

PENTA-OCEAN CONSTRUCTION COMPANY LIMITED

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

QUARTERLY EM&A SUMMARY
REPORT

(FROM OCT. TO DEC. 2003)


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FIGURE

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EXECUTIVE SUMMARY

This report is the fourthly quarterly EM&A summary report (No.4) 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 October to 31 December 2003.

Construction Progress in this Quarter

The major construction works in this quarter are as below:

<u>Month</u>	<u>Major Activities</u>
October	The major construction works in this reporting month included drainage works and watermain installation works, earth work and forming earth mound, excavation and removal of surcharge mound, predrilling works for road Pumping Station, sheet piling, roadworks and subway construction works, demolition of existing steel bridge, construction of culvert C10, modification of trapezoidal channel and headwall, construction of PSK underpass extension, pipe jacking works for Watermain 600dia, construction of Culvert C10 and DN2500 twin pipe outfall, construction of bored pile, drainage and watermain works under KCRC and Erection of hoarding & signboard.
November	The major construction works in this reporting month included Excavation of Culvert C10 and its associated outfall, installation of precast unit for culvert C10 outfall, drainage work in Area 1, Area 2, Area 9A, Area 9B, Area 7B, Zone S2 and Area 15, Re-removal RE wall works in Zone F, subway SB1 construction work in Zone N2, watermain works in Area 8A and Zone A, extraction of sheetpiling and backfilling for culvert C10, sewage works in Area 1, Area 15 and Area 6, installation of the watermain works at Zone L, formation of stockpile areas in Zone T, modification of headwall and trapezoidal channel at Zone L, manhole construction and pipe laying at pipe culvert C10, removal of surcharge mound S2, completed formation of surcharge mound S5, bored piling works for pumping station No.1, installation of foul sewer line at Zone L, sheetpiling works for pump station No.2, roadworks for Area 1, 8A and 9B, and precasting works for twin DN 2500 pipe outfall.
December	The major construction works in this reporting month included Excavation of Culvert C10 and its associated outfall, cofferdam construction/sheetpiling for culvert C10 and pump station no.2, drainage work in Area 1, Area 2, Area 9A, Area 9B, Area 7B, Zone S2 and Area 15, re-removal RE wall works in Zone F, subway SB1 construction in Zone N2, watermain works in Area 8A and Zone A, extraction of sheetpiling and backfilling for culvert C10, sewage works in Area 1, Area 15 and Area 6, installation of the Watermain works at Zone L, formation of stockpile areas in Zone T, modification of headwall and trapezoidal channel at Zone L, bored piling works for pumping station No.1, construction of underpass extension structure, roadworks for Area 1, 8A and 9B, precasting works for twin DN 2500 pipe outfall.

Environmental Monitoring Progress

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

- Noise Monitoring (Day-time): 13 Occasions at 3 designated locations;
- Noise Monitoring (Evening-time): 13 Occasions at 3 designated locations;
- Noise Monitoring (Holiday): 13 Occasions at 3 designated locations;
- 24-hour TSP Monitoring: 13 Occasions at 2 designated location;
- 1-hour TSP Monitoring: 40 Occasions at 2 designated locations;
- Weekly-site inspection: 13 Occasions.

Noise Monitoring

No exceedances of Action and Limit levels for noise monitoring were recorded in this quarter.

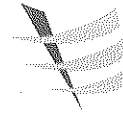
Air Monitoring

24-hour TSP monitoring at HKIB Staff Accommodation was carried out from 19 November 2003. Hence, both 1-hour and 24-hour TSP monitoring at HKIB Staff Accommodation was conducted to monitor the air quality in this quarter.

No exceedances of Action and Limit levels were recorded for 24-hr TSP and 1-hr TSP monitoring in this quarter.

Environmental Complaints

No environmental complaints were received in this reporting period.



Notification of summons and successful prosecutions

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

The monitored environmental data indicated that no unacceptable environmental impacts arising from the Project had been caused to the surrounding sensitive receivers. The environmental measures had been effective in controlling potential impacts to within acceptable sensitive receivers. However, the Contractor had been recommended to introduce more effort on environmental mitigation measures to minimize the environmental impact from the Project.



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 quarterly EM&A summary report summarizes the impact monitoring results and audit findings of the EM&A program during the reporting period from 01 October to 31 December 2003. It covers 3 monthly reports produced for October 2003, November 2003 and December 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.

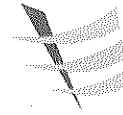
Figure 1 and 2 show the noise and air monitoring locations of this project.

2.3 Construction Programme

The details of construction programme (from October 2003 to January 2004) 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	Ir. Coleman Ng	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 QUARTER

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

A summary of the major construction activities undertaken in this quarter is shown in Table 3.1.

