

**Civil Engineering & Development Department  
NT EAST Development Office**


**Contract No. ST89/02**

**Sha Tin Heights Tunnel and Approaches**

**Environmental Monitoring and Audit  
Quarterly Report (Version 1.0)**

May to July 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 seventh 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 May to July 2004.
2. The construction activities undertaken in this reporting quarter were:
  - Excavation works;
  - Backfilling;
  - Tunneling;
  - Bored pile foundation;
  - Construction of Retaining Wall; and
  - Drainage works

### 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. No Action/Limit Level exceedance was recorded in the reporting quarter.

##### 24-hr TSP Monitoring

5. All 24-hr TSP monitoring was conducted as scheduled during the reporting period. No Action/Limit Level exceedance was recorded in the reporting quarter.

#### *Construction Noise*

6. All construction noise monitoring was conducted as scheduled during the reporting month.
7. One (1) Limit Level exceedance was recorded at Station N7 (Lau Pak Lok Secondary School) on 12 May 2004. According to ET’s investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.
8. Three (3) Action Level exceedances were recorded on 30 June, 13 and 23 July 2004 as complaints were received.

### Environmental Complaint and Prosecution

9. No environmental prosecution was recorded in the reporting quarter.
10. A total of four (4) complaints have been received in the reporting period.  
*Complaint at Hin Keng Estate (Received on 4 May 2004)*

11. On 3 May 2004, the CEDD received a complaint (CEDD Ref.: NTE-ST2/694TH/100) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The CEDD referred the complaint to the ET Leader of the Project on the following day for investigation and the ET has submitted the investigation report on 10 May 2004.
12. According to ET's investigation report, the Contractor has enhanced mitigation measures as follows:-
  - To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;
  - To inform Hin Keng Estate of the time of blasting in advance;
  - To provide water spraying in the blasting door during blasting time; and
  - To provide acoustic absorption material at the inner surface of the blasting door.
13. No non-compliance of noise level recorded and observed after implementation of mitigations.

*Complaint at Sha Tin Heights (Received on 17 May 2004)*

14. On 14 May 2004, the EPD received a complaint (EPD Ref.: N01/TN/00009723-04) about the dust nuisance due to uncovered lorries near Shatin Heights. The EPD referred the complaint to the ET Leader of the Project on 17 May 2004 for investigation and the ET has submitted the investigation report on 20 May 2004.
15. The complaint was a public complaint at Sha Tin Heights. The complainant mentioned that some construction lorries with loaded with earth were not covered and caused dust nuisance. According to ET's investigation, the Contractor has already provided all possible measures to prevent uncovered dump trucks leaving the site. It is believed that the captioned complaint is an exceptional incidence and the Contractor was recommended to strictly enforce their policy on dump trucks leaving the site.

*Complaint at Hin Keng Estate (Received on 30 June 2004)*

16. An environmental complaint about tunnel blasting was received on 30 June 2004. According to the information provided by the Contractor, a blasting door for both the tunnel was erected before the commencement of blasting works in order to enclose the dust and reduce the noise level. The blasting door is made of steel plate with fiberglass filled in between. In addition, a water pipe has been installed inside the tunnel, which can produce aerosol to form a water screen for dust suppression. During blasting, water screen will be operated throughout the period until dust is settled. Water will be sprayed outside the open ground of the tunnel. The blasting door is only allowed to re-open at least spraying will be provided after opening the blasting door.

*Complaint at Hin Keng Estate (Received on 13 July 2004)*

17. On 6 July 2004, the CEDD received a complaint (CEDD Ref.: NTE-ST2/654TH/108) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The CEDD referred the complaint to the ET Leader of the Project on 13 July 2004 for investigation.
18. Refer to ET's investigation, The Contractor has provided the following mitigations:-
  - To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;
  - To inform Hin Keng Estate of the time of blasting in advance;
  - To provide water spraying in the blasting door during blasting time; and
  - To provide acoustic absorption material at the inner surface of the blasting door.

- 
19. Based on the information provided by the ER on 13 July 2004 and the site investigation conducted by ET on 15 July 2004, the Contractor has been strictly implementing the mitigations. The Management Office of Hin Keng Estate was always noticed 24 hours before every blasting.

