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

Monthly EM&A Report
Part I – Lai Chi Kok Viaduct (Version 1)

July 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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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
CEDD	Civil Engineering and Development Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
HyD	Highways Department
IEC	Independent Environmental Checker
NOE	Notification of Exceedancne
QA/QC	Quality Assurance / Quality Control
RE	Resident Engineer
RH	Relative Humidity
SLM	Sound Level Meter
TSP	Total Suspended Particulates

EXECUTIVE SUMMARY

Introduction

- This is the twentieth monthly 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 report documents the findings of EM&A Works conducted in July 2005 for Contract No. HY/2003/01, Lai Chi Kok Viaduct (the Project).

- The major site activities undertaken in the reporting month included piling works, construction of pile caps and piers, bulk excavation and segment erection works.

Environmental Monitoring and Audit Works

- Environmental monitoring and audit works for the Project was performed regularly as stipulated in the updated EM&A Manual 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.

- Summary of the events and action taken in the reporting month is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Month

Parameter	No. of Events		No. of Events Due to the Project	Action Taken
	Action Level	Limit Level		
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	1	0	0	Complaint investigation

1-hr TSP Monitoring

- All 1-hr TSP monitoring was conducted as scheduled in this reporting month. No Action/Limit Level exceedance was recorded in this reporting month.

24-hr TSP Monitoring

- All 24-hr TSP monitoring was conducted as scheduled in this reporting month. No Action/Limit Level exceedance was recorded in this reporting month.

Construction Noise

- All construction noise monitoring was conducted as scheduled in this reporting month. One Action Level exceedance was triggered by a public noise complaint received on 21 July 2005. No Limit Level exceedance was recorded in the reporting month.

Environmental Licenses and Permits

- Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, the Water Discharge Licenses (WDLs) and the Construction Noise Permits (CNPs). A varied EP (no. EP-103/2001/C) and 5 new CNPs were issued to the Project in the reporting month.

Key Information in the Reporting Month

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

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	1	Noise	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:

- Utility diversions;
- Pre-drilling works;
- Piling works;
- Construction of abutment, pile caps and columns;
- Bulk excavation;
- Soil nail installation;
- Retaining wall construction;
- Drainage works;
- Segment erection; and
- Launching gantry works.

The anticipated environmental impacts will be mainly on water quality impact from surface runoff in rainy days and construction noise from slope works.

1. INTRODUCTION

Background

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. 499) (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 and a varied EP No. EP-103/2001/A was subsequently issued on 20 May 2003 for R9K (R9K EP) to HyD as Permit Holder. A varied EP-103/2001/C was recently issued on 22 July 2005.

1.6 The major construction activities of two civil 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 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 Consultants Ltd. 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 twentieth monthly EM&A report summarizing the EM&A works for the Project in July 2005.

Project Organizations

1.8 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Major Works Project Management Office (MWPMO) of Highways Department (HyD)
- Engineer (E) – Maunsell-Hyder Joint Venture
- Engineer's Representative (ER) – Maunsell-Hyder Joint Venture
- Environmental Team (ET) – Cinotech Consultants Limited
- Independent Environmental Checker (IEC) – CH2M-IDC Hong Kong Limited
- Contractor – NECSO Entrecanales Cubiertas, S.A.

1.9 The responsibilities of respective parties are detailed in Section 1.8.3 of the EM&A Manual (1999) of the Project.

1.10 The key contacts of the Project are shown in **Table 1.1**.

Construction Programme

1.11 The site activities undertaken in the reporting month were:

- Utility diversions for piling works at Slip Road C and Piers D14;
- Pre-drilling works for R6 and D9;
- Piling works for Main Viaduct at Mui Kong Tsuen, Slip Roads C and D;
- Construction of abutment, pile caps and columns at Slip Roads B, C and D, Lai Wan Overpass and Main Viaduct;
- Bulk excavation works and retaining wall construction at CCR-R1;
- Bulk excavation works and soil nails installation at slope CCR-S1;
- Bulk excavation works at CCR-R3;
- Drainage works at Rest Garden area;
- Segment erection for Main Viaduct, Slip Roads A and B;
- In-situ construction for slip roads C and D;
- Pre-bored H piling work at R5;

- Bored piling work at R3;
- Retaining wall construction for 11NW-A/C678 & CR679.