Table 3.1 Major Construction Activities in this quarter

Location	Major Construction Activity
Area1, Area2, Area3, Area7B, Area9A+9B, ZoneA, Area7B, ZoneS2 and Area15	Drainage work and watermain installation works
Area 1, Area 9A+9B	Earth work and forming earth mound
Area 10A	Predilling works for road Pumping Station
Road D1 bridge	Preparation for bored piling works
Area 9A+9B,	Roadworks and subway construction works
Area 10A	Earthworks & Works of Box culvert C10
Area 5,	Modification of trapezoidal channel and headwall
Area 1,	Construction of PSK Underpass extension
Area 9A+9B	Ramps and Pump House (SB1)
---	Demolition of existing steel bridge
---	Sheet piling
---	Pipe jacking works for Watermain 600dia
---	Construction of Culvert C10 and DN2500 twin pipe outfall
---	Drainage and watermain works under KCRC
---	Erection of hoarding & signboard
---	Excavation / Removal of surcharge mound
Zone F	Re-removal RE wall works
Zone N2	Subway SR1 construction work
Zone A, Area 8A	Watermain works
Area 1, Area 8A and Area 9B	Roadworks
Area 1, Area 15 and Area 6	Sewage works
Zone L	Installation of the Watermain works, modification of headwall and trapezoidal channel and Installation of foul sewer line.
Zone T	Formation of stockpile
---	Sheetpiling works for pumping station No.2
---	Bored piling works for pumping station No.1
---	Construction of underpass extension structure
---	Completed formation of surcharge mound S5
---	Manhole construction and pipe laying at pipe culvert C10
---	Installation of precast unit for culvert C10 outfall



Location	Major Construction Activity
---	Excavation of Culvert C10 and its associated outfall
---	Extraction of sheetpiling and backfilling for Culvert C10
---	Removal of surcharge mound S2 and S4
---	Precasting works for twin DN2500 pipe outfall
---	Cofferdam construction / sheetpiling for culvert C10 and pump station No.2

4.0 AIR QUALITY MONITORING

4.1 Monitoring Locations

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

- HKIB Staff Accommodation (on ground floor near the entrance facing south-east) for 1-hr TSP monitoring;
- 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.

24-hour TSP monitoring at HKIB Staff Accommodation was started from 14 November 2003. Hence, both 1-hour and 24-hour TSP monitoring at HKIB Staff Accommodation was conducted to monitor the air quality in this reporting month.

4.2 Monitoring Parameters, Frequency, Duration and Schedule

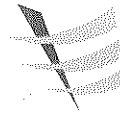
Table 4.1 summarizes the monitoring parameters, monitoring duration and frequencies of air quality monitoring. The air quality monitoring schedule for 24-hr and 1-hr TSP monitoring at designated monitoring locations in this quarter is summarized in table 4.2.

Table 4.1 Monitoring parameters, duration and frequency 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

Table 4.2 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					02/10/03	09:12	10:12
						03/10/03	14:20	15:20
						07/10/03	11:00	12:00
						09/10/03	15:42	16:42
						11/10/03	10:53	11:53
						14/10/03	10:12	11:12
						16/10/03	11:00	12:00
						18/10/03	09:25	10:25
						21/10/03	09:41	10:41
						23/10/03	11:00	12:00
						25/10/03	15:03	16:03
						28/10/03	10:02	11:02
						30/10/03	13:06	14:06
						01/11/03	10:06	11:06
						04/11/03	10:19	11:19
						06/11/03	13:00	14:00
						08/11/03	09:35	10:35
						11/11/03	14:17	15:17
						13/11/03	14:45	15:45
						15/11/03	15:56	16:56
				18/11/03	09:15	10:15		
				20/11/03	10:46	11:46		



