

Highways Department

**Route 8 (previously known as Route 9) between
Cheung Sha Wan & Sha Tin**

**Contract No. HY/2003/10 - Environmental Team for
Lai Chi Kok Viaduct and Eagle's Nest Tunnel**

**Quarterly EM&A Report
Part II – Eagle's Nest Tunnel and Associated Works
(Version 1.0)**

September to November 2004

Approved 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

- This is the fourth Quarterly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the “Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin, Lai Chi Kok Viaduct & Eagle's Nest Tunnel”. This summary report documents the findings of EM&A works performed in the period between September and November 2004 for Contract No. HY/2003/02, Route 8 – Eagle's Nest Tunnel and Associated Works (the Project).
- The construction activities undertaken in the reporting quarter were:
 - Slope cutting;
 - Haul road construction;
 - Site investigation;
 - Directional drill hole;
 - Soil nail installations;
 - Stepped channel and box culvert construction;
 - Blasting works at Portals;
 - Preparation for direction drill;
 - Erection of blasting door; and
 - Pre-drilling and bored piling works.

Environmental Monitoring Works

- Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manuals and the results were checked and reviewed. Environmental 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.
- Summary of the events and action taken in the reporting quarter is tabulated in **Table I**.

1-hr TSP Monitoring

- All 1-hr TSP monitoring was conducted as scheduled in this reporting period, except that the monitoring on 10th Sep 04 at AM3 was cancelled due to electricity problem.
- One Action Level exceedance was recorded at AM4 (Government Quarters) on 20th Oct 04. According to ET's site observations, the exceedance was considered to be related to the Project works. No Limit Level exceedance was recorded in the reporting quarter.

24-hr TSP Monitoring

- All 24-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring on 10th Sep 04 at AM3 was cancelled due to electricity problem. The monitoring was re-scheduled to 13th Sep 04. No Action/Limit Level exceedance was recorded in this reporting quarter.

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

Construction Noise

- All construction noise monitoring was conducted as scheduled in this reporting quarter. No Limit Level exceedance was recorded in this reporting period. Three public noise complaints were received by the ET Leader on 14th Sep, 21st Oct and 24th Nov 04, triggering the Action Level for construction noise.

Table I Summary Table for Events Recorded in the Reporting Quarter

<i>Parameter</i>	<i>No. of Events</i>		<i>No. of Events Due to the Project</i>	<i>Action Taken</i>
	<i>Action Level</i>	<i>Limit Level</i>		
<i>September 2004</i>				
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	1	0	0	Complaint Investigation
<i>October 2004</i>				
1-hr TSP	1	0	1	Issue of Notification of Exceedance
24-hr TSP	0	0	0	N/A
Noise	1	0	1	Complaint Investigation
<i>November 2004</i>				
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	1	0	0	Complaint Investigation

Environmental Licensing and Permitting

- Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Construction Noise Permits (CNPs) and Water Discharge Licenses (WDLs). The Contractor had also registered as a Chemical Waste Producer.

Key Information in the Reporting Quarter

- Summary of key information in this reporting quarter is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Quarter

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	4	3 (noise) 1 (dust)	Complaint investigation	Closed	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---
<u>Future Key Issues:</u>					
<p>Major site activities for the coming month include:</p> <ul style="list-style-type: none"> • Slope cutting; • Haul road construction; • Directional drill hole; • Soil nail installations; • Stepped channel and retaining wall construction; • Blasting works at Portals; • Bored piling works; and • Surface blasting at slopes. <p>The anticipated environmental impacts will be mainly on dust and noise due to earthworks and water quality arising from tunneling works.</p>					