*Complaint at Garden Villa (Received on 23 July 2004)*

20. On 21 July 2004, the ER received a complaint (ER Ref.: EC-017) about the noise nuisance due to trucks queuing up along Temporary Access Road 1. The ER referred the complaint to the ET Leader of the Project on 23 July 2004 for investigation.
21. According to ET's investigation, on 26 July 2004, the Contractor has relocated the truck queue from top of TAR1 to downhill in front of wheel washing bay, where is much far away from Garden Villa. The increased notional distance is about 200m. A noise measurement was conducted on the same day at 9:30am and the measured construction noise level was 69.6dB(A) which does not exceed the Limit Level. Early measurement at Garden Villa will be conducted in order to monitor the effectiveness of mitigations.

**Environmental Licensing and Permitting**

22. License/Permits granted to the Project include the Environmental Permit (EP), Construction Noise Permits (CNP), Waste Disposal (Chemical Waste) License and Water Discharge Permit.
23. Two CNP were issued by EPD in the reporting quarter.

**Future Key Issues**

24. Excavation works, drainage works and tunneling 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 (Formerly Route 8) 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 (Formerly Route 8) project, is being managed and implemented by Civil Engineering & Development Department (CEDD).
- 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 (Formerly Route 8) (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 (Formerly Route 8) 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 (Formerly Route 8) 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 (Formerly Route 8) 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 4<sup>th</sup> October 2001 for the Project.
- 1.5 The works of the SHT is constructed under CEDD’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 CEDD to undertake the Environmental Team (ET) Services for the Project. This is the sixth Quarterly EM&A report summarizing the EM&A works for the Project between May to July 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 CEDD, 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		
		May 04	June 04	July 04
1.	Excavation works	✓	✓	✓
2.	Backfilling	✓	✓	✓
3.	Tunneling	✓	✓	✓
4.	Bored pile foundation	✓	✓	✓
5.	Construction of Retaining Wall	✓	✓	✓
6.	Drainage works	✓	✓	✓



### **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**

4.1 The summary exceedance report in this reporting quarter is presented in Appendix J.

##### **Weather Conditions**

4.2 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**

4.3 All 1-hr and 24-hr TSP monitoring was conducted as scheduled during the reporting period. No Action/Limit Level exceedance was recorded.

4.4 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.

##### **Noise**

4.5 All construction noise monitoring was conducted as scheduled during the reporting quarter.

4.6 One (1) Limit Level exceedance was recorded at Station N7 (Lau Pak Lok Secondary School) on 12 May 2004. According to ET's investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.

4.7 Three (3) Action Level exceedances were recorded on 30 June, 13 and 23 July 2004 as complaints were received.

4.8 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.

## 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 all water ponds within the site area.
- 5.3 In the audit session on 6 May 2004, muddy water were observed due to the bursting of an watermain at Che Kung Mui Road. The situation was rectified on the same day.
- 5.4 Desilting of box culvert was reminded in the audit session on 6 May 2004. Improvement was observed in the audit session on 13 May 2004.
- 5.5 Damaged sand bags were observed at Che Kung Mui Road in the audit session on 6 May 2004. Improvement was observed in the audit session on 20 May 2004.
- 5.6 Milky effluent was observed at Che Kung Mui Road on 15 July 2004. The situation was improved in the follow-up audits.

##### *Air Quality*

- 5.7 The Contractor was reminded to increase watering frequency at Portion 4.
- 5.8 Black smoke emitted from an excavator was observed at Portion 3B on 15 July 2004. The situation was improved in the follow-up audits.

##### *Chemical and Waste Management*

- 5.9 Oil stain was found at Portion 9 in the audit session on 27 May and 17 June 2004. The Contractor was reminded to keep well maintenance of all the equipments.
- 5.10 At the audit session on 10 June and 29 July 2004, oil drum placing on bare ground and oil stain were observed at Che Kung Mui Road. Rectified situation was observed in the follow-up audit session.
- 5.11 Oily water was observed in the drip tray at Che Kung Mui Road on 8 July 2004. The situation was improved in the follow-up audits.

##### *Noise*

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

##### *Permit / Licenses*

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

##### *Others*

- 5.14 The environmental conditions were generally satisfactory according to the audit session on 2 July 2004.

#### **Status of Environmental Licensing and Permitting**

- 5.15 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**

- 5.16 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 No Action/Limit Level exceedance was recorded in the reporting quarter.

#### *24-hr TSP*

- 6.2 No Action/Limit Level exceedance was recorded in the reporting quarter.

