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)

December 2004 to February 2005

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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CINOTECH CONSULTANTS LTD

Room 1602-1610, Delta House, 3 On Yiu Street, Shatin, NT, Hong Kong Tel: (852) 2151 2083 Fax: (852) 3107 1388

Email: info@cinotech.com.hk

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EXECUTIVE SUMMARY

- This is the fifth 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 December 2004 and February 2005 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;
 - Soil nail installations;
 - Stepped channel and retaining wall construction;
 - U-channel construction:
 - Tunnel excavation and mucking out;
 - Blasting works at Portals; and
 - Bored piling works.

Environmental Monitoring Works

- Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. 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 at AM3 was suspended from 20 December 2004 to 13 February 2005 due to relocation of monitoring station.
- No Action/Limit Level exceedance was recorded in this reporting quarter.

24-hr TSP Monitoring

• All 24-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring at AM3 was suspended from 9 December 2004 to 13 February 2005 due to relocation of monitoring station.

1

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

Construction Noise

All construction noise monitoring was conducted at scheduled in this reporting quarter. No Limit Level exceedance was recorded in this reporting period. One Action Level exceedance was recorded due to a public noise complaint forwarded by EPD on 25 January 2005.

Table I Summary Table for Events Recorded in the Reporting Quarter

Parameter	No. of Events		No. of Events	Action Taken			
Furumeter	Action Level	Limit Level	Due to the Project	Action Taken			
December 2004	December 2004						
1-hr TSP	0	0	0	N/A			
24-hr TSP	0	0	0	N/A			
Noise	0	0	0	N/A			
January 2005							
1-hr TSP	0	0	0	N/A			
24-hr TSP	0	0	0	N/A			
Noise	1	0	0	Complaint Investigation			
February 2005							
1-hr TSP	0	0	0	N/A			
24-hr TSP	0	0	0	N/A			
Noise	0	0	0	N/A			

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	
Event	Number	Nature	Action Taken	Status	Kemark	
Complaint received	2	1 – dust 1 – noise & 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		

Future Key Issues:

Major site activities for the coming month include:

- Slope cutting;
- Haul road construction;
- Soil nail installations;
- Stepped channel and retaining wall construction;
- Blasting works at Portals;
- Bored piling works; and
- Surface blasting at slopes.

The anticipated environmental impacts will be mainly on dust and noise due to slope works and water quality arising from tunneling works.

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.

- Eagle's Nest Tunnel and Associated Works (HY/2003/02) EM&A Quarterly Report for Dec 04 to Feb 05
- The major construction activities of two civil contracts of the R9K project, Contract No. 1.6 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.
- "Route 9" was recently re-titled as "Route 8 (previously known as Route 9)". Cinotech 1.7 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 fifth quarterly EM&A report summarizing the EM&A works for the ENT Project between December 2004 and February 2005.

2 PROJECT CHARACTERISTICS

Project Organization and Contacts of Key Management

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			
Item	Work Activity	Dec 04	Jan 05	Feb 05		
1.	Slope cutting;	✓	✓	✓		
2.	Haul road construction	✓	✓	✓		
3.	Soil nail installations	✓	✓	✓		
4.	Stepped channel and retaining wall construction	✓	✓	✓		
5.	U-channel construction	✓	✓	✓		
6.	Tunnel excavation and mucking out	✓	✓	✓		
7.	Blasting works at Portals	✓	✓	✓		
8.	Bored piling works.	✓	✓	✓		

3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manual designated locations for the ET to monitor environmental impacts in terms of noise and air quality due to the Project. The monitoring locations are depicted in **Figures 1a** and **1b**. **Appendix C** gives details of monitoring requirements.
- 3.2 Upon requested by the Management Office of Garden Villa, the 24-hr and 1-hr TSP monitoring was suspended from 9 December 2004 and 20 December 2004, respectively. The monitoring station of AM3 was relocated from Garden Villa to the nearby slope no. 07SW-D/FR4 and the monitoring has been resumed since 14 February 2005.

Monitoring Methodology and Calibration Details

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

Environmental Quality Performance Limits (Action and Limit Levels)

3.4 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

3.5 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 period, except that the monitoring at AM3 was suspended from 20 December 2004 to 13 February 2005 due to relocation of monitoring station.
- 4.3 No Action/Limit Level exceedance was recorded in this reporting quarter.

24-hr TSP Monitoring

- 4.4 All 24-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring at AM3 was suspended from 9 December 2004 to 13 February 2005 due to relocation of monitoring station.
- 4.5 No Action / Limit Level exceedance was recorded for 24-hr TSP monitoring in the reporting quarter.
- 4.6 The monitoring data of 1-hr and 24-hr TSP Levels are attached in the appendices of the Monthly Reports for December 2004 to February 2005. The graphical presentations of the monitoring results are shown in **Appendix E**.

Construction Noise

- 4.7 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 NM5, NM6 and NM7.
- 4.8 No Limit Level exceedance was recorded in this reporting period.
- 4.9 One Action Level exceedance was recorded due to a public noise complaint forwarded by EPD on 25 January 2005.
- 4.10 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.