1. INTRODUCTION

- 1.1 Route 9 (Kowloon Section) (R9K) (hereinafter call the R9K-Project) forms part of the Route 9 between Cheung Sha Wan and Sha Tin (R9-CSWST) 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. R9K is being managed and implemented by the Highways Department (HyD).
- 1.2 The engineering design of R9K is covered under Agreement No. CE 50/98 "Route 9 between Cheung Sha Wan and Sha Tin – Design Construction Assignment". The main consultant engaged under Agreement No. CE 50/98 is Maunsell Hyder Joint Venture (MHJV), who will act as the Engineer for the construction contracts. The works of R9K mainly comprise a 1.4km dual 3-lane Lai Chi Kok Viaduct from Lai Wan Interchange to Butterfly Valley; 0.5 km of dual 3-lane at-grade carriageway linking to the 2.1 km dual 3-lane twin-bore Eagle's Nest Tunnel with associated portal buildings; a toll plaza with an administration building located with the Sha Tin valley woodland; a ventilation building and an adit; associated noise barriers, noise enclosures, drainage, slope and landscape works; and electrical and mechanical works for the whole R9-CSWST. The remainder of the R9-CSWST forms the Sha Tin Section (R9S) of the project and is being managed and implemented separately by the Civil Engineering and Development Department (CEDD).
- 1.3 The R9-CSWST 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 R9-CSWST project (1998 R9 EIA) to consider the key issues of noise, air quality, water quality, ecological, construction waste, landscape and visual, land use and cultural impacts, and identify possible mitigation measures.
- 1.4 An Updated Final EIA report was subsequently completed in August 1999 for the R9-CSWST project (1999 R9 EIA), to cater for some changes in R9K portion as mentioned in paragraph 1 in the report. The 1999 R9 EIA was endorsed by Environmental Protection Department (EPD) in November 1999. The 1998 R9 EIA and the 1999 R9 EIA (R9 EIA Reports) were included in the EIA register under the EIAO as report no. EIA-135/BC and AEIAR-022/1999 respectively. An Environmental Monitoring and Audit (EM&A) Manuals for each of the R9 EIA Reports (EM&A Manuals) were also included as part of the EIA reports in the register.
- 1.5 Subsequent to the endorsement of the R9 EIA Reports by EPD in November 1999, the project programme was deferred to start in 2002/2003 for completion by 2006/07. The implementation of the project was then separated into the R9S and R9K portion. An Environmental Permit (EP) No. EP-103/2001 was issued on 17 September 2001 for R9K to the HyD as Permit Holder. A revised EP No. EP-103/2001/A was issued on 20 May 2003 for R9K (R9K EP) to HyD as Permit Holder.

- 1.6 Two civil works contracts of the R9K project, Contract No. HY/2003/01 entitled "Route 9 – Lai Chi Kok Viaduct" and Contract No. HY/2003/02 entitled "Route 9 – Eagle's Nest Tunnel and Associated Works", were commenced in 15th December 2003 for completion in April 2007.
- 1.7 "Route 9" was recently re-titled as "Route 8 (previously known as Route 9)". Cinotech Consultants Limited (Cinotech) was commissioned by HyD to undertake the Environmental Monitoring and Audit works for "Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin - Environmental Team (ET) for Lai Chi Kok Viaduct and Eagle's Nest Tunnel (Contract No. HY/2003/10)". Dr. Priscilla CHOY of Cinotech was appointed as the ET Leader under Condition 2.2 of the EP. Mr. David YEUNG of CH2M-IDC Hong Kong Ltd. was appointed as the IEC under Condition 2.1 of the EP. This is the fourth quarterly EM&A report summarizing the EM&A works for the ENT Project between September and November 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 Project Proponent, Engineer's 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 2**.

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 Period

Item	Work Activity	Month		
		Sep 04	Oct 04	Nov 04
1.	Slope cutting	✓	✓	✓
2.	Haul road construction	✓	✓	✓
3.	Site investigation	✓	✓	✓
4.	Directional drill hole	✓	✓	✓
5.	Soil nail installations	✓	✓	✓
6.	Stepped channel and box culvert construction	✓	✓	✓
7.	Blasting works at Portals	✓	✓	✓
8.	Preparation for direction drill	✓	✓	✓
9.	Erection of blasting door		✓	✓
10.	Pre-drilling and bored piling works		✓	✓

3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manuals designated locations for the ET to monitor environmental impacts in terms of noise and air quality due to the Project. The Project area and monitoring locations are depicted in **Figures 1a** and **1b**. **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 EM&A 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 Event Action Plans would be implemented. The Action/Limit Levels for each environmental parameter are provided 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 G**.

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

1-hr TSP Monitoring

- 4.2 All 1-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring on 10th Sep 04 at AM3 was cancelled due to electricity problem.
- 4.3 One Action Level exceedance was recorded for 1-hr TSP monitoring at AM4 (Government Quarters) on 20th Oct 04. Dust generation was observed during the excavation works and site vehicle movement in the construction site of Butterfly Valley. It should be highlighted that a public complaint was received on 20th Oct 04 from Government Quarters, concerning dust generation at Butterfly Valley (Section 7).
- 4.4 No Limit Level exceedance for 1-hr TSP monitoring was recorded in the reporting quarter.
- 4.5 The exceedances recorded in the reporting quarter and the associated actions taken are summarized in **Appendix J**.