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					22/11/03	13:30	14:30		
						25/11/03	11:05	12:05		
						27/11/03	15:48	16:48		
						29/11/03	09:15	10:15		
						02/12/03	15:30	16:30		
						04/12/03	13:30	14:30		
						06/12/03	13:00	14:00		
						09/12/03	13:30	14:30		
						11/12/03	10:30	11:30		
						13/12/03	11:00	12:00		
						16/12/03	09:30	10:30		
						18/12/03	10:00	11:00		
						20/12/03	10:41	11:41		
						23/12/03	11:00	12:00		
						24/12/03	11:05	12:05		
						27/12/03	09:30	10:30		
						30/12/03	10:05	11:05		
						31/12/03	10:30	11:30		
		AM3	Cheung Shue Tan Village (near the outer building, temple)					02/10/03	10:30	11:30
								03/10/03	15:37	16:37
						07/10/03	14:50	15:50		
						09/10/03	13:34	14:34		
						11/10/03	14:26	15:26		
						14/10/03	15:07	16:07		
						16/10/03	13:05	14:05		
						18/10/03	10:54	11:54		
						21/10/03	17:25	18:25		
						23/10/03	13:50	14:50		
						25/10/03	13:40	14:40		
						28/10/03	16:23	17:23		
						30/10/03	16:37	17:37		
						01/11/03	15:03	16:03		
						04/11/03	14:30	15:30		
						06/11/03	14:32	15:32		
						08/11/03	11:00	12:00		
						11/11/03	16:01	17:01		
						13/11/03	16:02	17:05		
						15/11/03	09:14	10:14		
						18/11/03	10:40	11:40		
						20/11/03	16:38	17:38		
						22/11/03	14:55	15:55		
						25/11/03	14:05	15:05		
						27/11/03	13:00	14:00		
						29/11/03	10:40	11:40		
						02/12/03	16:00	17:00		
						04/12/03	15:48	16:48		
						06/12/03	14:15	15:15		
						09/12/03	15:40	16:40		
						11/12/03	14:20	15:20		
				13/12/03	15:01	16:01				
				16/12/03	11:00	12:00				
				18/12/03	15:00	16:00				
				20/12/03	13:20	14:20				
				23/12/03	14:32	15:32				
				24/12/03	13:20	14:20				
				27/12/03	13:30	14:30				
				30/12/03	15:04	16:04				
				31/12/03	16:10	17:10				
AM1	HKIB Staff Accommodation	19/11/03	11:15	20/11/03	11:10					
		25/11/03	10:55	26/11/03	10:45					
		01/12/03	15:21	02/12/03	15:23					
		05/12/03	10:22	06/12/03	10:21					
		11/12/03	10:45	12/12/03	10:45					
		17/12/03	10:00	18/12/03	10:00					
		23/12/03	10:30	24/12/03	10:30					
		29/12/03	08:48	30/12/03	08:48					
AM3A	Cheung Shue Tan (in front of Man Kee Store)	03/10/03	16:47	04/10/03	16:47					
		09/10/03	13:40	10/10/03	13:40					
		15/10/03	13:45	16/10/03	13:45					



Air quality monitoring stations	Location	Monitoring Period						
		24-hr TSP				1-hr TSP		
		Start		Finish		Date	Start	Finish
		Date	Time	Date	Time			
AM3A	Cheung Shue Tan (in front of Man Kee Store)	21/10/03	17:40	22/10/03	17:40			
		27/10/03	16:03	28/10/03	16:03			
		01/11/03	14:07	02/11/03	14:07			
		07/11/03	09:05	08/11/03	09:05			
		13/11/03	16:15	14/11/03	16:15			
		19/11/03	11:40	20/11/03	11:40			
		25/11/03	14:15	26/11/03	14:15			
		01/12/03	15:40	02/12/03	14:39			
		05/12/03	10:40	06/12/03	10:41			
		11/12/03	11:30	12/12/03	11:30			
		17/12/03	10:20	18/12/03	10:20			
		23/12/03	15:10	24/12/03	15:10			
		29/12/03	09:12	30/12/03	09:12			

4.3 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 period are shown in Appendix D.

4.4 Action and Limit Levels

Action and Limit levels for 24-hr TSP and 1-hr TSP derived as illustrated in Table 4.3.

Table 4.3 Action and Limit Levels for 24-hr TSP and 1-hr TSP

Monitoring Location	24-hr TSP ($\mu\text{g}/\text{m}^3$)		1-hr TSP ($\mu\text{g}/\text{m}^3$)	
	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"

4.5 Event-Action Plans

Please refer to Appendix E for details.

4.6 Air Quality Monitoring Results

4.6.1 24-hour TSP Monitoring

24-hour TSP monitoring at HKIB Staff Accommodation was started from 14 November 2003. Hence, both 1-hour and 24-hour TSP monitoring at HKIB Staff Accommodation was conducted to monitor the air quality in this reporting month. Graphical presentation of 24-hour TSP monitoring results for these reporting months is shown in Appendix B.

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



4.6.2 1-hour TSP Monitoring

1-hour TSP monitoring was carried out at monitoring stations, AM1 and AM3 in the reporting period. Graphical presentation of 1-hour TSP monitoring results for these reporting months is shown in Appendix B.

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

5.0 Noise Monitoring

5.1 Monitoring Locations

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 Parameters, duration, Frequency and Schedule

Noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} 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 $L_{eq}(5-min)$);
- One set of measurements between 1900-2300 hours (3 consecutive $L_{eq}(5-min)$)*;
- One set of measurements between 2300-0700 hours of next day (3 consecutive $L_{eq}(5-min)$)*;
- One set of measurements between 0700-1900 hours on holidays (3 consecutive $L_{eq}(5-min)$)*.

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

Duration, frequencies and parameters of noise measurement are presented in Table 5.1.

Table 5.1 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

The noise monitoring programme of monitoring locations (Day-time, Evening-time, Holiday and Night-time) is summarized in Table 5.2.

