Territory Development Department

NT EAST Development Office

Tseung Kwan O Development, Phase II
Contract No. TK57/02

Grade Separated Interchange T1/P1/P2

Environmental Monitoring and Audit
Monthly Report (Version 1.0)

August 2003

Certified By

(Environmental Team Leader)

REMARKS:

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

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Abbreviation and Acronym

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

EXECUTIVE SUMMARY

Introduction

1. This is the fifteenth monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the "Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2" (the Project). This report documents the findings of EM&A Works conducted in August 2003 (26th of each month as the cut-off day).

2. The construction activities undertaken in the reporting month were:

- Piles & substructure works
- Mobilization & work area set up for bored piles
- Site clearances works
- Erection of steel frame of noise barrier type B
- Pile cap construction
- Construction of superstructure of Bridge A
- Construction of superstructure of Bridge D
- Retaining Wall structure
- Pre-drilling works for noise barrier type D
- Bored piling works for Bridge C

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the non-compliance of the reporting month is tabulated Table I.

Table I Summary Table for Non-compliance Recorded in the Reporting Month

Media / Nature	No of Exceedances		Action Taken	Results of action taken	Remarks
	Action Level	Limit Level			
Air	0	0	N.A.	N.A.	---
Noise	0	2	Mitigation measure was provided	No exceedance was recorded after the implementation of mitigation measures.	The exceedances were due to the operation of drilling machines of the Project.
Water	0	0	N.A.	N.A.	---

Air Quality

1-hour TSP Monitoring

5. All 1-hour TSP monitoring was conducted as schedule and no Action/Limit Level exceedance was recorded in the reporting month.

24-hour TSP Monitoring

6. All 24-hour TSP monitoring was conducted as scheduled and all monitoring results complied with the Action and Limit Levels in the reporting month.

Construction Noise

7. All construction noise monitoring was conducted as scheduled except that one additional noise monitoring was conducted on 15th August 2003 to confirm the Limit Level exceedance recorded on 14th August 2003 at the monitoring station N5 (Nam Fung Plaza).

8. Noise Limit Level exceedance was recorded on 14th August 2003 at station N5 (Nam Fung Plaza). The exceedance was due to the operation of drilling machines which were located very close to N5. In accordance with the Event Action Plan, repeative monitoring was conducted on 15th August 2003 and the exceedance was still recorded. The Contractor was requested to propose and implement mitigation measure to lower the construction noise to acceptable level.

9. With implementation of the temporary noise enclosure for the water pumps by the Contractor, no further exceedance was recorded on the monitoring session on 22nd August 2003.

Environmental Licensing and Permitting

10. License/Permits granted to the Project include the Environmental Permit (EP) for the Project, water discharge licenses, Construction Noise Permit and Waste Disposal (Chemical Waste) license. The Environmental Permit (EP) No. EP-073/2000/B issued by EPD for the construction and operation of the proposed works under the Project was amended to EP-073/2000/C.

Key Information in the Reporting Month

11. Summary of key information in this reporting month is tabulated in Table II.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	N.A.	N.A.	N.A.	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N.A.	N.A.	---
Status of submissions under EP	0	---	N.A.	N.A.	---
Notifications of any summons & prosecutions received	0	---	N.A.	N.A.	---
Future Key Issues: Construction of superstructure of Bridge A and Bridge D will be the major construction site activities for the coming month. The anticipated environmental impact will be mainly on dust and noise.					

Overall Environmental Performance

12. Though no non-compliance was issued during any site audits and the number of exceedances for noise and air quality remains to be low, a total of 16 complaints have been received since the commencement of the Project for 15 months.

13. It should be noted that limited number of monitoring stations cannot always fully monitor the site. However, as view of the large numbers of complaints received mainly on construction noise and muddy water discharge, the environmental performance of the project is regarded as poor. The Contractor should monitor their work closely and carry out corresponding mitigation measures to rectify the condition.

Key Information in the EIA Report

14. According to the *EIAO Guidance Note No. 14/2003*, the key information in the EIA Report is summarized in the Table III below. According to the EIA Report, air quality and noise would be the key issues during the construction of the Project. Details of the implementation of mitigation measures are provided in the Appendix J.

