**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 II – Eagle's Nest Tunnel & Associated Works
### (Version 1)

June 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.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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## ABBREVIATION AND ACRONYM

| | |
|---|---|
| AL Levels | Action and Limit Levels |
| 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 |
| IEC | Independent Environmental Checker |
| RE | Resident Engineer |
| RH | Relative Humidity |
| TSP | Total Suspended Particulates |
| TDD | Territory Development Department |
| QA/QC | Quality Assurance / Quality Control |
| SLM | Sound Level Meter |
| WMP | Waste Management Plan |

# EXECUTIVE SUMMARY

## Introduction

- This is the nineteenth 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 June 2005 for Contract No. HY/2003/02, Eagle's Nest Tunnel and Associated Works (the Project).

- The major site activities undertaken in the reporting month included slope cutting, bored piling, tunnel blasting and excavation 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 Events and actions taken in the reporting month is tabulated in **Table I**.

**Table I Summary of 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 | 0 | 0 | 0 | N/A |

*1-hr TSP Monitoring*

- All 1-hr TSP monitoring was conducted as scheduled in this reporting month, except that the monitoring at AM3 on 21 to 27 June 2005 was cancelled due to adverse weather, resulting in electricity disconnection to the sampler. 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, except that the monitoring at AM3 on 10, 16 and 22 June 2005 was cancelled due to adverse weather, resulting in electricity disconnection to the sampler. No Action/Limit Level exceedance was recorded in this reporting month.

*Construction Noise*

- All construction noise monitoring was conducted at scheduled in this reporting month, except that the monitoring in the week of 20 to 25 June 2005 was suspended due to severe rainstorms. No Action/Limit Level exceedance was recorded in this reporting month.

## Environmental Licenses and Permits

- Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Registration of Chemical Waste Producer (RCWP), Construction Noise Permits (CNPs) and Water Discharge Licenses (WDLs). Four 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 | Dust | N/A | 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; and
- Surface blasting.

The anticipated environmental impacts will be mainly on water quality from surface runoff in rainy days and noise impact 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. 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 of 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/B was recently issued on 22 March 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 on 15th December 2003 for completion in April 2007.

1.7 "Route 9" was recently re-tiled 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 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 nineteenth monthly EM&A report summarizing the EM&A works for the Project in June 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 (MHJV)
- Engineer's Representative (ER) – Maunsell-Hyder Joint Venture (MHJV)
- Environmental Team (ET) – Cinotech Consultants Limited
- Independent Environmental Checker (IEC) – CH2M-IDC Hong Kong Ltd.
- Contractor – Leighton-Kumagai Joint Venture (LKJV)

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:

- Tunnel blasting at North Portal, South Portal and Ventilation Adit;
- Bored piling at Butterfly Valley and pile cap construction at Toll Plaza;
- Soil nail installation at Butterfly Valley;
- Cut slope, u-channel and haul road construction at Butterfly Valley;
- Chlorine barrier wall construction at Portion X;
- Surface blasting at Butterfly Valley;
- Water proofing membrane and lining construction at North Portal;
- Excavation and mucking out in tunnels;
- Excavation and lower down formation at Ventilation Adit; and
- Footbridge and subway construction and drainage work at Toll Plaza.

**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. George Law | E4/R8K | 2762 3675 | |
| MHJV | Engineer | Mr. Conrad Ng | Project Manager | 2605 6262 | 2691 2649 |
| | Engineer's Representative | Mr. Peter Poon | CRE | 3552 2500 | 2743 9200 |
| | | Mr. Eric Wong | RE (S & EP) | 3552 2551 | |
| | | Ms. Sammie Chan | TO (EN) | 3552 2605 | |
| 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 | 2507 2203 | 2507 2293 |
| | | Mr. Billy Yu | Assistant Independent Environmental Checker | 2872 2949 | |
| LKJV | Contractor | Mr. Ray Brewster | Project Director | 9092 6128 | 2743 1600 |
| | | Mr. Kevin Harman | QA/E Manager | 3352 2128 | |
| Enquiries Hotline | | | | 3552 2226 | - |
| Complaint Hotline | | | | 3552 2380 | - |

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 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 June 2005.

# 2. AIR QUALITY

## Monitoring Requirements

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

## Monitoring Locations

2.2 Three designated monitoring stations, AM1, AM3 and AM4 was selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 1a** and **1b**.

**Table 2.1 Locations for Air Quality Monitoring**

| Station | Description | Location |
|---|---|---|
| AM1 | Yew Chung International School / PLK Choi Kai Yau School | Rooftop |
| AM3 | Slope no. 07SW-D/FR4 near Garden Villa | On Ground |
| AM4 | Government Quarters | Ground Floor[1] |

Note: [1]The HVS was installed on the ground floor, which is close to the refuse collection station of the Government Quarters.

## Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. 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 | 3 |

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

2.10 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.

2.11 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.

2.12 The shelter lid was closed and secured with the aluminum strip. 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). After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

2.13 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

2.14 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**

2.15 The TSP monitoring at the three designated stations was performed as scheduled in the reporting month, except the following monitoring events at Station A3. The 1-hr TSP monitoring on 21 to 27 June 2005 and the 24-hr TSP monitoring on 10, 16 and 22 June 2005 were cancelled due to adverse weather, resulting in electricity disconnection to the TSP sampler.

2.16 No Action/ Limit Level exceedance was recorded for both 1hr and 24hr TSP monitoring.

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

2.18 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 ($L_{eq}$). $L_{eq}$ (30min) shall be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, $L_{eq}$ (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 Three designated noise monitoring stations, namely NM1, NM5 & NM6 were selected for impact monitoring in accordance to the EM&A manual (1999) and the subsequent EPD approval of the relocations.

3.4 Noise monitoring is also required to be conducted at station NM7 in accordance with the EM&A Manual (1998). The noise monitoring at the station is required to be conducted under CEDD's construction Contract No. ST 89/02 "Sha Tin Heights Tunnel and Approaches" in accordance with the requirement of Environmental Permit No. EP104/2001/A. The impact noise monitoring results at station NM7 are also presented in this report.

3.5 **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

## Monitoring Locations

3.6 Noise monitoring was conducted at four designated monitoring stations as summarized in Table 3.1. Figures 1a & 1b show the locations of these stations.

**Table 3.1 Noise Monitoring Stations**

| Monitoring Station | Description | Location |
|---|---|---|
| NM1 | Yew Chung International School / PKL Choi Kai Yau School | Rooftop |
| NM5 | Villa Carlton | Ground Floor[1] |
| NM6 | Government Quarters | Rooftop of Refuse Collection Station |
| NM7 | Garden Villa | Rooftop |

Note: [1] The noise measurement was taken at 2.3m above the ground floor of Villa Carlton, where has a line of sight of the construction site in the opposite.

### 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**

| Station | Parameter | Period[1] | Frequency | Measurement |
|---|---|---|---|---|
| NM1 | $L_{10}$(30 min.)dB(A)<br>$L_{90}$(30 min.)dB(A)<br>$L_{eq}$(30 min.)dB(A) | (a) 0700-1900 hrs. on weekdays<br>(b) 1900-2300 hrs. on weekdays<br>(c) 0700-2300 hrs. on holidays<br>(d) 2300-0700 hrs on any days | Once per week | Façade |
| NM5 | | | | Façade |
| NM6 | | | | Free Field |
| NM7 | | | | Façade |

Note: [1](b), (c) and (d) will only be conducted if construction works are undertaken during these periods.

### 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.
- For free field measurement (if any), the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- 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. The meters were sent to the supplier to check and calibrate on a yearly interval.

**Results and Observations**

3.10 Noise monitoring was performed at the four designated locations during the daytime period (0700-1900 hours) as scheduled in this reporting month, except that the monitoring in the week of 20 to 25 June 2005 was cancelled due to severe rainstorms. Restricted-hour monitoring was also conducted at NM5, NM6 and NM7.

3.11 All the Construction Noise Levels (CNLs), except the monitoring (0700-1900 on weekdays) at NM1 and NM6, reported in this report were adjusted with the corresponding baseline level, in order to facilitate the interpretation of the noise exceedance.

3.12 Since construction works of other project were undertaken in the vicinity of NM1 and NM6 during daytime in the baseline monitoring period, the baseline level presented in the baseline monitoring report could not represent the current ambient noise level at these two stations. Adjustment would not be taken for the interpretation of construction noise at these two stations.

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

3.14 No Action (public noise complaint) / Limit Level exceedance was recorded in the reporting month.

# 4. ENVIRONMENTAL AUDIT

## Site Audits

4.1 Site audits were carried out on a 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 1, 9, 15, 22 and 29 June 2005 by ET. The audit session on 9 June 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**. Four 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/A | 20/05/03 | 21/03/05 | Construction and operation of<br>(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;<br>(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;<br>(c) The permanent slope works above the northern portal of the Eagle's Nest Tunnel;<br>(d) The architectural works (including fitting out and furnishings) of the portal buildings of the Sha Tin Heights Tunnel. | Superseded |
| EP-103/2001/B | 22/03/05 | N/A | | Valid |
| **Registration of Chemical Waste Producer** | | | | |
| WPN 5213-761-L2595-01 | 26/01/04 | N/A | N/A | Valid |
| **Water Discharge Licence** | | | | |
| EP482/261/0327/I | 03/05/04 | 31/05/09 | Discharge of industrial trade effluent and effluent arsing from construction activities at the construction site at Ventilation Adit on Tai Po Road (behind Shell Filling Station) opposite Pinehilll Development Highways. | Valid |
| EP482/261/0326/I | 01/04/04 | 30/04/09 | Discharge of industrial trade effluent and effluent arsing from construction activities at the construction site at Mui Kong Tsuen, Butterfly Valley, Lai Chi Kok, Kowloon. | Valid |
| No. 3156 | 23/02/04 | 22/02/09 | Discharge of industrial trade effluent and all other wastewater arising from the works areas at North Portal of Route 9 - Eagle's Nest Tunnel and Associated Works (Contract HY/2003/02). | Valid |
| **Construction Noise Permit (CNP)** | | | | |
| GW-RW0214-05 | 06/04/05 | 07/10/05 | *Location*: Butterfly Valley<br>*Time period*: general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours. | Valid |
| GW-RW0405-05 | 30/06/05 | 28/12/05 | *Location*: Ventilation Adit<br>*Time period*: general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours. | Valid |
| GW-RW0406-05 | 30/06/05 | 28/12/05 | *Location*: Ventilation Adit<br>*Time period*: Any day between 2300 and 0700 hours on next day. | Valid |

| Permit No. | Valid Period | | Details | Status |
|---|---|---|---|---|
| | From | To | | |
| GW-RW0256-05 | 14/06/05 | 13/12/05 | *Location*: South Portal<br>*Time period*: general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours. | Valid |
| GW-RW0255-05 | 13/06/05 | 14/12/05 | *Location*: South Portal<br>*Time period*: Any day between 2300 and 0700 hours on next day. | Valid |
| GW-RN0227-05 | 26/05/05 | 25/11/05 | *Location*: North Portal<br>*Time period*: general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours. | Valid |
| GW-RN0226-05 | 01/06/05 | 30/11/05 | *Location*: North Portal<br>*Time period*: Any day between 2300 and 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**.

**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 this reporting month.

*Construction noise*

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

**Implementation Status of Event Action Plans**

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

## Table 4.2 Observations and Recommendations of Site Audit

| Parameters | Date | Observations / Recommendations | Remedial Actions |
|---|---|---|---|
| ***Water Quality*** | 09-Jun-05 | At ventilation adit, direct discharge of muddy water was observed. The Contractor was reminded to provide adequate drainage system. | Rectification was observed during the site audit on 15-Jun-05. |
| | 22-Jun-05 | Accumulation of silt in the de-silting pit at Mui Kong Tsuen was observed due to rainstorm during the site inspection. The contractor was reminded to pay more attention on the de-silting facilities in the rainy season. | Rectification was observed during the site audit on 29-Jun-05. |
| ***Air Quality*** | 01-Jun-05 | Fugitive dust emission was observed during the breaking works at BVS2. The Contractor was reminded to apply water spray fro the breaking works for dust emission. | Rectification was observed during the site audit on 09-Jun-05. |
| | 01-Jun-05 | Spot check was conducted at Garden Villa to inspect the condition of dump trucks leaving the site via TAR1. One nos. of dump truck, which was working for ENT Contract, was found uncovered. Three other trucks were found covered inadequately. | Similar deficiency was still observed during the subsequent audit session on 9, 22 and 29 Jun 05. Situation would be followed up in July 2005. |
| | 15-Jun-05 | Dark smoke emission was observed from an air-compressor at Mui Kong Tsuen. The contractor was reminded to use well-maintained equipment on site. | Rectification was observed during the site audit on 22-Jun-05. |
| ***Waste / Chemical Management*** | 22-Jun-05<br>29-Jun-05 | Improper chemical storage was observed at North Portal (D3) and Toll Plaza (D7). The contractor was reminded to provide the tray for fuel/chemicals storage. | Rectification was observed during the site audit on 07-Jul-05. |
| | 29-Jun-05 | Oily water was accumulated in the tray of chemical at North Portal (D3). | Rectification was observed during the site audit on 07-Jul-05. |
| | 29-Jun-05 | Improper storage of the chemical was observed at Ventilation Adit. The contractor was recommended to provide the drip tray for chemical storage. | Rectification was observed during the site audit on 07-Jul-05. |

**Summary of Complaints and Prosecutions**

4.11 One environmental complaint, forwarded by the RSS, was received on 10 June 2005, regarding construction dust generation from the construction activities at Butterfly Valley. Based on the RSS information, soil nailing work at Slope BV-S2 was likely to be the source of problem. Corrective actions, including use of thicker cover and continuous water spray, were immediately taken by the Contractor after the complaint was received. The complaint was therefore considered valid and related to the Project works. The situation was found improved and no further adverse comment was received from the complainant. The complaint investigation report was submitted to EPD on 23 June 2005.

4.12 No environmental related prosecution was received in the reporting month.

4.13 There were 13 environmental complaints and no prosecution received since the commencement of the Project. The updated Complaint Log is shown 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:

- Provision of proper covers for dump trucks leaving site;
- Surface runoff generated from site area in Butterfly Valley and Toll Plaza during rainy days;
- Potential dust emission from slope works and haul road construction at Butterfly Valley, excavation and mucking out from portals and vehicle movement on haul roads;
- Noise generation from excavation works, rock breaking works at Butterfly Valley as well as pile cap construction at Toll Plaza;
- Wastewater generation from tunneling works;
- Storage of chemicals/fuel and chemical oil at Portion D3.

## 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-hour TSP Monitoring

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

24-hour TSP Monitoring

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

Construction Noise Monitoring

6.4 No Action/Limit Level exceedance was received in this reporting month.

Complaint and Prosecution

6.5 One environmental complaint, forwarded by the RSS, was received on 10 June 2005, regarding construction dust generation from the construction activities at Butterfly Valley. The complaint was considered valid and related to the Project works. Corrective actions were taken by the Contractor immediately. The situation was found improved and no further adverse comment was received from the complainant.

6.6 No environmental related prosecution was received in this 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 existing desilting facility on site, especially for the discharge at the site in Butterfly Valley and Toll Plaza.
- To keep the sedimentation facilities well maintained and perform de-silting regularly.
- To cover the idled slope surfaces by tarpaulin sheeting as much as possible during rainstorms.
- To review the surface runoff control measures for the upcoming wet season.

*Dust Impact*

- To ensure the dusty materials on dump trucks are properly covered before leaving site.
- To regularly maintain the machinery and vehicles on site to avoid dark smoke emission.
- To ensure water spray or other dust suppression measures are applied for the dust emissive works, such as breaking, drilling and soil nail installation works.
- To provide frequent water spray on haul roads and stockpiles of dusty materials;
- To cover idle soil slope surface to prevent wind erosion;

*Noise Impact*

- To provide temporary noise barriers for noisy activities (such as breaking works).
- To reduce the number of noisy equipment in concurrent use, especially during the examination period of Yew Chung International School.
- To implement a systematic checking system in order to ensure compliance of CNP conditions during the restricted-hour works.

*Waste/Chemical Management*

- To ensure proper storage of chemical and chemical waste 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.