Table 5.2 Monitoring Schedule for noise monitoring stations

Noise monitoring stations	Monitoring Period							
	Day-time		Evening-time		Holiday		Night-time	
NM1	07/10/03	11:03	07/10/03	19:00	05/10/03	15:12	---	---
	14/10/03	16:29	14/10/03	19:04	12/10/03	14:18	---	---
	21/10/03	09:43	21/10/03	19:00	19/10/03	15:38	---	---
	28/10/03	16:31	28/10/03	19:00	26/10/03	14:18	---	---
	04/11/03	10:23	04/11/03	19:15	02/10/03	14:23	---	---
	11/11/03	14:19	11/11/03	20:10	09/10/03	10:49	---	---



Noise monitoring stations	Monitoring Period								
	Day-time		Evening-time		Holiday		Night-time		
	18/11/03	09:17	18/11/03	19:07	16/10/03	14:12	---	---	
	25/11/03	11:30	25/11/03	19:00	23/10/03	11:23	---	---	
	---	---	---	---	30/11/03	14:50	---	---	
	02/12/03	09:00	02/12/03	19:00	07/12/03	09:08	---	---	
	09/12/03	10:02	09/12/03	19:18	14/12/03	11:45	---	---	
	16/12/03	09:45	16/12/03	19:00	21/12/03	14:52	---	---	
	23/12/03	10:00	23/12/03	19:18	28/12/03	14:00	---	---	
	30/12/03	10:10	30/12/03	20:58	---	---	---	---	
	NM2	07/10/03	13:30	07/10/03	19:30	05/10/03	15:48	---	---
		14/10/03	10:16	14/10/03	19:36	12/10/03	14:47	---	---
21/10/03		11:00	21/10/03	19:33	19/10/03	16:20	---	---	
28/10/03		17:40	28/10/03	19:34	26/10/03	14:52	---	---	
04/11/03		11:30	04/11/03	19:42	02/10/03	13:44	---	---	
11/11/03		15:29	11/11/03	19:40	09/10/03	11:10	---	---	
18/11/03		13:36	18/11/03	19:43	16/10/03	14:38	---	---	
25/11/03		13:10	25/11/03	19:48	23/10/03	13:55	---	---	
---		---	---	---	30/11/03	14:10	---	---	
02/12/03		09:41	02/12/03	19:35	07/12/03	09:55	---	---	
09/12/03		10:45	09/12/03	19:56	14/12/03	11:18	---	---	
16/12/03		13:45	16/12/03	19:35	21/12/03	15:28	---	---	
23/12/03		10:46	23/12/03	19:52	28/12/03	13:30	---	---	
30/12/03		14:00	30/12/03	20:27	---	---	---	---	
NM3		07/10/03	14:55	07/10/03	20:10	05/10/03	16:16	---	---
	14/10/03	15:14	14/10/03	20:12	12/10/03	15:13	---	---	
	21/10/03	17:30	21/10/03	20:10	19/10/03	16:55	---	---	
	28/10/03	10:04	28/10/03	19:59	26/10/03	15:19	---	---	
	04/11/03	14:35	04/11/03	20:20	02/11/03	15:04	---	---	
	11/11/03	16:04	11/11/03	19:00	09/11/03	11:40	---	---	
	18/11/03	10:44	18/11/03	20:11	16/11/03	15:15	---	---	
	25/11/03	14:00	25/11/03	20:18	23/11/03	14:24	---	---	
	---	---	---	---	30/11/03	13:35	---	---	
	02/12/03	10:20	02/12/03	20:06	07/12/03	10:37	---	---	
	09/12/03	13:30	09/12/03	20:28	14/12/03	10:45	---	---	
	16/12/03	14:38	16/12/03	20:02	21/12/03	15:55	---	---	
	23/12/03	11:30	23/12/03	20:30	28/12/03	13:05	---	---	
	30/12/03	15:15	30/12/03	19:56	---	---	---	---	

5.3 Action and Limit Levels

The Action and Limit levels for noise levels derived as illustrated in Table 5.3.

Table 5.3 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		55 dB(A) **
Night-time	2300-0700 hrs of next day		

* = 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".

5.4 Event-Action Plans

Please refer to the Appendix E for details.

5.5 Noise Monitoring Results

Day-time, Evening-time and Holiday noise monitoring were carried out at monitoring



stations, NM1, NM2 and NM3 in this reporting period. No night-time noise monitoring were required since no construction works were processed during the night-time period. Graphical presentation of the monitoring results for these reporting months are shown in Appendix C.

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 period. Besides, no exceedances in Limit Level were recorded according to the results from day-time, evening-time and holiday noise monitoring.

6.0 WASTEWATER MONITORING

- 6.1 According to the Discharge of Industrial Trade Effluent Licence (Licence No.: 2946), POC is required to carry out wastewater monitoring of suspended solids quarterly at all effluent discharge points within the site.
- 6.2 POC appointed ET of ETL to sampling the wastewater samples at the effluent discharge points. The collected sample will be transport to the Environmental Laboratory of ETL for suspended solids content analysis. The Environmental Laboratory of ETL is HOKLAS accredited and the test method used for suspended solids analysis is also HOKLAS accredited in accordance with the 2540D of Standard Methods for the Examination of Water and Wastewater (APHA 19th edition).
- 6.3 Under the Wastewater Discharge Licence (No.: 2946), the discharge limit of Suspended Solids content of the effluent at this site should be 30mg/L. It means that the suspended solids of wastewater discharged should be less than 30mg/L or otherwise no wastewater can be discharged under this Licence.
- 6.4 During this quarter, one wastewater monitoring was carried out.
- During December 2003, the wastewater monitoring was carried out by ET at 29 December 2003 at two discharges points. The locations of these discharge points were shown in the figures at Appendix G. During this monitoring, two wastewater samples were collected from these effluent discharge points and transport to ETL immediately for analysis. The results of suspended solids content of these wastewater samples were found below 30mg/L and within the discharge limit of the Discharge Licence.
- 6.5 The test reports for these two wastewater monitoring were attached in Appendix I.