Table III Key Information in the EIA Report and the EMIS

Issues	Assumptions and Assessment	Recommended Mitigation Measures
Air	Dust concentration, if unmitigated, at the ASRs, especially the open space in Areas 24, 25, 40 and 45, would exceed the construction dust criteria.	• Covering the materials on truck with tarpaulin sheeting; • Watering of the dusty areas, at least twice a day; • Good housekeeping; • Provide wheel-washing facilities at site exit(s)
Noise	Construction noise, in unmitigated, would be likely to produce high noise level exceeding 75 dB(A) Leq (30-min) at the NSRs, and the predicted noise level at worst-affected NSRs is in the range 83-87 dB(A).	• The main construction activities for the Project shall be pre-drilling and bored piling only and no excessive noisy work shall be carried out; • Acoustic sheds shall be provided to enclose the noise generating part of oscillators and drill-rigs; • Use of silenced equipment; • Suitable sitting of equipment; • Use of mobile noise barriers; • Completing construction of the full enclosure in Po Shun Road.

1. INTRODUCTION

Background

1.1 Cinotech Consultants Limited (hereinafter called the "ET") was appointed by Territory Development Department (TDD) (hereinafter called the "Project Proponent") via Maunsell Consultants Asia Limited (hereinafter called the "Engineer/ Engineer's Representative) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project "Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2" (the Project).

1.2 The scopes of works for the Project include upgrading the existing at-grade interchange at Roads T1/P1/P2 junction at Tseung Kwan O to a grade separated interchange, and to widen the section of Road P2 between Po Hong Road and Po Ning Road. Figure 1 shows the location and the site boundary of the Project. The works have been commenced under Contract No. TK 57/02 – "Grade Separated Interchange T1/P1/P2".

1.3 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 449) and an environmental impact assessment report titled "Tseung Kwan O Development Contract F – Grade Separated Interchange T1/P1/P2, Environmental Impact Assessment (EIA) Study" (Register No. AEIAR – 017/1999) has been approved and deposited with Environmental Protection Department (EPD). The Environmental Permit (EP) No. EP-073/2000/B issued by EPD for the construction and operation of the proposed works under the Project was amended to EP-073/2000/C.

1.4 The Project "Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2" was commenced on 14th June 2002. Under the requirements of Conditions 3 of the EP, 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 are required for the construction phase of the Project.

1.5 This is the fifteenth monthly EM&A report summarizes the EM&A works for the Project in August 2003.

Project Organizations

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

- Project Proponent – TDD, NT East Development Office
- Engineer or Engineer's Representative (E/ER) – Maunsell Consultants Asia Limited (MCAL)
- Environmental Team (ET) – Cinotech Consultants Limited
- Independent Environmental Checker (IEC) – Ove Arup & Partners Hong Kong Limited
- Contractor - China Civil Engineering Construction Corporation

1.7 The responsibilities of respective parties are detailed in Section 1.4 of the EM&A Manual and the project organization chart is presented in Figure 2.

1.8 The key contacts of the Project are shown in Table 1.1.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
TDD	Ms. Joanna Kwok	Permit Holder	23011384	27218630
	Mr. Clement Poon	Project Coordinator	23011374	27218630
MCAL	Mr. Ivan Tsang	The Engineer	26856514	26912649
	Mr. Peter Yue / Mr. Stephen Lai	The Engineer's Representative	27010811	27013155
ET	Dr. Priscilla Choy	The ET Leader	21512083	31071388
	Mr. Joshua Hui	Audit Team Leader	21512079	31071388
	Mr. Henry Leung	Monitoring Team Leader	21512083	31071388
IEC	Mr. Sam Tsoi	Independent Environmental Checker	22683208	22683950
Contractor	Mr. Tommy Leung	Project Manager	22718899	28274313

Construction Programme

1.9 The construction activities undertaken in the reporting month were:

- Piles & substructure works
- Mobilization & work area set up for bored piles
- Site clearances works
- Erection of steel frame of noise barrier type B
- Pile cap construction
- Construction of superstructure of Bridge A
- Construction of superstructure of Bridge D
- Retaining Wall structure
- Pre-drilling works for noise barrier type D
- Bored piling works for Bridge C

Summary of EM&A Requirements

1.10 The EM&A programme requires construction phase monitoring for air quality and construction noise and environmental site audit. The EM&A requirements for each parameter are described in following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study

final report;
- Environmental requirements in contract documents.

1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of this report.

1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust, noise levels and audit works for the Project in the reporting month.

