

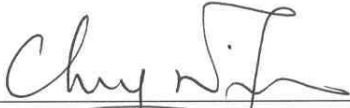
Territory Development Department
NT EAST Development Office

Contract No. ST89/02

Sha Tin Heights Tunnel and Approaches

Environmental Monitoring and Audit
Quarterly Report (Version 1.1)

November 2003 to January 2004

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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EXECUTIVE SUMMARY

1. This is the fifth Environmental Monitoring and Audit (EM&A) Quarterly Summary Report prepared by Cinotech Consultants Limited for the “Sha Tin Heights Tunnel and Approaches” (the Project). This summary report presents EM&A works performed in the period between November 2003 and January 2004.
2. The construction activities undertaken in this reporting quarter were:
 - Excavation works
 - Installation of soil nails
 - Slope cutting and filling works
 - Retaining wall construction
 - Drainage works
 - Bored pile foundation
 - Rock filling works
 - Tunneling

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-hr TSP Monitoring

4. All 1-hr TSP monitoring was conducted as scheduled during the reporting period.
5. At Station A4 (Garden Villa), five (5) Action Level exceedances were recorded on 3rd, 8th and 22nd December 2003, 2nd and 6th January 2004.
6. For the 1-hr TSP Action Level exceedance at Station A4 on 8th December 2003, according to Contractor’s information, the exceedance was due to broken down of wheel washing machine and insufficient watering at TAR1. The Contractor has replaced the wheel washing machine and increased the water spraying frequency of sprinkler system. A follow-up measurement was conducted on 10th December 2003 and no further exceedance was recorded.
7. For the 1-hr TSP Action Level exceedance at Station A4 on 22nd December 2003 and 6th January 2004, in accordance with the Event/Action Plan, follow-up measurements were undertaken on 23rd December 2003 and 7th January 2004 respectively and no further exceedance was recorded. Therefore, no further action was required.
8. For the 1-hr TSP Action Level exceedances at Station A4 on 3rd November 2003 and 2nd January 2004, high API, haze around the area or too low humidity were observed according to ET’s site investigations. It was concluded that these exceedances might be due to poor ambient air quality and were not related to the Project. Therefore, no further action was required.
9. One (1) Limit level exceedance of 1-hr TSP was recorded at Station A4 on 19th December 2003, according to ET’s site investigation, strong wind and low humidity were observed. The exceedance might be due to the poor ambient air quality and were not related to the Project. A

follow-up measurement was conducted on 23rd December 2003 and no further exceedance was recorded. Therefore, no further action was required.

24-hr TSP Monitoring

10. All 24-hr TSP monitoring was conducted as scheduled, except the monitoring at station A2 on 30th December 2003 was re-scheduled to 31st December 2003 due to electricity problem.
11. Three (3) Action Level exceedances were recorded at Station A2 (Lau Pak Lok Secondary School) on 27th November, 15th and 20th December 2003, and one (1) Action Level exceedance was recorded at Station A3 (Shatin Heights) on 31st December 2003.
12. For all of the exceedances recorded at Station A2, according to the ET's observations, the major dust sources were the operations of mobile cranes and excavators from the construction site of T3 but not due to the Project. Therefore, no further action was required.
13. For the exceedance recorded at station A3 on 31st December 2003, high API was recorded and haze were observed in the area according to field observation. It was concluded that the exceedance might be due to poor ambient quality and not related to the Project. Therefore, no further action was required.

Construction Noise

14. All construction noise monitoring was conducted as scheduled during the reporting month. Two (2) Limit Level exceedances were recorded at Station N7 (Lau Pak Lok Secondary School) on 4th December 2003 and 7th January 2004. According to ET's investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.

Environmental Complaint and Prosecution

15. No environmental prosecution was recorded in the reporting quarter.
16. A total of 3 complaints have been received in the reporting period.
17. Two environmental complaints were received by EPD on 29th November 2003 (EPD complaint ref. N01/TN/00019795-03) and 1st December 2003 (EPD complaint ref. N01/TN/00019858-03) respectively, and were transferred to ET on 31st December 2003. The complaints were about the construction dust from the works at Sha Tin Heights. ET has investigated the complaint and the investigation report was submitted to TDD on 6th January 2004.
18. Another environmental complaint was raised by residents of Hin Keng Estate and was received by EPD (EPD complaint ref.: N01/TN/00022004-03) on 29th December 2003. The complaint was forwarded to the ET on the same day. The complaint was about the construction noise at the entrance of Sha Tin Heights Tunnel in North Portion. ET has investigated the complaint and report was submitted to TDD on 6th January 2004.