Eagle's Nest Tunnel and Associated Works (HY/2003/02) EM&A Quarterly Report for Dec 04 to Feb 05

- 4.11 The monitoring data of construction noise are attached in the appendices of the Monthly Reports for December 2004 to February 2005. The graphical presentations of the monitoring results are shown in **Appendix F**.
- 4.12 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

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 1, 8, 15, 23 and 30 December 2004, 4, 12, 19 and 27 January, 4, 17 and 24 February 2005. IEC's monthly site audits were conducted on 8 December 2004, 4 January and 4 February 2005 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	
Water	15-Dec-04	The exit/entrance of Site Area Portion A has been relocated. Water hose and a hard paved surface have been provided at such exit/entrance already. However, the Contractor was reminded to divert the wheel washing water for treatment properly.	Rectification was observed during the site audit on 23-Dec-04.	
	23-Dec-04	The water discharging through a treatment system (WetSep) at Portion D4 near the Administration Building was observed silty and milky. The Contractor was reminded to ensure the water treatment system functioning properly.	Rectification was observed during the site audit on 30-Dec-04.	
	04-Jan-05	A water pond at Portion D3 was observed. The Contractor was reminded to remove the water as soon as possible.	Rectification was observed during the site audit on 12-Jan-05.	
Air Quality	01-Dec-04	Exposed soil slope surfaces were observed at BVS2. The Contractor was recommended to cover those slopes, at which construction work would not be undertaken within short period of time, by tarpaulin sheets in order to minimize dust emission.	Rectification was observed during the site audit on 08-Dec-04.	
	01-Dec-04	No dust suppression measure was applied for the breaking work at Portion I1. The Contractor was reminded to provide water spray for the breaking operation.	Rectification was observed during the site audit on 15-Dec-04.	

Parameters Date		Observations / Recommendations	Remedial Actions
	08-Dec-04	The uncovered stockpile material at Portion D4 (outside North Portal) was observed dry. The Contractor was reminded to water spray the stockpile more frequently.	Rectification was observed during the site audit on 15-Dec-04.
		Fugitive dust emission was observed during the breaking work at Portion H1. The Contractor was reminded to apply water spray for the breaking work.	Rectification was observed during the site audit on 15-Dec-04.
and dry. The Contractor was reminded to cover		Rectification was observed during the site audit on 15-Dec-04.	
	30-Dec-04	Fugitive dust emission from loading / unloading material was observed at Portion D5. The Contractor was reminded to increase the frequency of water spraying to avoid dust generation.	Rectification was observed during the site audit on 04-Jan-05.
Fugitive dust emission was observed during vehicle movement on the haul road at Portion E1 (Mui Kong Tsuen area). The Contractor was reminded to increase the watering frequency for dust suppression.		Rectification was observed during the site audit on 19-Jan-05.	
	19-Jan-05	Fugitive dust emission from rock breaking by an excavator was observed at Portion E1 (BVS2). The Contractor was reminded to provide water spray for avoiding dust emission.	Rectification was observed during the site audit on 27-Jan-05.
Waste / Chemical Management	15-Dec-04	Chemical drums were found on ground at South Portal (Portion H1). The Contractor was reminded to place such chemical drums within bunded area.	Rectification was observed during the site audit on 23-Dec-04.
	04-Jan-05	No drip tray was provided for 2 oil drums at Portion D3. The Contractor was reminded to provide a drip tray for the drum as soon as possible.	Rectification was observed during the site audit on 12-Jan-05.
	19-Jan-05	Oil stain was found under a drip tray, which was provided for oil drum storage, at Portion D3.	Rectification was observed during the site audit on 27-Jan-05.
	27-Jan-05	Oil in drip tray should be removed regularly to prevent overflowing / oil leakage. (site area: Portion D4 main building)	Rectification was observed during the site audit on 04-Feb-05.
	04-Feb-05	Accumulation of mud and general refuse was observed in the Steel Casing Yard at Toll Plaza. The Contractor was reminded to remove the refuse as soon as possible and keep the site area more tidy.	Rectification was observed during the site audit on 17-Feb-05.

Parameters Date		Observations / Recommendations	Remedial Actions
		Accumulation of spilled oil was observed in two drip trays in the Material Storage Area of North Portal. The Contractor was reminded to remove the spilled oil as soon as possible.	Rectification was observed during the site audit on 17-Feb-05.
	17-Feb-05	Rectification was observed during the site audit on 24-Feb-05.	
	17-Feb-05 Chemical waste oil drums without cher labels were observed in the Chemical Storage Area at Portion D4. The Conference on such oil waste drums.		Rectification was observed during the site audit on 24-Feb-05.
	24-Feb-05	Some rubbish was observed besides the Gabion Wall at Portion A. The Contractor was reminded to remove the rubbish a.s.a.p.	Rectification was observed during the site audit on 03-Mar-05.
Others 30-Dec-04		Water ponding was observed at Portion D3. The Contractor was reminded to clear it as soon as possible.	The situation would be followed up in Jan 2005

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 No Action / 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 this reporting period. One Action Level exceedance was recorded due to a public noise complaint forwarded by EPD on 25 January 2005.

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 Two environmental related complaints were received in this reporting quarter.
- 7.2 One of the complaints was related to dust generation at Butterfly Valley and received by the ER on 1 December 2004 and subsequently forwarded to the ET Leader on the same day. Based on the ET's investigation, the complaint was considered valid and related to the Project works of R8-ENT. Enhanced dust suppression measures had been implemented by the Contractor in order to rectify the situation. The complaint investigation report was submitted by ET on 11 December 2004.
- 7.3 Another complaint was received by the ET Leader on 25 January 2005. The complaint was about construction noise and dust generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. The complainant was particularly concerned of two issues, (1) Noise from tunnel blasting work carrying out at around 7:30am and 10:00pm; and (2) Dump trucks without covering of canvas when leaving the construction site. Complaint investigation was undertaken by ET and the results were submitted to EPD on 3rd Feb 05.
- 7.4 The details of the complaints, the investigation results and the mitigation actions are summarized in **Appendix I**. There were seven 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:
 - Soil nail installations;
 - Stepped channel and retaining wall construction;
 - U-channel construction;
 - Tunnel excavation and mucking out;
 - Blasting works at Portals; and
 - Bored piling works.
- 9.2 The anticipated environmental impacts will be mainly on dust and noise due to slope works and water quality arising from tunneling works.