2. AIR QUALITY

Monitoring Requirements

2.1 1-hour and 24-hour TSP monitoring was conducted to monitor the air quality. Appendix A shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Two designated monitoring stations, A1 and A2 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figure 1.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Location
A1	Wan Lung Road Refuse Collection Station
A2	On Ning Garden

Monitoring Equipment

2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in Appendix B.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	GMW 25	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	2
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	2

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in Appendix C.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

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

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

Maintenance/Calibration

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

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

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.3 of the EM&A Manual.

Operating/Analytical Procedures

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

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

horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

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

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

2.11 The power supply was checked to ensure the sampler worked properly.

2.12 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.13 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.

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

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

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

2.17 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

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

Maintenance/Calibration

2.19 The following maintenance/calibration was required for the HVS.
- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary

power supply are in good working condition.

- High volume samplers were calibrated at 3-month intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

2.20 Dust monitoring was conducted as scheduled in the reporting month.

2.21 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices D and E respectively. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/TKO.

2.22 Wind data monitoring equipment has been installed near the RE Office for logging wind speed and wind direction. Wind conditions monitored are provided in Appendix G.

1-hour TSP Monitoring

2.23 All monitoring data complied with the Action and Limit Levels. No exceedance was reported.

24-hour TSP Monitoring

2.24 All monitoring data complied with the Action and Limit Levels. No exceedance was reported.

2.25 According to our field observations, the identified dust sources were mainly from road traffic.

3. NOISE

Monitoring Requirements

3.1 Noise monitoring was conducted in accordance with the EM&A Manual. Appendix A shows the established Action Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 In accordance with the EM&A Manual, noise monitoring was conducted at four monitoring stations, namely N1, N2, N5 and N7. Figure 1 shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Location
N1	Tseung Kwan O Public Library
N2	On Ning Garden
N5	Nam Fung Plaza
N7	Chung Ming Court

Monitoring Equipment

3.3 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 readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1).

3.4 Table 3.2 summarizes the noise monitoring equipment model being used. Copies of calibration certificates are attached in Appendix B.

Table 3.2 Noise Monitoring Equipment

Equipment	Model	Quantity
Integrating Sound Level Meter	B&K 2238	5
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Monitoring Parameters, Frequency and Duration

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency	Measurement
N1	L_{10}(30 min.)dB(A) L_{90}(30 min.)dB(A) L_{eq}(30 min.)dB(A)	0700-1900 hrs. on weekdays	Once per week	Free Field
N2				Facade
N5				Facade
N7				Facade

Monitoring Methodology and QA/QC Procedures

3.6 The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.

3.7 For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).

3.8 The battery condition was checked to ensure the correct functioning of the meter.

3.9 Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

- frequency weighting : A
- time weighting : Fast
- time measurement : 30 minutes / 5 minutes

3.10 Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000 Hz. 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 of noise measurement would be required after re-calibration or repair of the equipment.

3.11 The wind speed was frequently checked with the portable wind meter.

3.12 At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

3.13 Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.

3.14 Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.15 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.

3.16 The meter was sent to the supplier to check and calibrate on yearly intervals.

Results and Observations

3.17 Noise monitoring was performed at four designated locations during the daytime period (0700 to 1900) as scheduled except that one additional noise monitoring was conducted on 15th August 2003 to confirm the Limit Level exceedance recorded on 14th August 2003 at the monitoring station N5 (Nam Fung Plaza).

3.18 Results and graphical presentations are shown in Appendix F. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/TKO.

3.19 One Limit Level exceedance was recorded on 14th August 2003 at station N5 (Nam Fung Plaza). The exceedance was due to the operation of drilling machines which were located very close to N5. In accordance with the Event Action Plan, repeative monitoring was conducted on 15th August 2003 and the exceedance was still recorded. The Contractor was requested to propose and implement mitigation measure to lower the construction noise to acceptable level.

3.20 With implementation of the temporary noise enclosure for the water pumps by the Contractor, no further exceedance was recorded on the monitoring session on 22nd August 2003.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in Appendix H.

4.2 Site audits were conducted on 1st, 8th, 15th and 22nd August 2003.

Review of Environmental Monitoring Procedures

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

Air Quality Monitoring

4.4 The monitoring team recorded all observations around the monitoring stations within and outside of the construction site.