7.0 Review of the Reasons for and the implications of Non-compliance

According to the summary of environmental monitoring results, no exceedances of noise and air quality monitoring were recorded in this quarter. Hence, no further mitigation measures and action were required.

8.0 Summary of Environmental Complaints

No environmental complaints on this Project were received in this quarter. A statistical summary of environmental complaints is presented in Table 8.1.



Table 8.1 Statistical Summary of Environmental Complaints

Reporting Month	Complaints Statistics		
	Frequency	Cumulative	Complaint Nature
October 2003	0	0	N/A
November 2003	0	0	N/A
December 2003	0	0	N/A

9.0 Environmental Summons

There were no notification of summons respect to environmental issues registered in this quarter. Cumulative log of Notification of Summons and Prosecution is tabulated in Table 9.1.

Table 9.1 Cumulative Log of Notification of Summons and Prosecution

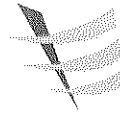
Date	Detail of Notice of Summons or Prosecution	Action Taken	Environmental Outcome
16 Oct 2002	The site main haul road was neither paved with any one of concrete, bituminous materials, hard core or metal plates, nor had the entire road surface maintained wet by the spraying of water or dust suppression chemical.	<ul style="list-style-type: none"> POC paved the site main haul road with concrete and bituminous materials; The road surface was wet by the spraying of water regularly by POC. 	It was observed that the problem of dust emission from the site main haul road has been improved. No further complaint or ticket was received until September 2003.
11 July 2003	Three stockpiles of dusty material namely aggregate, were wither sheeting, nor place in an area sheltered on top and three sites, nor sprayed with water or dust suppression chemical so as to maintain entire surface wet.	The stockpiles of aggregates / excavated materials were covered with tarpaulin sheet / sprayed with water in order to avoid the dust emission.	No further complaints were received during the reporting month.

10.0 Status of Environmental Licensing and Permitting

All permits/licenses obtained in this quarter are summarises in Table 10.1.

Table 10.1 Summary of environmental licensing and permit status

Description	Permit No.	Valid Period		Section
		From	To	
Environmental	EP-108/2001	05/11/02	---	Whole work site
Construction Noise Permit	GW-TN0299-2003	27/08/03	26/02/04	<p><u>Group A:</u></p> <ul style="list-style-type: none"> 2 Dump trucks (CNP 067) 2 Excavator, tracked (CNP 081) 1 Generator, super silenced, 70dB(A) at 7m (CNP 103) 1 Bulldozer (CNP 030) <p><u>Group B:</u></p> <ul style="list-style-type: none"> 1 Dump trucks (CNP 067) 2 Excavator, tracked (CNP 081) 1 Generator, super silenced, 70dB(A) at 7m (CNP 103) 1 Water pump (electric) (CNP 281) <p><u>Group C:</u></p> <ul style="list-style-type: none"> 1 Dump trucks (CNP 067) 2 Excavator, tracked (CNP 081) 1 Crane, mobile (diesel) (CNP 048) <p><u>Group D:</u></p> <ul style="list-style-type: none"> 2 Poker, vibratory, hand-held (CNP 170) 1 Concrete pump, lorry mounted (CNP 047) 2 Concrete lorry mixer (CNP 044)



Description	Permit No.	Valid Period		Section
		From	To	
Construction Noise Permit	GW-TN0299-2003	27/08/03	26/02/04	Group E: • 2 Concrete lorry mixer (CNP 044) • 1 Crane, mobile (CNP 048) • 1 Piling, large diameter bored, oscillator (CNP 165) Group F: • 1 Air compressor, with noise emission label, Sound Power Level < 102 dB(A) • 1 Crane, mobile (diesel) (CNP 048) • 1 Generator, silenced, 75 dB(A) at 7m (CNP 102) • 1 Piling, large diameter bored, reverse circulation drill (CNP 166) Group G: • 2 Excavator, tracked (CNP 081) • 1 Generator, super silenced, 70 dB(A) at 7m (CNP 103)
Construction Noise Permit	GW-TN0151-2003	27/05/03	26/11/03	• 2 Excavators, tracked • 2 Generators, 1 Lorry (CNP 141) • 1 Crane, mobile (diesel) • 1 Vibration hammer
Construction Noise Permit	GW-TN0022-2003	16/05/03	15/11/03	• 2 Drop hammer driving steel sheet pile; or • 1 hydraulic hammer driving steel sheet pile.
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

11.0 WASTE MANAGEMENT

11.1 Summary of Waste Quantities

The summary of waste generated at the site in the reporting period is summarized in Table 11.1.

