


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)

June 2003

Certified By	 (Environmental Team Leader)
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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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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Introduction.....	1
Environmental Monitoring Works.....	1
Environmental Licensing and Permitting	2
Prosecutions and Complaints.....	2
Future Key Issues.....	2
1. INTRODUCTION.....	3
Background.....	3
Project Organizations.....	3
Construction Programme	4
Summary of EM&A Requirements	4
2. AIR QUALITY.....	6
Monitoring Requirements	6
Monitoring Locations	6
Monitoring Equipment.....	6
Monitoring Parameters, Frequency and Duration.....	6
Monitoring Methodology and QA/QC Procedure	7
Results and Observations.....	9
3. NOISE.....	10
Monitoring Requirements	10
Monitoring Locations	10
Monitoring Equipment.....	10
Monitoring Parameters, Frequency and Duration.....	10
Monitoring Methodology and QA/QC Procedures.....	11
Maintenance and Calibration.....	11
Results and Observations.....	12
4. ENVIRONMENTAL AUDIT	13
Site Audits.....	13
Review of Environmental Monitoring Procedures	13
Status of Environmental Licensing and Permitting	13
Implementation Status of Environmental Mitigation Measures	13
Summary of Non-compliance of the Environmental Quality Performance Limit.....	15
Implementation Status of Event Action Plans	15
Summary of Complaints and Prosecution.....	16
5. FUTURE KEY ISSUES.....	17
Key Issues for the Coming Month.....	17
Monitoring Schedule for the Next Month.....	17
Construction Program for the Next Month.....	17
6. CONCLUSIONS AND RECOMMENDATIONS.....	18
Conclusions.....	18
Recommendations.....	18

LIST OF TABLES

Table 1.1	Key Project Contacts
Table 2.1	Locations for Air Quality Monitoring
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Impact Dust Monitoring Period
Table 3.1	Noise Monitoring Stations
Table 3.2	Noise Monitoring Equipment
Table 3.3	Noise Monitoring Parameters, Frequency and Duration
Table 4.1	Summary of Environmental Licensing and Permit Status

LIST OF FIGURES

Figure 1	Locations of the Site and the Monitoring Stations
Figure 2	Project Organization Chart

LIST OF APPENDICES

A	Action and Limit Levels for Air Quality and Noise
B	Copies of Calibration Certificates
C	Environmental Monitoring Schedules
D	1-hour TSP Monitoring Results and Graphical Presentations
E	24-hour TSP Monitoring Results and Graphical Presentations
F	Noise Monitoring Results and Graphical Presentations
G	Wind Data
H	Site Audit Summary
I	Event Action Plans
J	Environmental Mitigation Implementation Schedule (EMIS)
K	Construction Programme
L	Complaint Logs
M	Summary of Exceedances
N	Meeting Minutes on 1 April 2003

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

This is the thirteenth 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 June 2003 (26th of each month as the cut-off day).

The construction activities undertaken in the reporting month were:

- Piles & substructure works
- Mobilization & work area set up for bored piles
- Site clearances works
- Drainage 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

Environmental Monitoring Works

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.

Air Quality

1-hour TSP Monitoring

All 1-hour TSP monitoring was conducted as scheduled except that monitoring works on 9th and 11th June 2003 were cancelled due to adverse weather. No Action/Limit Level exceedance was recorded in the reporting month.

24-hour TSP Monitoring

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

All construction noise monitoring was conducted as scheduled except that monitoring work on 11th June 2003 was cancelled due to adverse weather. No Action/Limit Level exceedance was recorded during the reporting month.

Environmental Licensing and Permitting

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.

Prosecutions and Complaints

A total of 14 complaints have been received since the commencement of the Project. No environmental complaint and environmental prosecution were received in the reporting month.

Notes of meeting held on 1st April 2003 for discussion on construction noise after 7:00 pm was attached in Appendix N.

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.