4.5 The monitoring team recorded the temperature, air pressure and weather conditions on the monitoring day.

Noise Monitoring

4.6 The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.

4.7 Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

4.8 All permits/licenses obtained are summarized in Table 4.1. The Environmental Permit (EP) No. EP-073/2000/B issued by EPD for the construction and operation of the proposed works under the Project was amended to EP-073/2000/C.

Implementation Status of Environmental Mitigation Measures

4.9 According to the *EIAO Guidance Note No. 14/2003*, the key information in the EIA Report is summarized in the Table 4.2 below. According to the EIA Report, air quality and noise would be the key issues during the construction of the Project. Details of the implementation of mitigation measures are provided in the Appendix J.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-073/2000/B * a copy was attached in the monthly report of June 2002	08/02/02	N/A	Construction of widened Road P2 between Road D1 and D2, modified TKO Tunnel Road and Road P1 near Road P2 and Slip Road A to G, together with associated footpath, cycle tracks or amenity strips and retaining wall. Construction of 3 nos. vehicular bridges, a pedestrian subway and 2 extended pedestrian/cyclist subways. Erection of noise barriers and enclosure. Construction of drainage and utilities work.	Valid
EP-073/2000/C *a copy was attached in Appendix N	24/06/03	N/A	A full enclosure of about 120m long along Po Shun Road in front of King Lam Estate and Chung Ming Court shall be completed within 16 months after commencement of construction of the Project to help screen construction noise. 5 other mitigation measures are to be completed before commencement of operation of the Project. During the utility diversion works at the Po Shun Road section, the main construction activities for the Project at the Po Shun Road section shall be pre-drilling and bored piling only and no excessive noisy work including percussive piling and sheet piling shall be carried out. Acoustic sheds shall be provided to enclose the noise generating part of oscillators and drill-rigs to achieve at least 15dB(A) noise reduction. One additional noise monitoring station shall be provided throughout the whole construction period of full enclosure.	Valid
Wastewater Discharge License				
TE/C1247/837/1 * a copy was attached in the monthly report of July 2002	12/7/02	31/7/07	Effluent arising from construction site.	Invalid
TE/F1045/838/1 * a copy was attached in the monthly report of September 2002	6/8/02	N/A	Effluent arising from RE office at TKO Area 56.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-837-C3070-07 * a copy was attached in the monthly report of July 2002	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid
Construction Noise Permit				
PP-TE0006-03 * a copy was attached in the monthly report of March 2003	20/3/03	16/9/03	Permission was granted for carrying out percussive piling at specific time of designated days.	Valid

Table 4.2 Key Information in the EIA Report and the EMIS

Issues	Assumptions and Assessment	Recommended Mitigation Measures
Air	Dust concentration, if unmitigated, at the ASRs, especially the open space in Areas 24, 25, 40 and 45, would exceed the construction dust criteria.	• Covering the materials on truck with tarpaulin sheeting; • Watering of the dusty areas, at least twice a day; • Good housekeeping; • Provide wheel-washing facilities at site exit(s)
Noise	Construction noise, in unmitigated, would be likely to produce high noise level exceeding 75 dB(A) Leq (30-min) at the NSRs, and the predicted noise level at worst-affected NSRs is in the range 83-87 dB(A).	• The main construction activities for the Project shall be pre-drilling and bored piling only and no excessive noisy work shall be carried out; • Acoustic sheds shall be provided to enclose the noise generating part of oscillators and drill-rigs; • Use of silenced equipment; • Suitable sitting of equipment; • Use of mobile noise barriers; • Completing construction of the full enclosure in Po Shun Road.

4.10 During site inspections in the month, the following observations and recommendations were made:

Air Quality

4.11 On 1st August 2003, the exposed sand was found at PO Shun Road near King Lam Estate.

4.12 On 8th August 2003, the exit at Po Shun Road near Chung Ming Estate is untidy and muddy.

4.13 On 15th August 2003, black smoke was emitted from excavator at Bridge D (Retaining Wall 1).

4.14 On 22nd August 2003, smoke emitted from generator at Roundabout was observed.

Noise

4.15 No violation was observed during site inspections.

Water Quality

4.16 On 1st August 2003, the muddy exit at Bridge D was observed. Broken sand bags, and muddy water in the blocked gullies were also observed at Bridge D.

