

Territory Development Department
NT EAST Development Office


Sha Tin New Town, Stage II

**Route 9 between Cheung Sha Wan and
Sha Tin – Entrusted Portion**

**Environmental Monitoring and Audit
Monthly Report (Version 1)**

June 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.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LTD

Room 1601-1610, Delta House,
3 On Yiu Street,
Shatin, NT, Hong Kong

Tel: (852) 2151 2083 Fax: (852) 3107 1388

Email: info@cinotech.com.hk

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Introduction	1
Environmental Monitoring Works	1
Environmental Licenses and Permits	2
Complaints and Prosecutions	2
Future Key Issues	2
1. INTRODUCTION	3
Background	3
Project Organizations	4
Construction Programme	5
Summary of EM&A Requirements	5
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	11
4. ENVIRONMENTAL AUDIT.....	13
Site Audits	13
Review of Environmental Monitoring Procedures.....	13
Status of Environmental Licenses and Permits	13
Status of Waste Management	13
Implementation Status of Environmental Mitigation Measures.....	13
Summary of Exceedances of the Environmental Quality Performance Limit	15
Implementation Status of Event Action Plans.....	15
Summary of Complaints and Prosecutions.....	15
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 Parameters, Frequency and Duration
Table 3.1	Noise Monitoring Stations
Table 3.2	Noise Monitoring Equipment
Table 3.3	Noise Monitoring Parameters, Frequency and Duration
Table 3.4	Cumulative Number of Noise Limit Level Exceedances
Table 4.1	Summary of Environmental Licences and Permit Status

LIST OF FIGURES

Figure 1	Site Layout Plan
Figure 2a	Location of Monitoring Stations
Figure 2b	Location of Monitoring Stations
Figure 3	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	Summary of Amount of Waste Generated
J	Event Action Plans
K	Environmental Mitigation Implementation Schedule (EMIS)
L	Construction Programme
M	Copies of Environmental Permits Granted to the Contractor
N	Summary of Exceedances
O	Complaint Log

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 eighth monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the project “Sha Tin New Town, Stage II Route 9 between Cheung Sha Wan and Sha Tin – Entrusted Portion” (the Project). This report documents the findings of EM&A Works conducted in June 2003.
2. The construction activities undertaken in the reporting month were:
 - Site clearance works
 - Site investigation works
 - Excavation works
 - Bund wall construction
 - Installation of soil nail
 - Formation of hoarding and fencing
 - Slope cutting and filling work

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manuals 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

4. All 1-hour TSP monitoring was conducted as scheduled during the reporting month except 9th and 13th June 2003. Due to rainstorms, the monitoring work at A2 on 9th June 2003 was postponed to 10th June 2003 and the monitoring work at A3 on 13th June 2003 was cancelled. No Action/Limit Level exceedance was recorded in this reporting month.

24-hour TSP Monitoring

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

Construction Noise

6. All construction noise monitoring was conducted as scheduled during the reporting month except 9th and 16th June 2003. Due to rainstorms, the monitoring work at N6 and N8 on 9th June 2003 was postponed to 10th June 2003, and that at N5 and N8 on 16th June 2003 was postponed to 17th June 2003.

7. One Limit Level exceedance was recorded at N7 on 30th June 2003. The main source of noise was the tree cutting activity in the construction site nearby which is not a site of Route 9 and road traffic in Tai Po Road. No direct evidence showed that the exceedance was due to the Project works and the exceedance was considered to be invalid.

Environmental Licenses and Permits

8. License/Permits granted to the Project include the Environmental Permit (EP), Construction Noise Permits (CNP) and Waste Disposal (Chemical Waste) License. In this reporting month, the Contractor was granted the water discharge license for the site office compound and construction noise permit at Portion 9.

Complaints and Prosecutions

9. No environmental prosecution and complaint was received during the reporting month.

Future Key Issues

10. Site formation works, site investigation works, excavation works, installation of soil nails, formation of hoarding and fencing, slope cutting and filling work will be the major construction activities for the coming month. The anticipated environmental impacts will be mainly on dust and noise due to earthworks, and surface runoff generated in rainy season.