#### *Noise*

- 6.3 One (1) Limit Level exceedance was recorded at Station N7 (Lau Pak Lok Secondary School) on 12 May 2004. According to ET's investigation, all the exceedance were due to the construction works of T3 and were not related to the Project.
- 6.4 Three (3) Action Level exceedances were recorded on 30 June, 13 and 23 July 2004 as complaints were received.

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

- 6.5 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**

- 6.6 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.

7.2 A total of four (4) complaints have been received in the reporting period.

#### *Complaint at Hin Keng Estate (Received on 4 May 2004)*

7.3 On 3 May 2004, the CEDD received a complaint (CEDD Ref.: NTE-ST2/694TH/100) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The CEDD referred the complaint to the ET Leader of the Project on the following day for investigation and the ET has submitted the investigation report on 10 May 2004.

7.4 According to ET's investigation report, the Contractor has enhanced mitigation measures as follows:-

- To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;
- To inform Hin Keng Estate of the time of blasting in advance;
- To provide water spraying in the blasting door during blasting time; and
- To provide acoustic absorption material at the inner surface of the blasting door.

7.5 No non-compliance of noise level recorded and observed after implementation of mitigations.

#### *Complaint at Sha Tin Heights (Received on 17 May 2004)*

7.6 On 14 May 2004, the EPD received a complaint (EPD Ref.: N01/TN/00009723-04) about the dust nuisance due to uncovered lorries near Shatin Heights. The EPD referred the complaint to the ET Leader of the Project on 17 May 2004 for investigation and the ET has submitted the investigation report on 20 May 2004.

7.7 The complaint was a public complaint at Sha Tin Heights. The complainant mentioned that some construction lorries with loaded with earth were not covered and caused dust nuisance. According to ET's investigation, the Contractor has already provided all possible measures to prevent uncovered dump trucks leaving the site. It is believed that the captioned complaint is an exceptional incidence and the Contractor was recommended to strictly enforce their policy on dump trucks leaving the site.

#### *Complaint at Hin Keng Estate (Received on 30 June 2004)*

7.8 An environmental complaint about tunnel blasting was received on 30 June 2004. According to the information provided by the Contractor, a blasting door for both the tunnel was erected before the commencement of blasting works in order to enclose the dust and reduce the noise level. The blasting door is made of steel plate with fiberglass filled in between. In addition, a water pipe has been installed inside the tunnel, which can produce aerosol to form a water screen for dust suppression. During blasting, water screen will be operated throughout the period until dust is settled. Water will be sprayed outside the open ground of the tunnel. The blasting door is only allowed to re-open at least spraying will be provided after opening the blasting door.

*Complaint at Hin Keng Estate (Received on 13 July 2004)*

- 7.9 On 6 July 2004, the CEDD received a complaint (CEDD Ref.: NTE-ST2/654TH/108) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The CEDD referred the complaint to the ET Leader of the Project on 13 July 2004 for investigation.
- 7.10 Refer to ET's investigation, The Contractor has provided the following mitigations:-
- To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;
  - To inform Hin Keng Estate of the time of blasting in advance;
  - To provide water spraying in the blasting door during blasting time; and
  - To provide acoustic absorption material at the inner surface of the blasting door.
- 7.11 Based on the information provided by the ER on 13 July 2004 and the site investigation conducted by ET on 15 July 2004, the Contractor has been strictly implementing the mitigations. The Management Office of Hin Keng Estate was always noticed 24 hours before every blasting.

*Complaint at Garden Villa (Received on 23 July 2004)*

- 7.12 On 21 July 2004, the ER received a complaint (ER Ref.: EC-017) about the noise nuisance due to trucks queuing up along Temporary Access Road 1. The ER referred the complaint to the ET Leader of the Project on 23 July 2004 for investigation.
- 7.13 According to ET's investigation, on 26 July 2004, the Contractor has relocated the truck queue from top of TAR1 to downhill in front of wheel washing bay, where is much far away from Garden Villa. The increased notional distance is about 200m. A noise measurement was conducted on the same day at 9:30am and the measured construction noise level was 69.6dB(A) which does not exceed the Limit Level. Early measurement at Garden Villa will be conducted in order to monitor the effectiveness of mitigations.

**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, drainage works and tunneling works will be the major construction activities for the coming quarter. The anticipated environmental impact will be mainly on surface runoff due to in wet season.