Environmental Licensing and Permitting

19. License/Permits granted to the Project include the Environmental Permit (EP), Construction Noise Permits (CNP), Waste Disposal (Chemical Waste) License and Water Discharge Permit.
20. A CNP (CNP No. GW-TN0013-04) was issued by EPD in the reporting quarter on 16th January 2004.

Future Key Issues

21. Excavation works, geotechnical works (soil nail), drainage works and site formation works will be the major construction activities for the coming quarter. The anticipated environmental impact will be mainly on dust and noise due to earthworks.

1. INTRODUCTION

- 1.1 Sha Tin Heights Tunnel and Approaches (SHT) (hereinafter called 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. 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 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 SHT and R9K portions. Meanwhile further design amendments had also been proposed for the SHT during the detailed design stage to resolve various engineering constraints. In view of these changes, an Environmental Review on the SHT 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 SHT is constructed under TDD’s construction Contract No. ST 89/02 “Sha Tin Heights Tunnel and Approaches”. The site layout of the Project is shown in Figure 1.
- 1.6 Cinotech Consultants Limited (Cinotech) was commissioned by TDD to undertake the Environmental Team (ET) Services for the Project. This is the fifth Quarterly EM&A report summarizing the EM&A works for the Project between November 2003 and January 2004.

2. PROJECT CHARACTERISTICS

Project Organization and Contacts of Key Management

- 2.1 An organization structure and the line of communication were set up for the Project between the TDD, Engineer Representative (ER), Independent Environmental Checker (IEC), the Contractor and Environmental Team (ET). The organization chart and contact details are shown in Appendix A and Figure 3.

Construction Programme and Synopsis of Work

- 2.2 The construction programme is presented in Appendix B. The site activities during the reporting period are summarized in Table 2.1.

Table 2.1 Summary of Works Undertaken in the Reporting Months

Item	Work Activity	Month		
		Nov 03	Dec 03	Jan 04
1.	Excavation works	✓	✓	✓
2.	Installation of soil nails	✓	✓	✓
3.	Slope cutting and filling works	✓	-	-
4.	Retaining wall construction	✓	✓	-
5.	Drainage works	✓	✓	✓
6.	Bored pile foundation	✓	✓	✓
7.	Rock filling works		✓	
8.	Tunneling	-	-	✓

3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manuals designate locations for the ET to monitor environmental impacts in terms of air quality and noise due to the Project. The Project area and monitoring locations are depicted in Figures 2a and 2b. Appendix C gives details of monitoring requirements.

Monitoring Methodology and Calibration Details

- 3.2 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manuals. Copies of calibration certificates are attached in the appendices of the Monthly Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

- 3.3 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in Appendix D.

Environmental Mitigation Measures

- 3.4 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manuals for the Contractor to implement. A list of mitigation measures is given in Appendix E.

4. MONITORING RESULTS

Weather Conditions

- 4.1 The weather during monitoring sessions was mainly sunny or cloudy. The weather conditions for each individual monitoring session were presented in the field record sheets.

Air Quality

- 4.2 All 1-hr TSP monitoring was conducted as scheduled during the reporting period. All 24-hr TSP monitoring was conducted as scheduled, except the monitoring at station A2 on 30th December 2003 was re-scheduled to 31st December 2003 due to electricity problem.
- 4.3 The monitoring data of 1-hr and 24-hr TSP Levels are shown in the appendices of the Monthly Reports. The graphical presentations of the monitoring results are shown in Appendix F.

1-hr TSP

- 4.4 At Station A4 (Garden Villa), five (5) Action Level exceedances were recorded on 3rd, 8th and 22nd December 2003, 2nd and 6th January 2004.
- 4.5 For the 1-hr TSP Action Level exceedance at Station A4 on 8th December 2003, according to Contractor's information, the exceedance was due to broken down of wheel washing machine and insufficient watering at TAR1. The Contractor has replaced the wheel washing machine and increased the water spraying frequency of sprinkler system. A follow-up measurement was conducted on 10th December 2003 and no further exceedance was recorded.
- 4.6 For the 1-hr TSP Action Level exceedance at Station A4 on 22nd December 2003 and 6th January 2004, in accordance with the Event/Action Plan, follow-up measurements were undertaken on 23rd December 2003 and 7th January 2004 respectively and no further exceedance was recorded. Therefore, no further action was required.
- 4.7 For the 1-hr TSP Action Level exceedances at Station A4 on 3rd November 2003 and 2nd January 2004, high API, haze around the area or too low humidity were observed according to ET's site investigations. It was concluded that these exceedances might be due to poor ambient air quality and were not related to the Project. Therefore, no further action was required.
- 4.8 One (1) Limit level exceedance of 1-hr TSP was recorded at Station A4 on 19th December 2003, according to ET's site investigation, strong wind and low humidity were observed. The exceedance might be due to the poor ambient air quality and were not related to the Project. A follow-up measurement was conducted on 23rd December 2003 and no further exceedance was recorded. Therefore, no further action was required.