1. INTRODUCTION

Background

- 1.1 Route 9 (Sha Tin Section) (R9S) (hereinafter call the Project) forms part of the Route 9 between Cheung Sha Wan and Sha Tin project, which will be a new expressway connecting west Kowloon and Sha Tin. It will be the fourth external link between Sha Tin and Kowloon and will form an important link between the northeast New Territories and the west Kowloon, Lantau Island and the western New Territories. The Project, the entrusted portion of the Route 9 project, is being managed and implemented by Territory Development Department (TDD).
- 1.2 The Project works mainly comprise the site formation for a toll plaza at the valley of Sha Tin Heights, the construction of 1 km long dual three-lane tunnels under Sha Tin Heights, a 0.6 km long dual two-lane tunnel approach road in Tai Wai, two slip road viaducts with approximately total length of 1 km connecting to Che Kung Miu Road, associated noise barriers and noise enclosures, drainage, slope works and landscape works. The remainder of the Route 9 (Main Portion, R9K) project forms the Kowloon Section and is being managed and implemented separately by Highways Department.
- 1.3 The Route 9 (between Cheung Sha Wan and Sha Tin) project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 449, EIAO). An environmental impact assessment (EIA) report has been prepared in 1998 for the Route 9 project to consider the key issues of noise, air quality, water quality, ecological, construction waste, landscape and visual, land use and culture impacts, and identify possible mitigation measures. An updated Final EIA report was subsequently completed in August 1999 to cater for some changes in the main portion. The 1998 and 1999 Route 9 EIA (R9 EIA Reports) reports were included in the EIA register under the EIAO as report number EIA-135/BC and AEIAR-022/1999 respectively. EM&A Manuals for each of the R9 EIA reports were also included as part of the EIA reports in the register.
- 1.4 Subsequent to the endorsement of the R9 EIA reports by EPD in November 1999, the R9 project was deferred to start in 2002/2003 for completion by 2006/07. The implementation of the Route 9 project was then separated into the R9S and R9K portions. Meanwhile further design amendments had also been proposed for the R9S during the detailed design stage to resolve various engineering constraints. In view of these changes, an Environmental Review on the R9S was undertaken to update the findings of the R9 EIA reports. The Environmental Review report for R9S was completed in September 2001 and an Environmental Permit No. EP-104/2001 was issued on 4th October 2001 for the Project.
- 1.5 The works of the R9S is constructed under TDD's construction Contract No. ST 89/02 "Route 9 – Sha Tin Heights Tunnel and Approaches". The site layout of the Project is shown in Figure 1. The Project works were commenced on 18th November 2002.

1.6 Cinotech Consultants Limited (Cinotech) was commissioned by TDD to undertake the Environmental Team (ET) Services for the Project. This is the eighth monthly EM&A report summarizes the EM&A works for the Project in June 2003.

Project Organizations

1.7 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) – CH2M-IDC (Hong Kong) Limited
- Contractor - China State – China Railway Joint Venture

1.8 The responsibilities of respective parties are detailed in Section 2 of the EM&A Manual (1998) and Section 1.8 of the EM&A Manual (1999). The project organization chart is presented in Figure 3.

1.9 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	Mr. C.W. Kam	Permit Holder	2301 1383	2739 0076
	Mr. W.P. Fan	Project Coordinator	2301 1586	2721 8630
	Mr. Robert Choy		2301 1373	2721 8630
MCAL	Mr. Regis Lo	The Engineer	2685 6517	2691 2649
	Ir. Y. H. Fung	Engineer's Representative	9400 8208	2697 4106
	Mr. K.Y. Chan		9750 0557	2697 4106
	Mr. C.K. Ng		9751 9638	2697 4106
ET	Dr. Priscilla Choy	The ET Leader	2151 2083	3107 1388
	Mr. Joshua Hui	Audit Team Leader	2151 2079	3107 1388
	Mr. Henry Leung	Monitoring Team Leader	9779 7340	3107 1388
IEC	Mr. David Yeung	Independent Environmental Checker	2507 2203	2507 2293
Contractor	Mr. Dave Chan	Construction Manager	9027 4422	2697 1592
24-hour Hotline			9759 9852	-

Construction Programme

1.10 The construction activities undertaken in the reporting month were:

- Site clearance works
- Site investigation works
- Excavation works
- Bund wall construction
- Installation of soil nail
- Formation of hoarding and fencing
- Slope cutting and filling work

Summary of EM&A Requirements

1.11 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 the contract documents.