4.17 On 15th August 2003, the Contractor was reminded to clean up the water ponds at Area 40.

Chemical and Waste Management

4.18 On 1st August 2003, broken oil drip tray was observed at Bridge A of Area 40.

4.19 On 15th and 22nd August 2003, accumulated rubbish at Area 40 was observed. The Contractor was advised to clear up more frequently.

4.20 On 22nd August 2003, oil drums placed on the bared ground at Chung Ming Court nearby Retaining Wall 13 was observed.

Environmental Permit

4.21 On 1st August 2003, the Contractor was advised to post the updated Environmental Permit posted at the site entrance.

Environmental Mitigation Implementation Schedule (EMIS)

4.22 According to the Environmental Permit and the EM&A Manual, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is presented in Appendix J.

Summary of Non-compliance of the Environmental Quality Performance Limit

4.23 No non-compliance was recorded during the site audits in the reporting month.

Implementation Status of Event Action Plans

4.24 The Event Action Plans for air quality and noise are presented in Appendix I.

Air Quality

4.25 No exceedance of Action and Limit Levels was recorded for 1-hour and 24-hour TSP concentrations in the reporting month.

Noise

4.26 One Limit Level exceedance was reported at the monitoring station N5 (Name Fung Plaza) on 14th August 2003. The exceedance was due to the operating drilling machine which was located very close to the NSR. In accordance with the Event Action Plan, an additional noise monitoring was conducted on 15th August 2003.

4.27 Noise Limit Level exceedance was still recorded on 15th August 2003 and the causes of the exceedance were identified as the same in 14th August 2003. The Contractor

was reminded to take mitigation measures to lower the noise level in accordance to the EM&A manual.

4.28 With implementation of the temporary noise enclosure for the water pumps by the Contractor, no further exceedance was recorded on the monitoring session on 22nd August 2003.

Summary of Complaints and Prosecution

4.29 No environmental complaint or prosecution was recorded in the reporting month.

4.30 A total of 16 complaints have been received since the commencement of the Project. The details of each of the complaint are summarized in Appendix L.

Overall Environmental Performance

4.27 Though no non-compliance was issued during any site audits and the number of exceedances for noise and air quality remains to be low, a total of 16 complaints have been received since the commencement of the Project for 15 months. It should be noted that limited number of monitoring stations cannot always fully monitor the site. However, as view of the large numbers of complaints received mainly on construction noise and muddy water discharge, the environmental performance of the project is regarded as poor. The Contractor should monitor their work closely and carry out corresponding mitigation measures to rectify the condition.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming month include:

- Generation of dust from stockpiles, haul road and vehicles movement on-site.
- Noise from operation equipment and machinery on-site.
- Ineffective use of sand traps and/or baffles.
- Regular removal of mud, sand and silt along u-channel.
- Wastewater discharge from site.
- Storage of chemicals/fuel and chemical waste/waste oil on site.
- Surface runoff generated in rainy season.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule for the next month is shown in Appendix C.

Construction Program for the Next Month

5.3 The construction program for the Project is shown in Appendix K.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 Environmental monitoring for the Project was performed in the reporting month and all monitoring results were checked and reviewed.

6.2 No exceedance of Action and Limit Levels for 1-hour TSP and 24-hour TSP concentrations was recorded during the reporting month.

6.3 All construction noise monitoring was conducted. Noise Limit Level exceedance was reported at the monitoring station N5 on 14th August 2003. Exceedance was still recorded in the additional noise measurement on 15th August 2003. The exceedances were due to the operating drilling machines which were located very close to the NSR.

6.4 With implementation of the temporary noise enclosure for the water pumps by the Contractor, no further exceedance was recorded on the monitoring session on 22nd August 2003.

6.5 No environmental prosecution or complaint was received during the reporting month.

Recommendations

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

Dust Impact

- To prohibit any open burning on site.
- To regularly maintain the machinery and vehicles on site.
- To follow up any exceedance caused by the construction works.
- To implement dust suppression measures on all haul roads, stockpiles and dry surfaces.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers.
- To obtain a valid Construction Noise Permit for prescribed works and construction works using powered mechanical equipment (PME) during restricted hours as stipulated in the relevant Technical Memorandum under Noise Control Ordinance.

Water Impact

- To identify any wastewater discharges from site.
- To regularly maintain the condition of u-channel, catch pits and wheel washing facilities on site.
- To regularly maintain the sediment control measures after rainstorms.

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge of chemical waste or oil directly from the site.