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). An Environmental Permit (EP) No. EP-073/2000/B has been issued by EPD for the construction and operation of the proposed works under the Project.
- 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 twelfth monthly EM&A report summarizes the EM&A works for the Project in June 2003 (26th of each month as the cut-off day).

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
 - Drainage 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

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 and 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 SENSL.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 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 2.10 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].
- 2.11 The power supply was checked to ensure the sampler worked properly.
- 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 except that monitoring works on 9th and 11th June 2003 were cancelled due to adverse weather.
- 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.
- 2.23 Key dust monitoring findings and observations are provided as below.
- 2.24 The weather during the monitoring session was mainly rainy or cloudy. Weather conditions are provided in Appendix D.

1-hour TSP Monitoring

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

24-hour TSP Monitoring

- 2.26 All monitoring data complied with the Action and Limit Levels. No exceedance was reported.
- 2.27 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}, L₉₀ and L₁₀ 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 monitoring work on 11th June 2003 was cancelled due to adverse weather. 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>.
- 3.18 The weather during the monitoring sessions was mainly rainy or cloudy. Weather conditions are provided in Appendix F.
- 3.19 All construction noise monitoring data compiles with the Limit Level during the reporting month.

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 30th May, 6th, 13th, and 20th June 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.

Implementation Status of Environmental Mitigation Measures

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

Air Quality

- 4.10 On 6th June 2003, improper storage of cement bags was observed at Po Shun Road near Chung Ming Court.

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
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.	Valid
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

Water Quality

- 4.11 On 30th May 2003, accumulated stand water on the tarpaulin sheets was observed at Area 40 and inside the temporary surface channel at the Roundabout. It was also observed that water dripping from sedimentation tank at the Roundabout. Gully was not covered properly at Bridge A (PA6-1).
- 4.12 On 6th June 2003, muddy water running into gullies was observed at Po Shun Road. Gully was not bounded by sand bags at Bridge D and this had been identified in the previous audit session on 30th May 2003.

- 4.13 On 13th June 2003, the Contractor was recommended to bound the site area by sand bags to prevent site runoff to public road at Bridge A (PA6-1).
- 4.14 On 20th June 2003, stand water was observed at A-10 area. No sand bags were provided to prevent site runoff into the public road/gullies at Bridge D and Po Shun Road near King Lam Estate.

Chemical and Waste Management

- 4.15 On 30th May 2003, accumulated rubbish at Po Shun Road, Wan Po Road and TKO Tunnel near the Roundabout was observed. Oil/ chemical drums were placed on the bared ground at Area 40. Oil stain was also found at Po Shun Road near Chung Ming Court. Besides, chemical waste containers without label were found at Area 45.
- 4.16 On 6th June 2003, soil contamination was found at Area 40. It was observed that large amount of soil/sand was found on the public road at Bridge A (PA6-1). The Contractor subsequent indicated that the leakage was not related to their works but they would clean up it immediately.
- 4.17 On 13th June 2003, accumulated rubbish at Bridge A was observed and there was oil leakage at Area 40.
- 4.18 On 20th June 2003, oil dripped on the bared ground was observed at Po Shun Road near King Lam Estate.

Environmental Mitigation Implementation Schedule (EMIS)

- 4.19 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

- 4.20 No non-compliance was recorded during the reporting period.

Implementation Status of Event Action Plans

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

Air Quality

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

Noise

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

Summary of Complaints and Prosecution

- 4.24 A total of 14 complaints have been received since the commencement of the Project. The details of each of the complaint are summarized in Appendix L.
- 4.25 No environmental complaint or prosecution was received during the reporting month.

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. No Limit Level exceedance of construction noise was recorded during the reporting month.
- 6.4 No environmental prosecution or complaint was received during the reporting month.

Recommendations

- 6.5 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.

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

Table 2.1 Locations for Air Quality Monitoring

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

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

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

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

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

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

Table 4.1 Summary of Environmental Licensing and Permit Status

	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
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.	Valid
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