Table 11.1 Summary of Quantities of Waste generated at this reporting period

Type of Waste	Quantity	Disposal Location
C&D Material (Inert) (m ³)	0	Nil
C&D material (Non-inert) (m ³)	25	Disposed of at SENT Landfills
General Refuse (m ³)	40	Disposed at NENT Landfills
Chemical Waste (L)	1324L	Collected by licensed waste hauliers

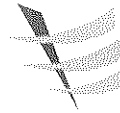
12.0 SITE INSPECTION / AUDIT

12.1 Summary of Weekly Site Inspection and Monthly Joint Site Audit Findings

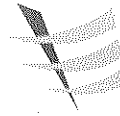
Weekly site inspection was carried out by the ET. A total 13 weekly site inspections were undertaken in this quarter. Monthly joint site audit was carried out by the RE, the IEC, POC and ET at 25 October, 18 November and 18 December 2003 in this quarter. The summary of weekly site inspection and monthly joint site audit findings from this quarter is shown in Table 12.1.

Table 12.1 Summary of Weekly Site Inspection and Monthly Joint Site Audit Findings

Item	Aspects	Findings	October 2003	
			Action(s) taken by POC	ET Verification
1	Chemical	A 200L drum and a 25L container of diesel were found on grassland at the 'subway' works area.	The oil drum of diesel found at Subway were already placed in the drip tray.	The oil drum and container of diesel were placed in the drip tray at the Subway during ET site inspection. However, POC was reminded to place all oil drum / container of diesel in the drip tray of capacity to accommodate 110% of the volume of the container.



October 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
2	Water	Stagnant water in an idle desilting tank at Zone P was found.	The Stagnant water in the idle desilting tank at Zone P was already drained away.	ET found that the stagnant water in the idle desilting tank was drained away during weekly site inspection. POC was still reminded to drain all stagnant water out from the tank / container to prevent mosquito breeding.
3	Waste	Bore piling was undertaken near the nullah. A small bund was built to prevent excavated material entering the nullah. The excavated material was deposited on the bare ground before transfer to the stockpiling area.	A holding tank will be provided for temporary storage of the excavated material as reduce the risk of the excavated material entering the nullah.	ET found that a holding tank was used for temporary storage of the material excavated from bore piling. POC was reminded to deposit all excavated material in the tank for temporary storage.
4	Air	Fugitive dust was observed at Area 1 due to loading of stones.	The subcontractor was reminded to wet the surface of the stone during loading at Area 1.	No fugitive dust was observed at Area 1 during weekly site inspection. POC was reminded to wet the stone to prevent dust emission due to loading.
5	Air	It was found that some of the offsite vehicles occupied by other contractors had not used the Northern Wheel-washing Bay before leaving the site.	The subcontractors were reminded to use the wheel washing facilities. Instruction and training were provided to the driver to use the wheel washing facilities.	Vehicles were found to use the Northern Wheel-washing Bay before leaving the site during weekly site inspection. However, POC was still reminded to display notice in front of site exit to instruct their workers and subcontractors to use wheel washing bay before leaving the site.
6	Water	The stagnant water was observed near the Northern wheel washing bay.	The stagnant water near northern site entrance was already drained away.	ET found that the stagnant water was drained away during next weekly site inspection. However, ET found the stagnant water is the wastewater leakage from the broken part of the northern wheel washing bay. After continuous use of wheel washing bay, wastewater were found outflow from the broken part of wheel washing bay and accumulated near the wheel washing bay. Hence, POC was reminded to repair the broken part of wheel washing bay and try to prevent the wastewater outflow from the wheel washing bay.
7	Air	Some stockpiles / slopes were not covered.	To cover by using clean tarpaulin sheets and hydroseed stockpiles and slope area; Watering applied to stockpile and exposed loose soil surface of site works; To perform more frequent water spraying activities after hydro seeding to enhance the effectiveness for the grass growth.	ET found that some areas of stockpiles and slope area were still not covered or hydroseeded. Therefore, POC was reminded to cover / hydroseed the stockpiles and slope area.
8	Air	Dust emission caused by vehicular movement was observed at several sections of the site area.	Haul road watering was carried out more frequently.	Although the water trucks were arranged to water of the haul road more frequently, dust emission from vehicular movement was still observed during weekly site inspection. Hence, POC was reminded to water the haul road if necessary.



October 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
9	Air	The roundabout and the access road just outside the Northern wheel washing area was silty.	To increase the frequency of public road cleaning.	ET found that the condition of roundabout and the access road were silty. POC was reminded to provide more manpower to clean the public road.
10	Air	The access road just outside the Southern wheel washing area was silty although both automatic and manual wheel washing facilities have been provided.	To clean the access road more frequency.	ET found that the access road was still silty during site inspection. POC was reminded to clean the access road more frequency. The wheel washing facilities should be maintained more frequently.