Summary of EM&A Requirements

1.12 The EM&A programme requires construction phase monitoring for air quality and construction noise, and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
HyD	Permit Holder	Mr. K.T. Lee	SE3/R8K	2762 3684	2714 5198
		Mr. Albert Cheung	E6/R8K	2762 3598	
		Mr. L.C. Chung	E2/R8K	2762 3613	
MHJV	Engineer	Mr. Conrad Ng	Project Manager	2605 6262	2691 2649
	Engineer's Representative	Mr. D.F. Lilliman	CRE	2959 0010	2959 0290
		Mr. Henry Liu	SRE	2991 1068	
		Mr. Joseph Chi	RE	2991 1034	
Cinotech	Environmental Team	Dr. Priscilla Choy	The ET Leader	2151 2089	3107 1388
		Mr. KK Chan	Audit Team Leader	2151 2077	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
CH2M-IDC	Independent Environmental Checker	Mr. David Yeung	Independent Environmental Checker	2872 2934	2507 2293
		Mr. Billy Yu	Assistant Independent Environmental Checker	2872 2949	
NECSO	Contractor	Mr. Rafael Rubio	Project Director	2956 3300	2956 3331
		Mr. Lawrence Kwok	QA/E Manager		
24-hour Emergency Hotline				2370 9200	

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

1.14 This report presents the environmental monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust and noise levels and audit works for the Project in July 2005.

2. AIR QUALITY

Monitoring Requirements

2.1 Monitoring of 1-hour and 24-hour TSP was conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 One designated monitoring station, AM2 was selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring location, which is also depicted in **Figures 1**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Description	Location
AM2	Lai Chi Kok Park Sports Centre	Rooftop

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used for the air quality monitoring. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	GMW25; S/N: 1536	1
HVS Sampler	Graseby GMW Model GS2310 High Volume TSP Sampler and associated equipment and shelter	1

Monitoring Parameters, Frequency and Duration

2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in **Appendix C**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology and QA/QC Procedure

Instrumentation

2.5 Graseby GMW Model GS2310 TSP High Volume Sampler (HVS) was employed for 1-hour & 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in Sections 2.2 to 2.4 of the EM&A Manual (1999).

Operating/Analytical Procedures

2.6 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.7 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.8 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

2.9 The power supply was checked to ensure the sampler worked properly.

2.10 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.11 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.12 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.13 The shelter lid was closed and secured with the aluminum strip.

2.14 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

2.15 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

2.16 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.17 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

2.18 All 1-hr TSP monitoring was conducted as scheduled in this reporting month. No Action/ Limit Level exceedance was recorded in the reporting month.

2.19 All 24-hr TSP monitoring was conducted as scheduled in this reporting month. No Action/Limit Level exceedance was recorded in this reporting month.

2.20 Wind data monitoring equipment has been installed in Shatin Heights for logging wind speed and wind direction. These wind data for the reporting month is summarized in **Appendix D**.

2.21 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E** and **F**, respectively.

3. NOISE

Monitoring Requirements

3.1 Monitoring and audit of construction noise levels is required to be conducted, in accordance with the EM&A Manual, to ensure that any unacceptable noise impacts could be readily detected and timely and appropriate action be undertaken to rectify the situation.

3.2 The construction noise levels shall be measured in terms of the A-weighted equivalent continuous sound pressure level (Leq). Leq (30min) shall be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, Leq (5min) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

3.3 Four designated noise monitoring stations, namely NM4, NM8a, NM8b and NM9 were selected for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.4 Noise monitoring was conducted at five designated monitoring stations as summarized in **Table 3.1**. **Figures 1** show the locations of these stations.

Table 3.1 Noise Monitoring Stations

Stations*	Description	Location
NM4	Mei Foo Sun Chuen, Phase 5	Rooftop of Block 9
NM8a	Nob Hill	M/F of Car Park
NM8b	Nob Hill	3/F of Car Park
NM9	Hoi Lai Estate	G/F of Hoi Fai House

(1) Renovation work was undertaken at the Lai Chi Kok Reception Centre (NM2) and the centre was found vacated. The noise monitoring was suspended since December 2004. Approval for the change of EM&A Programme was granted by EPD on 30th December 2004.

(2) The Lai Chi Kok Hospital (NM3) was also found vacated and noise monitoring has been suspended since January 2005, as approved by EPD on 15th March 2005.