24-hr TSP Monitoring

- 4.6 All 24-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring on 10th Sep 04 at AM3 was cancelled due to electricity problem. The monitoring was re-scheduled to 13th Sep 04.
- 4.7 No Action / Limit Level exceedance was recorded for 24-hr TSP monitoring in the reporting quarter.
- 4.8 The monitoring data of 1-hr and 24-hr TSP Levels are attached in the appendices of the Monthly Reports for September to November 2004. The graphical presentations of the monitoring results are shown in **Appendix E**.

Construction Noise

- 4.9 Noise monitoring was performed at the four designated locations during the daytime period (0700-1900 hours) on normal as scheduled in this reporting month. Restricted-hour monitoring was also conducted at NM4, NM5 and NM7.

- 4.10 Three Action Level exceedances were recorded in the reporting quarter due to the three public noise complaints received by the ET Leader on 14th Sep, 21st Oct and 24th Nov 04, respectively.
- 4.11 The major noise sources identified at the designated stations were traffic noise.
- 4.12 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = Measured CNL), in order to facilitate the interpretation of the noise exceedance.
- 4.13 The monitoring data of construction noise are attached in the appendices of the Monthly Reports for September to November 2004. The graphical presentations of the monitoring results are shown in **Appendix F**.
- 4.14 Construction noise exceedances recorded in the reporting quarter and the associated actions taken are summarized in **Appendix J**.

5 ENVIRONMENTAL AUDIT

Implementation Status of Environmental Mitigation Measures

- 5.1 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 Environmental Mitigation Implementation Status (EMIS) is provided in **Appendix G**.

Site Audit Summary

- 5.2 ET's weekly site audits were conducted on 2nd, 15th, 22nd and 28th Sep, 7th, 15th, 20th and 27th Oct, 3rd, 11th, 18th and 24th Nov 04. IEC's monthly site audits were conducted on 8th Sep, 15th Oct and 18th Nov 2004 together with ET.
- 5.3 During site inspections in the reporting period, no non-conformance was identified. The observations and recommendations are summarized in **Table 5.1**.

Table 5.1 Observations and Recommendations of the Site Audits

Parameters	Date	Observations / Recommendations	Remedial Actions
<i>Water Quality</i>	08-Sep-04	The Contractor was reminded to cover the exposed slope surfaces by impervious sheeting at Portion C2 and E1 (Mui Kong Tsuen area).	Rectification was observed during the site audit on 15-Sep-04.
	08-Sep-04	Ponding water was observed at Admin. Building (Portion D4) next to the WetSep. The Contractor was reminded to remove the water as soon as possible to prevent it overflowing to adjacent site.	Rectification was observed during the site audit on 15-Sep-04.
<i>Air Quality</i>	02-Sep-04	The stockpile of soil was not entirely covered at Portion D4 (Toll Plaza). The Contractor was reminded to cover the stockpile by impervious sheeting or other means to prevent dust emission.	Rectification was observed during the site audit on 08-Sep-04.
	28-Sep-04	The haul roads at Portion C3 (South Portal) were observed dry. The Contractor was reminded to water the roads more frequently.	Rectification was observed during the site audit on 07-Oct-04.
	28-Sep-04	The Contractor was reminded to cover the stockpile at Portion D1 (North Portal) after works.	Rectification was observed during the site audit on 07-Oct-04.
	20-Oct-04	Improper disposal of waste cement bags was observed at BVS2. The Contractor was reminded to collect the waste cement bags in a container with cover to prevent dust emission.	Rectification was observed during the site audit on 27-Oct-04.
	20-Oct-04	The haul roads at Mui Kong Tsuen were observed dry. Fugitive dust emission was still observed during vehicle movement.	Rectification was observed during the site audit on 27-Oct-04.