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

1.13 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 June 2003.

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, A2 and A3 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figures 2a and 2b.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Description
A2	Lau Pak Lok Secondary School
A3	Shatin Heights

Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	G25A; S/N: 1536	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	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 this reporting month is shown in Appendix C.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

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

- 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 bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

- 2.20 Dust monitoring was conducted on scheduled in this reporting period except 9th and 13th June 2003. Due to rainstorms, the monitoring work at A2 on 9th June 2003 was postponed to 10th June 2003 and the monitoring work at A3 on 13th June 2003 was cancelled. The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices D and E respectively.
- 2.21 Wind data monitoring equipment has been installed in monitoring station A3 for logging wind speed and wind direction. Wind data for the reporting month is summarized in Appendix G.
- 2.22 The weather during the monitoring sessions was mainly rainy or cloudy. Weather conditions on the monitoring days are provided in Appendices D and E.

1-hour and 24-hour TSP Monitoring

- 2.23 All monitoring data complied with the Action and Limit Levels. No exceedance was recorded in this reporting month.
- 2.24 According to our field observations, the potential fugitive dust sources were mainly from the excavation works of the captioned project.

3. NOISE

Monitoring Requirements

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

Monitoring Locations

- 3.2 Noise monitoring was conducted at four designated monitoring stations, namely N5, N6, N7 and N8, as summarized in Table 3.1. Figures 2a and 2b show the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Description
N5	At the podium level of Garden Villa
N6	On the roofing of Shatin Heights
N7	On the roofing of Lau Pak Lok Secondary School
N8	At the ground level of 187 Tin Sam Tsuen

Monitoring Equipment

- 3.3 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 and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	4
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Monitoring Parameters, Frequency and Duration

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
N5	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	Facade
N6				Facade
N7				Facade
N8				Facade

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weighting : A
 - time weighting : Fast
 - time measurement : L_{eq} (30 min) for daytime noise monitoring /
3 consecutive L_{eq} (5 min) for restricted hour noise monitoring
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq} , L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

- 3.5 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.
- 3.6 The meters were sent to the supplier to check and calibrate on yearly intervals.

Results and Observations

- 3.7 Noise monitoring was performed at the four designated locations during the daytime period (0700 to 1900) as scheduled in the reporting month except 9th and 16th June 2003. Due to rainstorms, the monitoring work at N6 and N8 on 9th June 2003 was postponed to 10th June 2003, and that at N5 and N8 on 16th June 2003 was postponed to 17th June 2003. Results and graphical presentations are shown in Appendix F. The weather in this monitoring sessions was mainly rainy or cloudy. The weather conditions summaries are provided in Appendix F.
- 3.8 No Action Level exceedance was recorded at all designated monitoring stations in this reporting month. The major noise sources identified at these designated stations were excavation works and traffic noise.
- 3.9 One Limit Level exceedance was recorded at N7 on 30th June 2003. . The main source of noise was the tree cutting activity in the construction site nearby which is

not a site of Route 9 and road traffic in Tai Po Road. No direct evidence showed that the exceedance was due to the Project works and the exceedance was considered to be invalid. The summary of exceedance is presented in Appendix N.

- 3.10 Table 3.4 shows the cumulative number of noise Limit Level exceedance recorded since the commencement of the Project.

Table 3-4 Cumulative Number of Noise Limit Level Exceedances

Month	No. of Exceedance
November 2002	0
December 2002	0
January 2003	0
February 2003	0
March 2003	0
April 2003	0
May 2003	0
June 2003	1

4. ENVIRONMENTAL AUDIT

Site Audits

- 4.1 Site audits were carried out on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 4.2 Site audits were conducted on 5th, 12th, 19th and 26th June 2003. The observation summaries of site audits are attached in Appendix H.

Review of Environmental Monitoring Procedures

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

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside of the construction site.
- The monitoring team recorded the temperature and weather conditions on each monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licenses and Permits

- 4.4 In this reporting month, the Contractor was granted the water discharge license for the site office and construction noise permit at Portion 9. All permits/licenses obtained are summarized in Table 4.1.