3.5 Stations NM8a and NM8b were installed at Nob Hill in May 2004. Station NM8b is located at 3/F of the car park of Nob Hill, which is strongly influenced by traffic noise from Ching Cheung Road. The measurement at this station is for reference purpose, but not for compliance check of construction noise. The measured noise level at Station NM8a, which is located at M/F of car park and closer to the construction site, acts as an indicator of the construction noise. Since the domestic premises are located above 5/F, noise assessment would be performed to assess the level of nuisance resulting from the construction noise at the domestic premises whenever the measured noise level at NM8a exceeds the noise limit level.

3.6 A new housing estate, Hoi Lai Estate, became one of the noise sensitive receivers close to the Project site. As recommended by the Regional (West) Office of EPD, noise monitoring at this location (Station NM9) was newly included in the EM&A programme. Approval for the change of EM&A programme was granted by EPD on 30th December 2004.

Monitoring Equipment

3.7 **Table 3.2** summarizes the noise monitoring equipment model being used. Copies of calibration certificates are attached in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	5
Calibrator	B&K 4231	2
Wind Speed Anemometer	RS232 Integral Vane Digital Anemometer	1

Monitoring Parameters, Frequency and Duration

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Stations	Parameter	Period	Frequency	Measurement
NM4	L_{10}(30 min.)dB(A) L_{90}(30 min.)dB(A) L_{eq}(30 min.)dB(A)	0700-1900 hrs. on weekdays	Once per week	Façade
NM8a				Façade
NM8b				Façade
NM9				Façade

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was generally set on a tripod at a height of 1.2 m above the ground, depending to the actual monitoring condition.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.

- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.9 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.

3.10 The meters were sent to the supplier to check and calibrate on a yearly interval.

Results and Observations

3.11 Noise monitoring was performed at the four designated locations as scheduled in this reporting month.

3.12 All the Construction Noise Levels (CNLs) reported in this report, except those collected at Stations NM8a, NM8b and NM9, 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.

3.13 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.14 No noise Limit Level exceedance was recorded in the reporting month.

3.15 One public noise complaint was received on 21 July 2005, triggering an Action Level exceedance for construction noise. The details of the complaint could refer to Section 4.

3.16 At Stations NM4, NM8a and NM8b, the major noise source identified during the monitoring exercises was mainly the road traffic noise.

3.17 At Station NM9, construction noise from the Project was identified as the major noise source during monitoring. Road traffic noise was occasionally identified as the dominant noise source.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix I**.

4.2 Site audits were conducted on 7, 14, 21 and 27 July 2005 by ET. The audit session on 7 July 2005 was conducted with the representatives of HyD, IEC, ER, the Contractor and ET.

Review of Environmental Monitoring Procedures

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

Air Quality Monitoring

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

Noise Monitoring

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

Status of Environmental Licensing and Permitting

4.4 All permits/licenses obtained for the Project are summarized in **Table 4.1**. One varied EP (no. EP-103/2001/C) and 5 new CNPs were issued to the Project in the reporting month.