November 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
1	Air (NC)	Muddy trail was observed along the slop road towards Shatin.	In order to reduce the muddy trail along the slop road towards Shatin, the following actions were taken by POC: <ul style="list-style-type: none"> The Subcontractors were reminded to use the wheel washing facilities.; Instruction and training were provided to the driver to use the wheel washing facilities; The roundabout at Northern site entrance will be cleaned frequently. 	During weekly site inspection, muddy trails were reduced along the slop road towards Shatin. However, POC was still reminded to ensure all vehicles should use wheeling washing facilities properly before leaving the site, and increase the frequency of public road cleaning.
2	Air (NC)	Muddy water was discharging into the gullies at the roundabout at Northern Site Entrance.	The workers were reminded not to introduce the muddy water directly to the gullies at the roundabout during cleaning the roundabout. Besides, instruction and training were provided to the drivers to use the wheel washing facilities properly and hence avoid the formation of muddy water outside the site entrance.	No muddy water at the roundabout was found during weekly site inspection. However, POC was recommended to place sand bags around the gullies at the roundabout to avoid the muddy water discharged into the gullies directly.
3	Waste (Obs)	C&D Waste was not properly segregated at Area 10A and Zone P.	The C&D Waste found at Zone P were already removed.	The C&D Waste at Zone P had been removed during weekly site inspection
4	Water (Obs)	Drip tray at Zone P was full of water.	The stagnant water accumulated in the drip tray at Zone P was already removed.	No stagnant water was observed in the drip tray at Zone P during weekly site inspection.
5	Water (Obs)	The sedimentation tank was full of silt at Zone P.	The silt was already removed and the tank will stand by for use.	No silt was observed in the sedimentation tank during weekly site inspection. POC was reminded to cover the tank by impervious sheet and cleanup regularly to avoid accumulation of rain and silt.
6	Air (Obs)	Proper hydroseeding of the large stockpile at Zone T should be performed as soon as possible.	Hydroseeding or covering the stockpile with impervious sheets at Zone T will be performed as soon as possible.	ET found that some area of stockpile were still not covered or hydroseeded during weekly site inspection. Therefore, POC was reminded to cover / hydroseed the stockpiles and slope area.

Remark: "NC" = Non-compliance and "Obs" = Observation



November 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
7	Air (Obs)	It was found that some of the offsite vehicles occupied by other contractors had not used the Northern Wheel-washing Bay before leaving the site during weekly site inspection.	The subcontractors were reminded to use the wheel washing facilities. Instruction and training were provided to the driver to use the wheel washing facilities.	Most of vehicles were found to use the Northern wheel-washing bay before leaving the site during weekly site inspection. However, POC was still reminded to display notice in front of site exit to instruct their workers and subcontractors to use wheel washing bay before leaving the site.
8	Water (Obs)	The stagnant water was observed near the Northern wheel washing bay during weekly site inspection.	The stagnant water near northern site entrance was already drained away.	ET found that the stagnant water was drained away during next weekly site inspection. However, ET found the stagnant water is the wastewater leakage from the broken part of the northern wheel washing bay. After continuous use of wheel washing bay, wastewater were found outflow from the broken part of wheel washing bay and accumulated near the wheel washing bay. Hence, POC was reminded to repair the broken part of wheel washing bay and try to prevent the wastewater outflow from the wheel washing bay.
9	Air (Obs)	Dust emission caused by vehicular movement was observed at several sections of the site area.	Haul road watering was carried out more frequently.	Although the water trucks were arranged to water of the haul road more frequently, dust emission from vehicular movement was still observed during weekly site inspection. Hence, POC was reminded to water the haul road if necessary.
10	Air (Obs)	The access road just outside the Southern wheel washing area was silty although both automatic and manual wheel washing facilities have been provided.	To clean the access road more frequency.	ET found that the access road was still silty during site inspection. POC was reminded to clean the access road more frequency. The wheel washing facilities should be maintained more frequently.
11	Waste (Obs)	Rubbish were deposited on bare ground in the construction site.	Rubbish receptacles were provided at the site area.	During weekly site inspection, rubbish were still observed on the bare ground although rubbish receptacles were provided. Therefore, POC was reminded to provide training or instruction to the workers and the Subcontractors to deposit the rubbish receptacles. Besides, rubbish receptacles with cover should be provided at this area.

Remark: "NC" = Non-compliance and "Obs" = Observation

December 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
1	Air (Obs)	Open stockpiles of soil were observed at Area 7A & 7B. The Contractor was reminded to cover the stockpiles or wet them regularly.	The stockpile materials were transfer to Zone T and some of those materials were covered with tarpaulin sheet or wet by water spray.	During the ET weekly site inspection, it was found that some of the stockpile materials were covered by tarpaulin sheet but some were found to be dry. POC was reminded to cover or wet the stockpiles especially dry season.