24-hr TSP

- 4.9 Three (3) Action Level exceedances were recorded at Station A2 (Lau Pak Lok Secondary School) on 27th November, 15th and 20th December 2003, and one (1) Action Level exceedance was recorded at Station A3 (Shatin Heights) on 31st December 2003.
- 4.10 For all of the exceedances recorded at Station A2, according to the ET's observations, the major dust sources were the operations of mobile cranes and excavators from the construction site of T3 but not due to the Project. Therefore, no further action was required.

- 4.11 For the exceedance recorded at station A3 on 31st December 2003, high API was recorded and haze were observed in the area according to field observation. It was concluded that the exceedance might be due to poor ambient quality and not related to the Project. Therefore, no further action was required.

Noise

- 4.12 All construction noise monitoring was conducted as scheduled during the reporting month. Two (2) Limit Level exceedances were recorded at Station N7 (Lau Pak Lok Secondary School) on 4th December 2003 and 7th January 2004. According to ET's investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.
- 4.13 The noise monitoring data are attached in the appendices of the Monthly Reports. The graphical plots of the noise monitoring results in this reporting quarter are shown in Appendix G.
- 4.14 The summary exceedance report in this reporting quarter is presented in Appendix J.

5. AUDIT RESULTS

Implementation Status of Environmental Mitigation Measures

- 5.1 The implementation status of environmental mitigation measures (EMIS) is given in Appendix G.

Site Audit Summary

Water Quality

- 5.2 The Contractor was reminded to clear up all stagnant water after rainstorm and keep the stormwater drainage at Che Kung Mui Road clear on 13th and 20th November 2003. Improvement was observed in the follow-up audit sessions.
- 5.3 Damaged sand bags were observed at Che Kung Mui Road on 31st December 2003. The Contractor was recommended to replace or clear up the sand bags as soon as possible

Air Quality

- 5.4 On the audit sessions on 6th, 27th November 2003 and 18th December 2003, open stockpile were found at Che Kung Miu Road. Improvement was observed in the follow-up audit sessions.
- 5.5 At the audit session on 8th January 2004, the Contractor was reminded to maintain the wheel washing facilities in good condition at Che Kung Mui Road. Improvement was observed at the audit session on 15th January 2004.
- 5.6 Hydroseeding and good condition of open slopes were observed during the site inspections.

Chemical and Waste Management

- 5.7 At the audit session on 8th January 2004, oil tank was observed placing on bare ground at Portion 9. Improvement was observed at the audit session on 15th January 2004.

Noise

- 5.8 No environmental deficiency was observed during these subsequent site inspections.

Permit / Licenses

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

Status of Environmental Licensing and Permitting

- 5.10 Environmental licenses and permits including Environmental Permit for the Project, Construction Noise Permits (CNPs), Waste Disposal (Chemical Waste) License and Water Discharge Permit were in place and valid during this reporting quarter. A summary status of licenses and permits is given in Appendix H.

Advice on Solid Waste Management Status

- 5.11 The solid waste generated from the Project site office was mainly general refuse that was collected by a licensed collector on an as need basis.

6. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

1-hr TSP

- 6.1 At Station A4 (Garden Villa), five (5) Action Level exceedances were recorded on 3rd, 8th and 22nd December 2003, 2nd and 6th January 2004.
- 6.2 For the 1-hr TSP Action Level exceedance at Station A4 on 8th December 2003, according to Contractor's information, the exceedance was due to broken down of wheel washing machine and insufficient watering at TAR1. The Contractor has replaced the wheel washing machine and increased the water spraying frequency of sprinkler system. A follow-up measurement was conducted on 10th December 2003 and no further exceedance was recorded.
- 6.3 For the 1-hr TSP Action Level exceedance at Station A4 on 22nd December 2003 and 6th January 2004, in accordance with the Event/Action Plan, follow-up measurements were undertaken on 23rd December 2003 and 7th January 2004 respectively and no further exceedance was recorded. Therefore, no further action was required.
- 6.4 For the 1-hr TSP Action Level exceedances at Station A4 on 3rd November 2003 and 2nd January 2004, high API, haze around the area or too low humidity were observed according to ET's site investigations. It was concluded that these exceedances might be due to poor ambient air quality and were not related to the Project. Therefore, no further action was required.
- 6.5 One (1) Limit level exceedance of 1-hr TSP was recorded at Station A4 on 19th December 2003, according to ET's site investigation, strong wind and low humidity were observed. The exceedance might be due to the poor ambient air quality and were not related to the Project. A follow-up measurement was conducted on 23rd December 2003 and no further exceedance was recorded. Therefore, no further action was required.