Status of Waste Management

- 4.5 The amounts of wastes generated by the activities of the project in June 2003 are shown in Appendix I.
- 4.6 No violation was observed during site inspections.

Implementation Status of Environmental Mitigation Measures

- 4.7 During site inspections in the month, the following observations and recommendations were made.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-104/2001 * a copy was attached in the monthly report of November 2002	04/10/01	N/A	Site formation, drainage, geotechnical and landscape works for the toll plaza. Construction of the Sha Tin Heights Tunnels, the Sha Tin Approach Roads and the Slip Road Connecting to Che Kung Miu Road including all formation, structure, road, geotechnical, drainage and landscape work. Construction of the structure of the portal buildings of the Sha Tin Heights Tunnel and noise mitigation measures.	Valid
Construction Noise Permit				
GW-TN0504-2002 * a copy was attached in the monthly report of December 2002	29/12/02	28/6/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 2C.	Valid up to 28/6/03
GW-TN0038-2003 * a copy was attached in the monthly report of February 2003	21/2/03	20/8/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 1.	Valid
GW-TN0167-03 * a copy was attached in Appendix M.	10/6/03	9/12/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 9.	Valid
Water Discharge Permit				
3024 * a copy was attached in Appendix M.	16/6/03	15/6/08	Wastewater discharge at the site office in Sha Tin Heights.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-754-C3250-01 * a copy was attached in the monthly report of February 2003	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid

Water Quality

- 4.8 Following up the site audit on 29th May 2003, no more muddy water discharged in the temporary drainage system at Portion 8 was observed on 5th June 2003.
- 4.9 It was observed that sand bags provided was not sufficient to prevent site runoff at Che Kung Miu Road on 12th June 2003. Though more sand bags were observed on 19th June 2003, it was still insufficient and the Contractor was reminded to follow up.
- 4.10 Muddy water discharge to the river from the existing desilting system in Portion 8 was still observed on 19th and 26th June 2003. The Contractor was recommended to modify the existing desilting system and provide additional mitigation measures to rectify this condition immediately.
- 4.11 The Contractor was advised to provide sand bags to prevent site runoff into the

drainage channel at Portion 9 on 19th June 2003.

Air Quality

- 4.12 During the site audit on 5th June 2003, it was observed that haul roads was dry and the Contractor was reminded to water the haul road more frequently.
- 4.13 One operating excavator without water spraying at Portion 9 was observed on 5th June 2003.
- 4.14 One operating breaker without water spraying at Portion 9A was observed on 19th June 2003.

Noise

- 4.15 No violation was observed during these subsequent site inspections.

Chemical and Waste Management

- 4.16 Oil dripped on the bare ground was observed at Che Kung Miu Road on 19th June 2003.
- 4.17 According to the Environmental Permit and the EM&A Manuals, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is presented in Appendix K.

Summary of Exceedances of the Environmental Quality Performance Limit

- 4.18 No non-compliance (exceedance) was recorded during this reporting period.

Implementation Status of Event Action Plans

- 4.19 The Event Action Plans for air quality and noise are presented in Appendix J.
- 4.20 No exceedance of Action/Limit Levels for 1-hour TSP and 24-hour TSP concentrations was recorded in this reporting month.
- 4.21 One Limit Level exceedance was recorded at N7 on 30th June 2003. However, no direct evidence showed that the exceedance was due to the Project works and the exceedance was considered to be invalid. The summary of exceedance is presented in Appendix N.

Summary of Complaints and Prosecutions

- 4.22 No environmental prosecution or complaint was received during this reporting month.

- 4.23 A total of 2 complaints have been received since the commencement of the Project. The details of each of the complaint are summarized in Appendix O.