Implementation Status of Environmental Mitigation Measures

4.5 According to the Environmental Permit and the EM&A Manuals, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is provided in **Appendix K**.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-103/2001/B	22/3/05	21/7/05	Construction and operation of (a) All civil works (including highways, traffic, geotechnical, drainage, structural, architectural and landscaping works) for the Lai Chi Kok Viaduct, the interchange with Ching Cheung Road, the main road within Butterfly Valley and the Eagle's Nest Tunnel; (b) All E&M works (including ventilation, Traffic Control & Surveillance System (TCSS), toll collection system and lighting) for the whole Route 9 between Cheung Sha Wan and Sha Tin; (c) The permanent slope works above the northern portal of the Eagle's Nest Tunnel; (d) The architectural works (including fitting out and furnishings) of the portal buildings of the Sha Tin Heights Tunnel.	Invalid
EP-103/2001/C	22/7/05	N/A		Valid
Registration of Chemical Waste Producer				
WPN 5213-261-N2413-04	17/11/03	N/A	N/A	Valid
Water Discharge Lisence				
EP482/260/251/1	05/12/03	31/12/08	Discharge of industrial trade effluent arising from the construction site at Route 9 – Lai Po Road Section of Lai Chi Kok Viaduct (Contract HY/2003/01).	Valid
EP482/260/251/2	15/12/03	31/12/08	Discharge of industrial trade effluent arising from the construction site at Route 9 – Lai Chi Kok Viaduct excluding Lai Po Road Section.	Valid
Construction Noise Permit (CNP)				
GW-RW0064-05	03/02/05	02/08/05	*Location*: Lai Po Road (P5R-B4) *Time Period:* Any day not being a general holiday between 2300-0700 hours	Valid
GW-RW0073-05	14/02/05	06/08/05	*Location*: Lai Chi Kok Park *Time Period:* Any day not being a general holiday between 1900-0700 hours on next day	Valid
GW-RW0109-05	02/03/05	01/10/05	*Location*: Butterfly Valley (P16-P18) *Time Period:* General holidays (including Sundays) between 0700-1900 hours and any other days between 1900-2300 hours	Valid
GW-RW0110-05	02/03/05	01/09/05	*Location*: Ching Cheung Road near Mei Foo Sun Chuen *Time Period:* General holidays (including Sundays) between 0700-1900 hours and any other days between 1900-2300 hours	Valid
GW-RW0130-05	16/03/05	15/09/05	*Location*: Castle Peak Road (R6) *Time Period:* Any day not being a general holiday between 2300-0700 hours	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RW0169-05	29/03/05	28/09/05	*Location*: Kom Tsun Street near LCK Interchange *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0176-05	25/03/05	19/09/05	*Location*: Ching Cheung Road near Nob Hill *Time Period:* General holidays (including Sundays) between 0700-1900 hours	Valid
GW-RW0211-05	07/04/05	06/10/05	*Location*: Junction of Ching Cheung Road and Castle Peak Road *Time Period:* General holidays (including Sundays) between 0700-2300 hours and any other days between 1900-2300 hours	Valid
GW-RW0224-05	13/04/05	12/10/05	*Location*: Butterfly Valley Road and Kom Tsun Street *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0226-05	14/04/05	13/10/05	*Location*: Butterfly Valley Road near Kwai Chung Road *Time Period:* General holidays (including Sundays) between 0700-2300 hours and any other days between 1900-2300 hours	Valid
GW-RW0248-05	22/04/05	21/10/05	*Location*: Butterfly Valley Road near LCK Reception Centre *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid
GW-RW0251-05	21/04/05	20/10/05	*Location*: Butterfly Valley *Time Period:* General holidays (including Sundays) between 0700-2300 hours and any other days between 1900-2300 hours	Valid
GW-RW0265-05	03/05/05	28/10/05	*Location*: Lai Po Road near Yuet Lun Street *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0296-05	09/05/05	08/11/05	*Location*: Butterfly Valley near Kwai Chung Road *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid
GW-RW0301-05	10/05/05	08/11/05	*Location*: Butterfly Valley Road near LCK Reception Centre *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid
GW-RW0310-05	17/05/05	16/11/05	*Location*: Lai Po Road (Pier B3) *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RW0354-05	08/06/05	05/11/05	*Location*: Lai Po Road (P1/L segment erection) *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0392-05	30/06/05	29/12/05	*Location*: Junction of Yuet Lun Street and Sham Mong Road *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0393-05	23/06/05	22/12/05	*Location*: Butterfly Valley Road near Kwai Chung Road *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid
GW-RW0401-05	27/06/05	22/12/05	*Location*: Butterfly Valley Road near LCK Interchange *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0402-05	27/06/05	23/12/05	*Location*: Butterfly Valley Road near LCK Fire Station *Time Period:* Any day not being a general holiday between 2100-0700 hours	Valid
GW-RW0416-05	29/06/05	28/12/05	*Location*: Lai Po Road near Hoi Lai Estate *Time Period:* General holidays (including Sundays) between 0700-2300 hours and any other days between 1900-2300 hours	Valid
GW-RW0426-05	04/07/05	03/01/06	*Location*: Kwai Chung Road near LCK Interchange *Time Period:* Any day not being a general holiday between 2300-0700 hours	Valid
GW-RW0445-05	08/07/05	07/01/06	*Location*: Carriageway (east bound) of Kwai Chung Road near LCK Fire Station *Time Period:* General holidays (including Sundays) between 0700-2100 hours and any other days between 1900-2100 hours	Valid
GW-RW0446-05	10/07/05	02/01/06	*Location*: Butterfly Valley Road near LCK Reception Centre *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid
GW-RW0461-05	18/07/05	17/01/06	*Location*: Hing Wah Street West (Jetty Area) *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RW0464-05	21/07/05	19/01/06	*Location*: Lai Po Road (Segment Erection at Piers P3 to P6) *Time Period:* Whole day of general holidays (including Sundays) and any other days between 1900-0700 hours on next day	Valid

4.6 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations are summarized in **Table 4.2**.