24-hr TSP

- 6.6 Three (3) Action Level exceedances were recorded at Station A2 (Lau Pak Lok Secondary School) on 27th November, 15th and 20th December 2003, and one (1) Action Level exceedance was recorded at Station A3 (Shatin Heights) on 31st December 2003.
- 6.7 For all of the exceedances recorded at Station A2, according to the ET's observations, the major dust sources were the operations of mobile cranes and excavators from the construction site of T3 but not due to the Project. Therefore, no further action was required.
- 6.8 For the exceedance recorded at station A3 on 31st December 2003, high API was recorded and haze were observed in the area according to field observation. It was concluded that the exceedance might be due to poor ambient quality and not related to the Project. Therefore, no further action was required.

Noise

- 6.9 Two (2) Limit Level exceedances were recorded at Station N7 (Lau Pak Lok Secondary School) on 4th December 2003 and 7th January 2004. According to ET's investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.

Review of the Reasons for and the Implications of Non-compliance

6.10 There was no non-compliance from the site audits in this reporting quarter. The observations and recommendations made in each individual site audit session were attached in the Monthly Reports.

Summary of Actions Taken

6.11 In this reporting quarter, the following mitigation measures were implemented:

- Drip trays for oil storage of oil buckets have been provided;
- Excavated/dusty materials have been covered by tarpaulin or water sprayed;
- Wheel washing facilities were provided;
- Groundwater pumped out was recycled via sediment tanks; and
- ‘AquaSep’ has been setup at Portion 8 to incorporate with the modify desilting system.

7. ENVIRONMENTAL COMPLAINTS

Complaints Log

- 7.1 All complaints have been handled in accordance with the EM&A Manuals. The implementation status of the complaint handling procedure is summarized in Appendix I Complaint Log.
- 7.2 A total of 3 complaints have been received in the reporting period.
- 7.3 Two environmental complaints were received by EPD on 29th November 2003 (EPD complaint ref. N01/TN/00019795-03) and 1st December 2003 (EPD complaint ref. N01/TN/00019858-03) respectively, and were transferred to ET on 31st December 2003. The complaints were about the construction dust from the works at Sha Tin Heights. ET has investigated the complaint and the investigation report was submitted to TDD on 6th January 2004.
- 7.4 According to Contractor's information, the Contractor has implemented mitigation measures to suppress the dust generation. These include
- Exhaust of dump trucks for internal use were slightly verified in order to avoid it directing to the ground, but horizontally;
 - All bared slope was hydroseeded; and
 - Frequency of watering for haul road was increased.
- 7.5 Another environmental complaint was raised by residents of Hin Keng Estate and was received by EPD (EPD complaint ref.: N01/TN/00022004-03) on 29th December 2003. The complaint was forwarded to the ET on the same day. The complaint was about the construction noise at the entrance of Sha Tin Heights Tunnel in North Portion. ET has investigated the complaint and report was submitted to TDD on 6th January 2004.
- 7.6 According to ET's investigation report, a noise measurement at Hin Keng Estate was conducted on 3rd January 2004 and the measured construction noise levels were well below the respective environmental criteria. The Contractor was recommended to
- space out noisy equipment and position it as far away as possible from the sensitive receivers;
 - avoid concurrent uses of noisy equipment near the sensitive area;
 - ensure the equipment are maintaining in good operation condition;
 - turn off any idle equipment on site;
 - provide mitigation measures to the rock-breaking activities; and
 - continuously keep ET informed for the construction works to be carried out.

8. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 8.1 No environmental prosecution was recorded in the reporting quarter.

9. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 9.1 Excavation works, geotechnical works (soil nail), drainage works and site formation works will be the major construction activities for the coming quarter. The anticipated environmental impact will be mainly on dust and noise due to in dry season.