Parameters	Date	Observations / Recommendations	Remedial Actions
	11-Nov-04	Fugitive dust emission was observed during rock breaking work at Portion H1. The Contractor was reminded to provide water spray for the breaking operation.	Rectification was observed during the site audit on 18-Nov-04.
	24-Nov-04	Slightly insufficient dust control was observed at haul road near Portion B.	Rectification was observed during the site audit on 01-Dec-04.
Noise	02-Sep-04	The newly granted CNP was not posted at the site entrance of TAR no.1. (The CNP has been posted at the entrance of North Portal.) The Contractor was reminded to post the CNP as soon as possible in accordance with the CNP condition.	Rectification was observed during the site audit on 08-Sep-04.
	27-Oct-04	Air compressor at Portion B (Mui Kong Tsuen) was observed not fitted with a valid noise emission label. The Contractor was reminded to provide the label as soon as possible.	Rectification was observed during the site audit on 03-Nov-04.
	27-Oct-04	Air compressor operated with doors opened was observed at Slope BVS2.	Immediate action was taken by the Contractor.
Waste / Chemical Management	08-Sep-04	General refuse accumulation was observed at Portion D1 (North Portion area). The Contractor was reminded to dispose of the refuse as soon as possible.	Rectification was observed during the site audit on 15-Sep-04.
	07-Oct-04	Some recyclable wastes (e.g. paper boxes, plastic bottles, aluminum cans) were observed in a rubbish skip and mixed with other general refuses at Portion D1. The Contractor was recommended to enhance the recycling practice on site in order to reduce the construction waste generated from the Project.	Rectification was observed during the site audit on 15-Oct-04.
	15-Oct-04	An oil drum was observed placed on bare ground without provision of drip tray at Portion I1 (South Portal). The Contractor was reminded to provide a drip tray for the drum as soon as possible.	Rectification was observed during the site audit on 20-Oct-04.
	03-Nov-04	Some chemical waste containers at Portion D1 (North Portal) were not properly labeled. The Contractor was reminded to provide the labels as soon as possible.	Rectification was observed during the site audit on 11-Nov-04.
	03-Nov-04	The chemical waste storage area at Portion D3 was observed full. The Contractor was reminded to arrange licensed collector to collect the chemical waste.	Rectification was observed during the site audit on 11-Nov-04.
	18-Nov-04	Two oil drums were observed to be placed on bare ground at the Main Building in Portion D4. The Contractor was reminded to provide drip tray for the oil drums.	Rectification was observed during the site audit on 24-Nov-04.

Parameters	Date	Observations / Recommendations	Remedial Actions
<i>Permit / Licenses</i>	20-Oct-04	The environmental permit previously displayed at the site entrance of Ventilation Adit was lost. The Contractor was reminded to display the permit as soon as possible.	Rectification was observed during the site audit on 27-Oct-04.
	18-Nov-04	The environmental permit, which was previously displayed at the site entrance of Portion H (Ventilation Adit), was lost. The Contractor was reminded to display the EP as soon as possible.	Rectification was observed during the site audit on 24-Nov-04.

Status of Environmental Licensing and Permitting

- 5.4 Environmental licenses and permits including the Environmental Permit for the Project were in place and valid during the reporting quarter. The status of all licenses and permits obtained for the Project is summarized in **Appendix H**.

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

Summary of Exceedances

1-hr TSP monitoring

- 6.1 One Action Level exceedance was recorded at AM4 (Government Quarters) on 20th Oct 04. According to ET's site observations, the exceedance was considered to be related to the Project works. No Limit Level exceedance was recorded in the reporting quarter.

24-hr TSP Monitoring

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

Construction Noise Monitoring

- 6.3 No Limit Level exceedance was recorded in the reporting quarter. Three Action Level exceedances were recorded in the reporting quarter due to the three public noise complaints received by the ET Leader on 14th Sep, 21st Oct and 24th Nov 04, respectively.

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

- 6.4 There was no non-compliance from the site audits in the reporting quarter. As mentioned previously in the Section 5.2 of this report, the observations and recommendations made in each individual site audit session were presented.

7 ENVIRONMENTAL COMPLAINTS

- 7.1 Four environmental related complaints were received in this reporting quarter. Three of the complaints were related to construction noise and one complaint was related to air quality. Complaint investigation was taken by the ET in accordance with the EM&A Manuals.
- 7.2 The details of the complaints, the investigation results and the mitigation actions are summarized in **Appendix I**.
- 7.3 There were five complaints received since the Project commencement.

8 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 8.1 No notification of summon or successful prosecution was recorded in this reporting quarter.
- 8.2 There was no notification of summon or successful prosecution received since the Project commencement.

9 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 9.1 Major site activities for the coming month include:
- Slope cutting;
 - Haul road construction;
 - Directional drill hole;
 - Soil nail installations;
 - Stepped channel and retaining wall construction;
 - Blasting works at Portals;
 - Bored piling works; and
 - Surface blasting at slopes.
- 9.2 The anticipated environmental impacts will be mainly on dust and noise due to earthworks and water quality arising from tunneling works.