Table 4.2 Observations and Recommendations of Site Audits

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	07-Jul-05	The effluent discharge at NTMM was observed silty. The Contractor was recommended to improve the de-silting efficiency of the sedimentation system. Same recommendation was applied at Slope S1.	Rectification was observed during the audit session on 14-Jul-05.
	21-Jul-05	Some surface runoff was observed discharging without passing through the sedimentation tank. The contractor was reminded to provide the temporary channel to divert the runoff to the sedimentation tank before discharge.	Rectification was observed during the audit session on 27-Jul-05.
Air Quality	14-Jul-05	Deposition of sand and silt was observed on the access road at Mui Kong Tsuen. The contractor was reminded to prevent the dust emission from the access roads.	Rectification was observed during the audit session on 21-Jul-05.
Chemical Management	27-Jul-05	Oil leakage from an air compressor was observed at Wai Man Tsuen. The contractor was reminded to provide well maintenance for equipment.	Rectification was observed during the audit session on 05-Aug-05.

Summary of Exceedances

1-hr TSP Monitoring

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

24-hr TSP Monitoring

4.8 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise Monitoring

4.9 No Limit Level exceedance was recorded in the reporting month. One Action Level exceedance was triggered by a public noise complaint received on 21 July 2005.

Implementation Status of Event Action Plans

4.10 The Event Action Plans for air quality and construction noise are presented in **Appendix J**.

Summary of Complaint and Prosecution

4.11 One environmental complaint was forwarded by EPD on 21 July 2005. The complaint was lodged by a resident of Hei Lai House of Wah Lai Estate and was about construction noise nuisance caused by rock breaking work, which claimed to be started from 8:30am daily at Ching Cheung Road near Wah Lai Estate. According to the investigation, the slope works at CCR-S1 was considered to be the activity of concern.

4.12 Ad-hoc noise measurement was carried out on the roof of Hei Lai House on 25 July 2005 and the measured noise levels were found well below the daytime construction noise criterion of 75 dB(A). The complaint was therefore considered not justifiable. Nevertheless, the Contractor would implement noise mitigation measures, such as use of quiet breakers and temporary noise barriers, in order to minimize the impact of the nearby residents. The complaint investigation report was submitted to EPD on 28 July 2005.

4.13 There were 14 environmental complaints and no prosecution received since the commencement of the Project. The Complaint Log is attached in **Appendix M**.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming month include:

- Accumulation of stagnant water in the site;
- Nighttime construction noise from bridge segment transportation works and segment erection works;
- Construction noise generation from slope works at S1, R2 and R3;
- Surface runoff generation from work area at slopes;
- Maintenance of de-silting facilities at NTMM and S1;
- Potential dust emission from slope works and soil nail installations;
- Wastewater generation from bored-piling works.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedules for the next month are shown in **Appendix C**.

Construction Program for the Next Month

5.3 The tentative construction program for the Project is provided in **Appendix L**.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

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

24-hr TSP Monitoring

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

Construction Noise Monitoring

6.4 No Limit Level exceedance was recorded in this reporting month. One Action Level exceedance was triggered by a public noise complaint received on 21 July 2005.

Complaint and Prosecution

6.5 One environmental complaint was forwarded by EPD on 21 July 2005, regarding construction noise at Ching Cheung Road affecting Hei Lai House of Wah Lai Estate. Complaint investigation was undertaken by ET and the complaint was considered not justifiable.

6.6 No environmental prosecution was received in the reporting month.

Recommendations

6.7 According to the environmental audit performed in the reporting month, the following recommendations were made:

Water Impact

- To review the capacity of de-silting facilities for discharge.
- To keep the sedimentation faculties well maintained and to perform de-silting regularly.
- To cover the idled slope surfaces and stockpiles during rainstorms.
- To review the surface runoff control measures in the sites for the wet season.

Dust Impact

- To ensure water spray is applied for the dust emissive works, such as soil nail installation, loading and unloading of soil materials, rock breaking works.
- To regularly maintain the machinery and vehicles on site to avoid dark smoke emission.
- To cover soil stockpiles and exposed slope surface by impervious sheets or other means.

Noise Impact

- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.
- To employ quiet powered mechanical equipment if possible.
- To ensure compliance of CNP conditions during restricted-hour works.
- To space out noisy equipment and position the equipment as far away as possible from noise sensitive receivers.

Waste / Chemical Management

- To avoid accumulation of stagnant water on site.
- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of chemical wastes / oil drum on site.