Remark: "NC" = Non-compliance and "Obs" = Observation



December 2003				
Item	Aspects	Findings	Action(s) taken by POC	ET Verification
2	Air (Obs)	The haul road at Area 7A & 7B was found to be dry and dusty.	Water tracks were arranged to spray the haul road at Area 7A and 7B by water to reduce the dust emission.	During the ET weekly site inspection, it was found that some sections of the haul road were found to be wet but some were still dry. POC was reminded to increase the frequency of water spraying by water tanker when necessary.
3	Waste Water (Obs)	The U-channel along the Southern wheel washing bay was filled with sediment and stagnant water. The Contractor was reminded to maintain the U-channel.	The mud and stagnant water accumulated along the U-channel near Southern wheel washing bay was already removed.	The mud and stagnant water accumulated along the U-channel was found to be removed during ET weekly site inspection.
4	Air (Obs)	Silt trails were observed on Science Park Road and the roundabout outside the Northern wheel washing area. The Contractor was reminded to strictly implement wheel washing at site exits	The Subcontractors were reminded to use the wheel washing facilities; instruction and training were provided to the driver to use the wheel washing facilities. The frequency of cleaning roundabout at Northern site entrance will be increased.	During weekly site inspection, muddy trails were reduced along the Science Park Road and the roundabout outside the Northern wheel washing area. However, POC was still reminded to ensure all vehicles should use wheeling washing facilities properly before leaving the site, and increase the frequency of public road cleaning.
5	Waste Water (Obs)	Stagnant water was still observed at the planter near the wheel washing bay at Northern site exit.	Sand bags will be used to placed along the profile barriers next to the plaster in order to prevent wastewater from wheel washing bay near Northern entrance.	During ET weekly site inspection, it was found that sand bags were placed along the barriers next to the plaster in order to prevent wastewater from wheel washing bay near Northern entrance.
6	Air (Obs)	It was found that some of the offsite vehicles occupied by other contractors had not used the Northern Wheel-washing Bay before leaving the site during weekly site inspection.	The subcontractors were reminded to use the wheel washing facilities. Instruction and training were provided to the driver to use the wheel washing facilities.	Most of vehicles were found to use the Northern wheel-washing bay before leaving the site during weekly site inspection. However, POC was still reminded to display notice in front of site exit to instruct their workers and subcontractors to use wheel washing bay before leaving the site.
7	Waste (Obs)	Rubbish were deposited on bare ground in the construction site.	Rubbish receptacles were provided at the site area.	During weekly site inspection, rubbish were still observed on the bare ground although rubbish receptacles were provided. Therefore, POC was reminded to provide training or instruction to the workers and the Subcontractors to deposit the rubbish receptacles. Besides, rubbish receptacles with cover should be provided at this area.

Remark: "NC" = Non-compliance and "Obs" = Observation



13.0 IMPLEMENTATION STATUS

13.1 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 schedule of the mitigation measures is presented in Appendix H.

Air Quality

Only partial stockpiles were covered by using tarpaulin sheets and hydroseeded. The Contractor was reminded to water, hydro-seed or cover all the stockpiles by using clean tarpaulin sheets. The Contractor was also reminded to cleanup the access road regularly to avoid dust emission.

Noise

All mitigation measures stated in Appendix H were implemented properly in this reporting period.

Water Quality

The Contractor was reminded to provide more effort to implement mitigation measures, such as diverting site runoff to suitable treatment processes before discharge, proper maintenance of sedimentation system and drainage facilities (e.g. sedimentation tank and U-channels), and remove the sand/rubbish accumulated in the drain/channel and sedimentation tanks regularly.

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 reminded to provide more manpower to clean up of rubbish accumulated at the site and provide rubbish bin/skips for collected the rubbish.

13.2 Implementation Status of Event and Action Plan

There were no exceedances in air quality and noise monitoring parameters recorded in this quarter. Hence, no further mitigation measures were required.

13.3 Implementation Status of Environmental Complaint Handling

No complaints had been received during this quarter.

14.0 Conclusions and Recommendations

All 1-hr TSP and 24-hr TSP levels in air quality monitoring were recorded below the Action and Limit levels in this quarter. At the same time, no noise monitoring exceedances were recorded and no complaints were received in this quarter. Therefore, no further mitigation measures and actions were required.

The monitored environmental data indicated that no unacceptable environmental impacts arising from the Project had been caused to the surrounding sensitive receivers. The environmental measures had been effective in controlling potential impacts to within acceptable sensitive receivers. However, the Contractor had been recommended to introduce more effort on environmental mitigation measures to minimize the environmental impact from the Project.



Based on the site inspections and audit findings during the reporting period, the following recommendation for further improvement of the current conditions are as below:

- All stockpiles with a volume of greater than 50m³ 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;
- Providing 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;
- Draining the stagnant water out from the idle sedimentation tank and u-channel to prevent mosquito breeding;
- Diverting silty runoff to sedimentation system before discharge;
- Placing enough sand bags or other protection should be applied to prevent the slity surface runoff onto the drains system;
- Removing the sand/rubbish accumulated in the drain/channel regularly;
- 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.