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 of the equipment and machinery on-site.
- Ineffective use of sand traps and/or baffles.
- Regular removal the deposit mud, sand and silt along U-channels and desilting system.
- 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 tentative construction program for the Project is provided in Appendix L.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring works were performed in this reporting month and all monitoring results were checked and reviewed.
- 6.2 Environmental monitoring of 24-hour TSP for the Project was performed as scheduled. No exceedance of Action and Limit Levels was recorded in this reporting month.
- 6.3 All 1-hour TSP monitoring was conducted as scheduled during this reporting month except 9th and 13th June 2003. Due to rainstorms, the monitoring work at A2 on 9th June 2003 was postponed to 10th June 2003 and the monitoring work at A3 on 13th June 2003 was cancelled. No Action/Limit Level exceedance was recorded in this reporting month.
- 6.4 Construction noise monitoring was performed as scheduled month except 9th and 16th June 2003. Due to rainstorms, the monitoring work at N6 and N8 on 9th June 2003 was postponed to 10th June 2003, and that at N5 and N8 on 16th June 2003 was postponed to 17th June 2003.
- 6.5 Limit Level exceedance was recorded at N7 on 30th June 2003. The main source of noise was the tree cutting activity in the construction site nearby which is not a site of Route 9 and road traffic in Tai Po Road. No direct evidence showed that the exceedance was due to the Project works and the exceedance was considered to be invalid.
- 6.6 No environmental prosecution or complaint was received in this reporting month.

Recommendations

- 6.7 According to the environmental audit performed in this 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 fugitive dust emission caused by the construction works.
- To implement dust suppression measures on all haul roads, stockpiles, loose and dry surfaces.

Noise Impact

- To inspect the noise sources within the construction area.
- 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.

Water Impact

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

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on construction site.
- To avoid any directly discharge of chemical waste or oil from the site.
- To regularly remove standing water in drip trips on site.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
TDD	Mr. C.W. Kam	Permit Holder	2301 1383	2739 0076
	Mr. W.P. Fan	Project Coordinator	2301 1586	2721 8630
	Mr. Robert Choy		2301 1373	2721 8630
MCAL	Mr. Regis Lo	The Engineer	2685 6517	2691 2649
	Ir. Y. H. Fung	Engineer's Representative	9400 8208	2697 4106
	Mr. K.Y. Chan		9750 0557	2697 4106
	Mr. C.K. Ng		9751 9638	2697 4106
ET	Dr. Priscilla Choy	The ET Leader	2151 2083	3107 1388
	Mr. Joshua Hui	Audit Team Leader	2151 2079	3107 1388
	Mr. Henry Leung	Monitoring Team Leader	9779 7340	3107 1388
IEC	Mr. David Yeung	Independent Environmental Checker	2507 2203	2507 2293
Contractor	Mr. Dave Chan	Construction Manager	9027 4422	2697 1592
24-hour Hotline			9759 9852	-

Table 2.1 **Locations for Air Quality Monitoring**

Monitoring Stations	Description
A2	Lau Pak Lok Secondary School
A3	Shatin Heights

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	G25A; S/N: 1536	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	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	Description
N5	At the podium level of Garden Villa
N6	On the roofing of Shatin Heights
N7	On the roofing of Lau Pak Lok Secondary School
N8	At the ground level of 187 Tin Sam Tsuen

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	4
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
N5	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	Facade
N6				Facade
N7				Facade
N8				Facade

Table 3-4 Cumulative Number of Noise Limit Level Exceedances

Month	No. of Exceedance
November 2002	0
December 2002	0
January 2003	0
February 2003	0
March 2003	0
April 2003	0
May 2003	0
June 2003	1

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-104/2001 * a copy was attached in the monthly report of November 2002	04/10/01	N/A	Site formation, drainage, geotechnical and landscape works for the toll plaza. Construction of the Sha Tin Heights Tunnels, the Sha Tin Approach Roads and the Slip Road Connecting to Che Kung Miu Road including all formation, structure, road, geotechnical, drainage and landscape work. Construction of the structure of the portal buildings of the Sha Tin Heights Tunnel and noise mitigation measures.	Valid
Construction Noise Permit				
GW-TN0504-2002 * a copy was attached in the monthly report of December 2002	29/12/02	28/6/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 2C.	Valid up to 28/6/03
GW-TN0038-2003 * a copy was attached in the monthly report of February 2003	21/2/03	20/8/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 1.	Valid
GW-TN0167-03 * a copy was attached in Appendix M.	10/6/03	9/12/03	The use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling at Portion 9.	Valid
Water Discharge Permit				
3024 * a copy was attached in Appendix M.	16/6/03	15/6/08	Wastewater discharge at the site office in Sha Tin Heights.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-754-C3250-01 * a copy was attached in the monthly report of February 2003	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid