

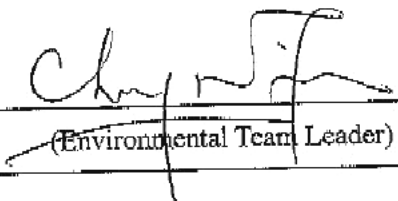
Highways Department

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 1.0)

November 2006

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.

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Introduction.....	1
Environmental Monitoring and Audit Works	1
Environmental Licenses and Permits.....	2
Key Information in the Reporting Month	2
1. INTRODUCTION.....	3
Background	3
Project Organizations.....	4
Construction Programme	4
Summary of EM&A Requirements	5
2. AIR QUALITY.....	7
Monitoring Requirements	7
Monitoring Locations	7
Monitoring Equipment.....	7
Monitoring Parameters, Frequency and Duration.....	7
Monitoring Methodology and QA/QC Procedure	8
Results and Observations.....	9
3. NOISE.....	10
Monitoring Requirements	10
Monitoring Locations	10
Monitoring Equipment.....	11
Monitoring Parameters, Frequency and Duration.....	11
Monitoring Methodology and QA/QC Procedures.....	11
Maintenance and Calibration	12
Results and Observations.....	12
4. ENVIRONMENTAL AUDIT	13
Site Audits.....	13
Review of Environmental Monitoring Procedures	13
Status of Environmental Licensing and Permitting	13
Implementation Status of Environmental Mitigation Measures	13
Summary of Exceedances	16
Implementation Status of Event Action Plans	17
Summary of Complaints and Prosecutions	17
5. FUTURE KEY ISSUES.....	18
Key Issues for the Coming Month.....	18
Monitoring Schedule for the Next Month.....	18
Construction Program for the Next Month	18
6. CONCLUSIONS AND RECOMMENDATIONS.....	20
Conclusions.....	20
Recommendations.....	20

LIST OF TABLES

Table I	Summary Table for Events Recorded in the Reporting Month
Table II	Summary Table for Key Information in the Reporting Month
Table 1.1	Key Project Contacts
Table 2.1	Locations for Air Quality Monitoring
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Impact Dust Monitoring Parameters, Frequency and Duration
Table 3.1	Noise Monitoring Stations
Table 3.2	Noise Monitoring Equipment
Table 3.3	Noise Monitoring Parameters, Frequency and Duration
Table 4.1	Summary of Environmental Licensing and Permit Status
Table 4.2	Observations and Recommendations of Site Audit

LIST OF FIGURES

Figure 1a	Locations of Monitoring Stations
Figure 1b	Locations of Monitoring Stations

LIST OF APPENDICES

A	Action and Limit Levels for Air Quality and Noise
B	Copies of Calibration Certificates
C	Environmental Monitoring Schedules
D	Wind Data
E	1-hour TSP Monitoring Results and Graphical Presentations
F	24-hour TSP Monitoring Results and Graphical Presentations
G	Noise Monitoring Results and Graphical Presentations
H	Summary of Exceedance
I	Site Audit Summary
J	Event Action Plans
K	Environmental Mitigation Implementation Schedule (EMIS)
L	Construction Programme
M	Complaint Log

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 thirty-sixth 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 November 2006 for Contract No. HY/2003/02, Eagle's Nest Tunnel and Associated Works (the Project).
- The major site activities for civil works undertaken in the reporting month included soil nailing, road & drainage works, earth works, cut slope & haul road, sand backfilling, shotcreting and Tunnel Ventilation System.
- The major site activities for Traffic Control and Surveillance System (TCSS) works undertaken in the reporting month included:
 - Cable containment in 1/F, 2/F and 3/F of SHT SPB
 - Cable containment in 1/F, 2/F and 3/F of SHT NPB
 - Cable containment in G/F of ENT SPB
 - Cable containment in G/F, 1/F, 2/F, 3/F and 4/F of ENT NPB
 - Cable containment in ENT tunnel Northbound tube CP01 & CP21
 - Cable containment in ENT tunnel Southbound tube CP01 & CP21
 - Cable laying at SHT portal buildings, tunnel and open road section
 - Cable laying at ENT NPB (1/F – 3/F) and tunnel
 - Cabinet installation in SHT CKM to SHT open road
 - Traffic field equipment (LCS) installation at SHT open road section and north bound tunnel.

Environmental Monitoring and Audit Works

- Environmental monitoring and audit works for the Project was performed regularly as stipulated in the 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

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

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). Total of one new CNP was issued to the Project by EPD 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	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---
<u>Future Key Issues:</u>					
<p>Major site activities for the coming months include:</p> <ul style="list-style-type: none"> Cut slope and haul road; Road & Drainage works; Rock dowel; TTA for watermains crossing Tai Po Road; Shotcreting; Earth works; Louvre, door wall and cladding installation; Plumbing & drainage; E&M cabling; Mechanical ventilation air condition; and Tunnel Ventilation System. <p>The anticipated environmental issues will be mainly on dust impact from slope work, haul roads and soil nailing, noise nuisance from concreting and installation works.</p>					

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 acts 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 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/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 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 HILL Hong Kong Ltd. was appointed as the IEC under Condition 2.1 of the EP. This is the thirty-sixth monthly EM&A report summarizing the EM&A works for the Project in November 2006.

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 / Engineer’s Representative (E/ER) – Maunsell-Hyder Joint Venture (MHJV)
 - Environmental Team (ET) – Cinotech Consultants Limited
 - Independent Environmental Checker (IEC) – CH2M HILL 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 for civil works undertaken in the reporting month included:
- Cut slope and haul road, box culvert/open channel & Culvert A, soil nailing, road & drainage works, DN200 & DN200 twin water-main, utility (Draw pit/ Ducting), Retaining Wall (BV-R1 & BV-R2) and shotcreting at Butterfly Valley.
 - LV cable trough sand backfilling activities, VE Panel, E&M cabling, dampers and Tunnel Ventilation System at ENT Tunnel.
 - Louvre installation, screeding, plumbing & drainage, Tunnel Ventilation System at South Portal Building.
 - Louvre installation, rendering, plumbing & drainage, Tunnel Ventilation System at North Portal Building.
 - Utility (draw pit/ ducting), drainage works, louvre, curtain wall & door installation, plumbing & drainage and rendering at Toll Plaza and Administration Building.
 - Concreting of wing wall, louvre door wall & cladding installation, rendering, earth works, plumbing & drainage, watermains crossing Tai Po Road and Tunnel Ventilation System at Ventilation Adit Tunnel and Building.
 - E&M installation works within SHT/T3 works area.

1.12 The site activities for TCSS works undertaken in the reporting month included:

- Cable containment in 1/F, 2/F and 3/F of SHT SPB
- Cable containment in 1/F, 2/F and 3/F of SHT NPB
- Cable containment in G/F of ENT SPB
- Cable containment in G/F, 1/F, 2/F, 3/F and 4/F of ENT NPB
- Cable containment in ENT tunnel Northbound tube CP01 & CP21
- Cable containment in ENT tunnel Southbound tube CP01 & CP21
- Cable laying at SHT portal buildings, tunnel and open road section
- Cable laying at ENT NPB (1/F – 3/F) and tunnel
- Cabinet installation in SHT CKM to SHT open road
- Traffic field equipment (LCS) installation at SHT open road section and north bound tunnel.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
HyD	Permit Holder	Mr. Kroc Leung	SE2/R8K	2762 3662	2714 5198
		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	ET Leader	2151 2089	3107 1388
		Mr. Jesse Yuen	Project Manager	2151 2091	
		Ms. Jenny Hau	Project Coordinator	2151 2068	
		Mr. Ray Yan	Audit Team Leader	2947 8682	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
CH2M	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. Danny Cheng	QA/E Manager	3552 2113	
Enquiries Hotline				3552 2226	-
Complaint Hotline				3552 2380	-

Summary of EM&A Requirements

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

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: ¹The 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 ProcedureInstrumentation

- 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 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. For TSP sampling, fiberglass filters (G810) were used.
- 2.8 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.
- 2.9 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.

- 2.10 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.
- 2.11 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.
- 2.12 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 $\pm 3^\circ\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. A convenient working RH is 40%.

Maintenance/Calibration

- 2.13 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

- 2.14 All TSP monitoring was conducted as scheduled in the reporting month.
- 2.15 No Action/Limit Level exceedance for both 1-hour TSP and 24-hour TSP was recorded in the reporting month.
- 2.16 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.
- 2.17 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) L ₉₀ (30 min.)dB(A) L _{eq} (30 min.)dB(A)	(a) 0700-1900 hrs. on weekdays (b) 1900-2300 hrs. on weekdays (c) 0700-2300 hrs. on holidays (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 as scheduled for the daytime period (0700-1900 hours) in this reporting month. 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 (i.e. Measured L_{eq} – Baseline L_{eq} = Measured CNL), in order to facilitate the interpretation of the noise exceedance.
- 3.12 Noise monitoring results and graphical presentations are shown in **Appendix G**.
- 3.13 No Action/Limit Level exceedance for noise monitoring 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 provided in **Appendix I**.
- 4.2 Site audits were conducted on 1st, 8th, 14th, 22nd and 29th November 2006. A joint site audit was conducted on 1st November 2006 with representatives from 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**. Total of one new CNP was issued to the Project by EPD 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/C	22/07/05	N/A	<p><u>Construction and operation of</u></p> <p>(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;</p> <p>(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;</p> <p>(c) The permanent slope works above the northern portal of the Eagle's Nest Tunnel;</p> <p>(d) The architectural works (including fitting out and furnishings) of the portal buildings of the Sha Tin Heights Tunnel.</p>	Valid
Registration of Chemical Waste Producer				
WPN 5213-761-L2595-01	26/01/04	N/A	Regulation for disposal of spent oil and waste batteries arising from construction activities in all project areas.	Valid
Water Discharge Licence				
EP482/261/0327/I	03/05/04	31/05/09	Discharge of industrial trade effluent and effluent arising from construction activities at the construction site at Ventilation Adit on Tai Po Road (behind Shell Filling Station) opposite Pinehill Development Highways.	Valid
EP482/261/0326/I	01/04/04	30/04/09	Discharge of industrial trade effluent and effluent arising 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-RN0143-06	3/4/06	2/10/06	<p><i>Location:</i> ENT South Portal Site at Butterfly Valley</p> <p><i>Time period:</i> any day between 2300 and 0700 on next day.</p>	Expired & replaced by CNP No. GW-RN0488-06
GW-RN0150-06	4/04/06	3/10/06	<p><i>Location:</i> ENT Tunnel North Portal Site near Garden Villa</p> <p><i>Time period:</i> Any day not being a general holiday including Sundays between 1900 and 2300.</p>	Expired & replaced by CNP No. GW-RN0487-06
GW-RN0151-06	3/4/06	2/10/06	<p><i>Location:</i> ENT North Portal Site near Garden Villa</p> <p><i>Time period:</i> Any day between 2300 and 0700 on next day.</p>	Expired & replaced by CNP No. GW-RN0486-06

Permit No.	Valid Period		Details	Status
	From	To		
GW-RN0226-06	11/5/06	10/11/06	<i>Location:</i> South Portal <i>Time period:</i> Normal weekdays between 1900 and 2300 and general holidays included Sunday between 0900 and 2300.	Expired
GW-RN0281-06	8/6/06	7/12/06	<i>Location:</i> Tunnel North Portal near Tai Po Road and Keng Hau Road <i>Time period:</i> Any day between 2300 and 0700 on next day.	Valid
GW-RN0282-06	8/6/06	7/12/06	<i>Location:</i> Tunnel South Portal near Garden Villa <i>Time period:</i> Any day between 2300 and 0700 on next day.	Valid
GW-RN0283-06	8/6/06	7/12/06	<i>Location:</i> Tunnel South Portal near Garden Villa <i>Time period:</i> General holiday including Sundays between 0900 and 2300 and any day not being a general holiday including Sundays between 1900 and 2300.	Valid
GW-RN0284-06	8/6/06	7/12/06	<i>Location:</i> Tunnel North Portal near Tai Po Road and Keng Hau Road <i>Time period:</i> General holiday including Sundays between 0900 and 2300 and any day not being a general holiday including Sundays between 1900 and 2300.	Superseded by GW-RN0473-06
GW-RW0392-06	6/8/06	5/2/07	<i>Location:</i> Tai Po Road Shell Petrol Filling Station and opposite to Villa Carlton <i>Time Period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid
GW-RW0422-06	4/8/06	3/2/07	<i>Location:</i> Butterfly Valley <i>Time Period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid
GW-RN0473-06	25/9/06	24/3/07	<i>Location:</i> Tunnel North Portal near Tai Po Road and Keng Hau Road <i>Time period:</i> General holiday including Sundays between 0700 and 2300 and any day not being a general holiday including Sundays between 1900 and 2300.	Valid
GW-RN0486-06	25/9/06	24/3/07	<i>Location:</i> ENT-North Portal <i>Time period:</i> Any day between 2300 and 0700 on next day.	Valid
GW-RN0487-06	10/10/06	9/4/07	<i>Location:</i> ENT-North Portal <i>Time Period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid
GW-RN0488-06	10/10/06	9/4/07	<i>Location:</i> ENT-South Portal <i>Time period:</i> Any day between 2300 and 0700 on next day.	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RN0489-06	10/10/06	9/4/07	<i>Location:</i> ENT-South Portal <i>Time period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid
GW-RN0492-06	11/11/06	10/5/07	<i>Location:</i> Administration Building <i>Time period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid (New)
GW-RW0536-06	20/9/06	19/3/07	<i>Location:</i> Butterfly Valley <i>Time Period:</i> General holidays including Sundays between 0700-2300 and any day not being a general holiday between 1900-2300.	Valid

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

4.7 Spot checks on truck overloading were also conducted during the site inspections since June 2006. No overloading incident was observed during the site inspections in the reporting month.

Summary of Exceedances

1-hr and 24-hr TSP Monitoring

4.8 No Action/Limit Level exceedance for both 1-hour TSP and 24-hour TSP was recorded in the reporting month.

Construction noise

4.9 No Action/Limit Level exceedance for noise monitoring was recorded in the reporting month.

Table 4.2 Observations and Recommendations of Site Audit for civil works

Parameters	Date	Observations / Recommendations	Remedial Actions
<i>Water Quality</i>	1-Nov-06	<i>Reminder</i> - Accumulation of silts and debris were observed at the drainage channel near RE Wall near SHT Tunnel. The Contractor was reminded to clear the silts and debris to prevent stagnant water.	Rectification / improvement was observed during the site inspection on 8 November 2006.
	22-Nov-06	<i>Observation</i> - Yellow surface runoff directly flowed to the step channel was observed. A temporary ditch should be constructed for the runoff flowed into the desilting facility before discharge.	Rectification / improvement was observed during the site inspection on 29 November 2006.
	22-Nov-06	<i>Reminder</i> - The contractor was reminded to turn on the power of de-silting facility at portion D4 when rainy in order to avoid accumulating yellow water at u-channel and de-silt before discharge.	Rectification / improvement was observed during the site inspection on 29 November 2006.
	29-Nov-06	• <i>Reminder</i> - Stagnant water was observed at 2/F Shatin Heights North Portal Building and G/F ENT South Portal Building. The Contractor was reminded to clean it up to avoid mosquito breeding.	The situation will be inspected in next follow-up audit session.
<i>Air Quality</i>	1-Nov-06	<i>Reminder</i> - The haul road and exposed slope at Butterfly Valley was observed to be dry. The Contractor was reminded to spray water on the haul road and exposed slope frequently for dust suppression.	Rectification / improvement was observed during the site inspection on 8 November 2006.
	8-Nov-06	<i>Reminder</i> - Dust generation by wind erosion was observed at unpaved road near administration building. The contractor should provide watering for the unpaved road more frequent in this dry season.	Rectification / improvement was observed during the site inspection on 14 November 2006.

Implementation Status of Event Action Plans

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

Summary of Complaints and Prosecutions

4.11 No environmental related complaint or prosecution was received in the reporting month.

4.12 There were 22 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 months include:

- Potential dust emission from cut slope works and haul road construction at Butterfly Valley, soil nailing and vehicle movement on haul roads; and
- Noise generation from concreting and installation works at South Portal Building and Ventilation Building.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule for next month is shown in **Appendix C**.

Construction Program for the Next Month

5.3 The major construction activities for civil works in the coming months include: The tentative construction program for civil works is provided in **Appendix L**. The major construction activities for civil works in the coming months include:

ENT Tunnel

- VE Panel, Road Work for NB tunnel, E&M cabling, dampers, Tunnel Ventilation System and fire services.

Butterfly Valley

- Cut slope and haul road, rock dowel, road and drainage works, DN200 & DN200 twin water-main, utility (Draw pit/ Ducting), retaining wall (BV-R2) and shotcreting.

South Portal Building

- Louvre installation, screeding, rendering, cladding, plumbing & drainage, fire services, mechanical ventilation air condition, Tunnel Ventilation System and T&C for HV, LV cable & switchboard.

North Portal Building

- Louvre installation/stone cladding, rendering, plumbing & drainage, fire services, mechanical ventilation air condition, Tunnel Ventilation System, T&C for HV, LV cable & switchboard.

Toll Plaza's Structures and Administration Building

- Footbridge and Toll Collector construction, utility (draw pit/ ducting), drainage works, louvre, curtain wall & glazing installation, rendering, mechanical ventilation air condition, plumbing & drainage, cabling, cabling work, lift installation, T&C for HV, LV cable & switchboard and fire services.

Ventilation Adit Tunnel and Building

- Concreting of wing wall, louvre door wall & cladding installation, rendering, earth works, TTA for water mains crossing Tai Po Road, plumbing & drainage, fire service, mechanical ventilation air condition, T&C for HV, LV cable & switchboard and Tunnel Ventilation System.

Other Works Areas

- E&M installation works within SHT/T3 works area.

5.4 The major site activities for TCSS works in the coming months include:

- On software development aspect
 - Finishing all module tests;
 - Finishing the per-FAT tasks; and
 - Continue Central System FAT scheduled on 11th December 2006.
- FAT for PA and ET System
- Assist interface contractors for resubmission fo DID
- Prepare equipment mounting detail drawings
- Resubmission of material installation at ENT and NWT
- Cable containment for ENT-Ventilation Building
- Equipment installation and cabling in SHT open area, SHT Tunnel, SHT-SPB, SHT-NPB, ENT tunnel, ENT-SPB, ENT-NPB
- Video Wall and Console installation for ADB

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.
- 6.2 No Action/Limit Level exceedance for 1-hour TSP and 24-hours TSP was recorded in the reporting month.
- 6.3 No Action/Limit Level exceedance for noise monitoring was recorded in the reporting month.
- 6.4 No environmental complaint or prosecution was received in the reporting month.

Recommendations

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

Water Impact

- To review and implement temporary drainage system especially for the areas at Butterfly Valley and Toll Plaza.
- To closely monitor the capacity of existing de-silting 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 avoid accumulation of stagnant water on site.

Dust Impact

- To ensure that adequate water spray or other dust suppression measures are applied for slope cutting and the haul roads and stockpile on site.
- To cover idle soil slope surface and stockpile of dusty materials to prevent wind erosion.
- To ensure that all vehicles carrying dusty materials are properly covered before leaving the site.

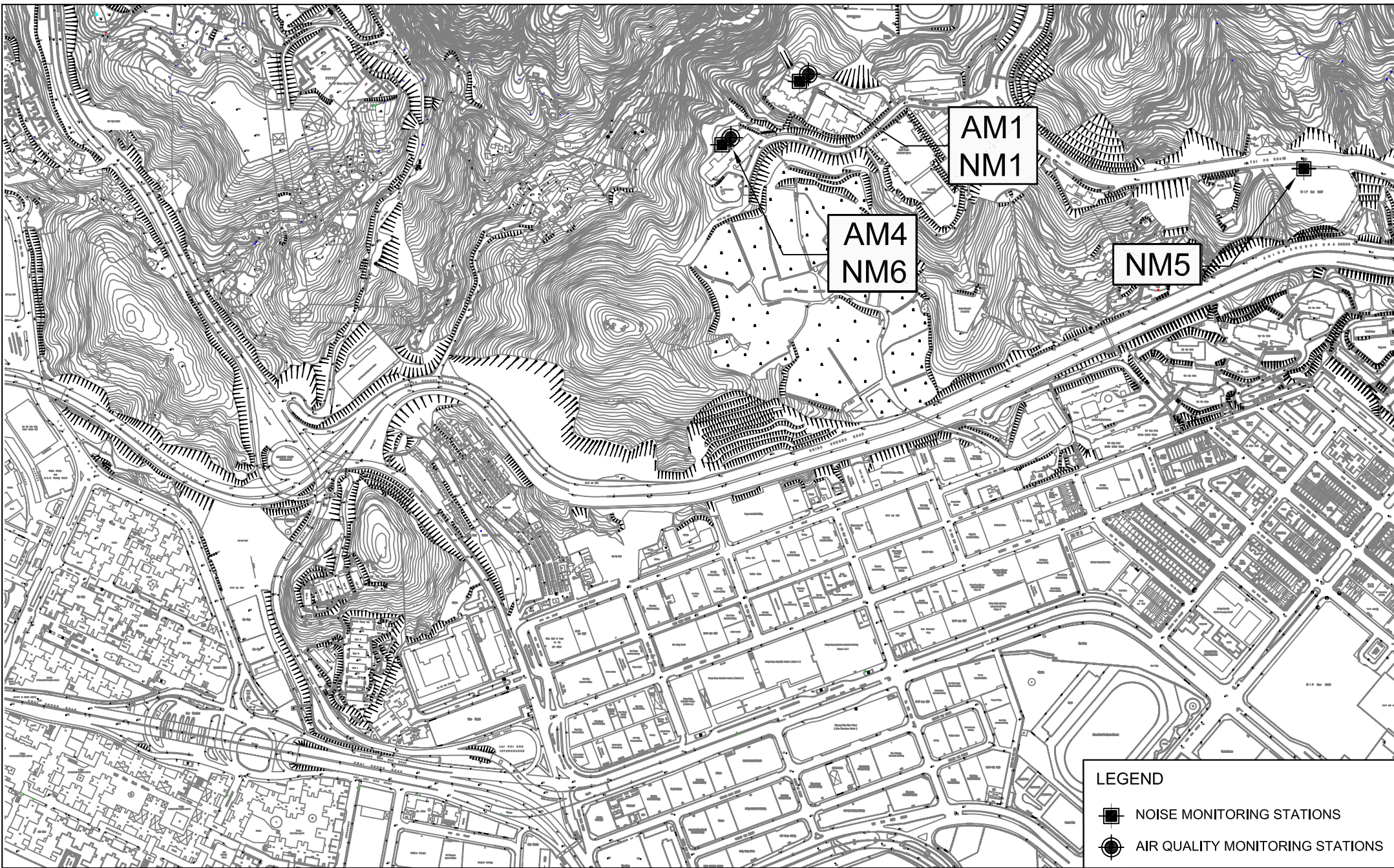
Noise Impact

- To provide temporary noise barriers for noisy activities (such as breaking works).
- To reduce the number of noisy equipment in concurrent operation.

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.

FIGURES



LEGEND	
	NOISE MONITORING STATIONS
	AIR QUALITY MONITORING STATIONS

Title

ROUTE 8 (PREVIOUSLY KNOWN AS ROUTE 9) BETWEEN CHEUNG SHA WAN AND SHA TIN
 CONTRACT NO. HY/2003/02 - EAGLE'S NEST TUNNEL AND ASSOCIATED WORKS

LOCATIONS OF MONITORING STATIONS

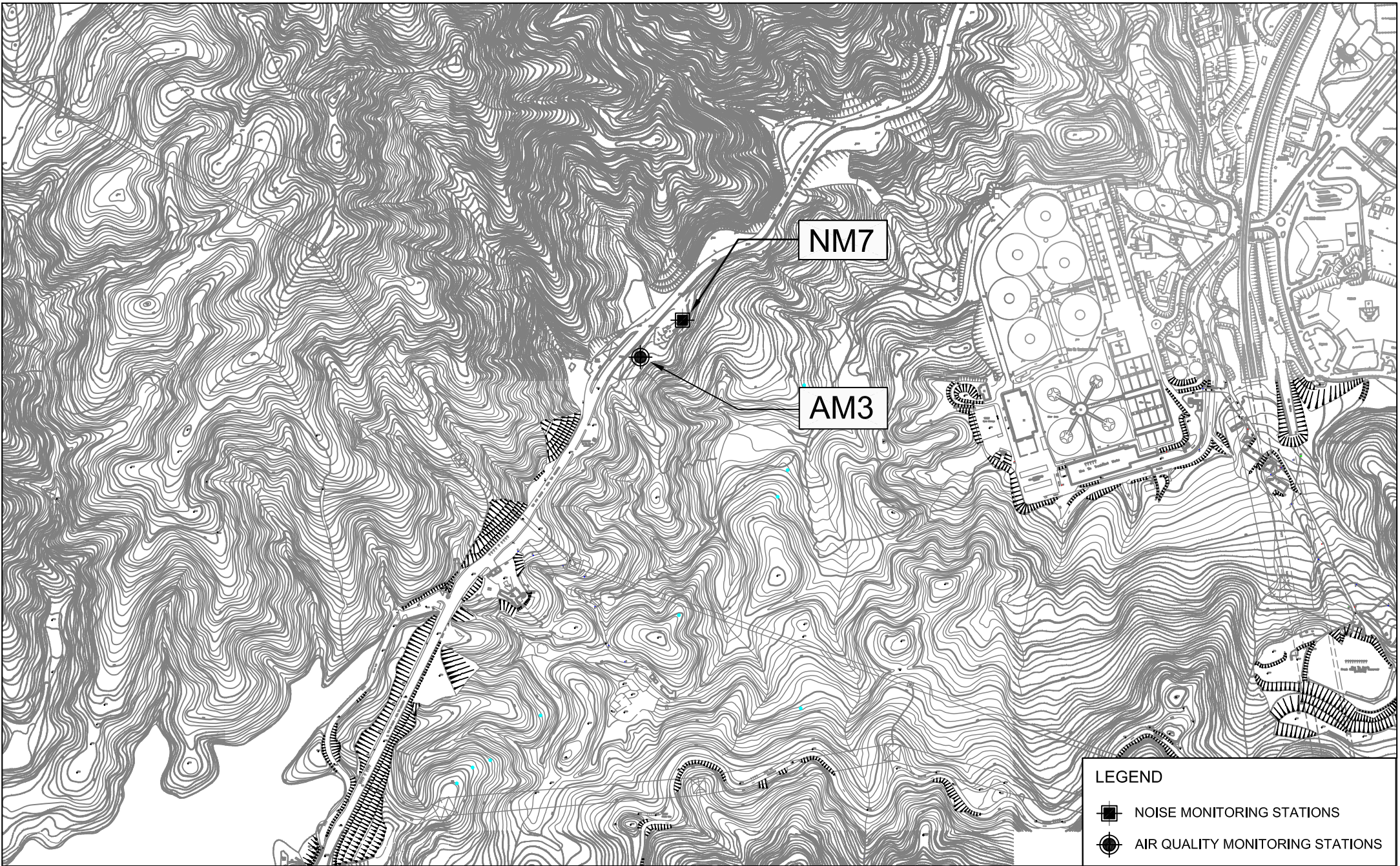
Scale
1 : 6500 (A4)

Date
2006

Project No.
MA3024

Figure No.
1a





LEGEND	
	NOISE MONITORING STATIONS
	AIR QUALITY MONITORING STATIONS

Title

ROUTE 8 (PREVIOUSLY KNOWN AS ROUTE 9) BETWEEN CHEUNG SHA WAN AND SHA TIN
 CONTRACT NO. HY/2003/02 - EAGLE'S NEST TUNNEL AND ASSOCIATED WORKS

LOCATIONS OF MONITORING STATIONS

Scale
 1 : 6500 (A4)

Date
 2006

Project No.
 MA3024

Figure No.
 1b



**APPENDIX A
ACTION AND LIMIT LEVELS**

Appendix A - Action and Limit Levels (ENT)

1-Hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	296	500
AM3	350	
AM4	294	

24-Hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	168	260
AM3	200	
AM4	170	

Construction Noise

Period	Action Level	Limit Level, dB(A)			
	for all stations	NM1	NM5	NM6	NM7
0700-1900 hrs on normal weekdays	When one documented complaint is received	70/65*	75	75	75
0700-2300 hrs on holidays & 1900-2300 hrs on all other days		-	70	65	60
2300-0700 hrs of next day		-	55	50	45

- (*) Since NM1 is an educational institution, the noise Limit Level (0700-1900 hrs on normal days) is taken as 70 dB(A). The Limit Level will be reduced to 65 dB(A) during school examination periods.

**APPENDIX B
COPIES OF CALIBRATION
CERTIFICATES**

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA3024/18/0019

Station Po Leung Kuk Choi Kai Yau School
 Date: 19-Sep-06
 Equipment No.: A-01-18

Operator: WK
 Next Due Date: 18-Nov-06
 Serial No. 0723

Ambient Condition			
Temperature, Ta (K)	303.4	Pressure, Pa (mmHg)	760.6

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	13-Mar-06	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	12-Mar-07	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis
1	12.4	3.49	60.03	8.6	2.91
2	11.5	3.36	57.79	7.3	2.68
3	7.6	2.73	46.85	5.1	2.24
4	5.3	2.28	39.01	3.0	1.72
5	3.2	1.77	30.16	1.8	1.33

By Linear Regression of Y on X

Slope, mw = 0.0519 Intercept, bw : -0.2512

Correlation coefficient* = 0.9961

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 3.99

Remarks: _____

Conducted by: Wk Tang Signature: Wk Tang
 Checked by: He Signature: He

Date: 19/9/06
 Date: 19 Sep 2006

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/A14/0019

Station Garden Vilia
Date: 4-Oct-06
Equipment No.: A-01-14

Operator: WK
Next Due Date: 3-Dec-06
Serial No. 1354

Ambient Condition			
Temperature, Ta (K)	300.8	Pressure, Pa (mmHg)	759.3

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	13-Mar-06	mc x Qstd + bc = $[\Delta H \times (\text{Pa}/760) \times (298/\text{Ta})]^{1/2}$			
Next Calibration Date:	12-Mar-07	Qstd = $\{[\Delta H \times (\text{Pa}/760) \times (298/\text{Ta})]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (\text{Pa}/760) \times (298/\text{Ta})]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (\text{Pa}/760) \times (298/\text{Ta})]^{1/2}$ Y-axis
1	11.6	3.39	58.24	7.7	2.76
2	9.5	3.07	52.64	6.4	2.52
3	7.2	2.67	45.74	5.2	2.27
4	4.5	2.11	36.02	3.3	1.81
5	2.9	1.69	28.78	2.3	1.51

By Linear Regression of Y on X

Slope , mw = 0.0426 Intercept, bw : 0.2846
Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

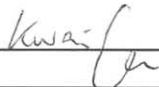
From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$mw \times Qstd + bw = [\Delta W \times (\text{Pa}/760) \times (298/\text{Ta})]^{1/2}$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / \text{Pa}) \times (\text{Ta} / 298) =$ 4.53

Remarks: _____

Conducted by: Wk Tang Signature:  Date: 4/10/06
Checked by: HZ Signature: _____ Date: 4 Oct 06

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA3024/17/0021

Station Government Quarter
 Date: 19-Sep-06
 Equipment No.: A-01-17

Operator: WK
 Next Due Date: 18-Nov-06
 Serial No. 3460

Ambient Condition			
Temperature, Ta (K)	303.4	Pressure, Pa (mmHg)	760.6

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	13-Mar-06	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	12-Mar-07	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis
1	13.1	3.59	61.72	7.8	2.77
2	11.0	3.29	56.50	6.6	2.55
3	8.4	2.87	49.29	5.4	2.30
4	5.6	2.35	40.12	3.2	1.77
5	3.3	1.80	30.64	1.9	1.37

By Linear Regression of Y on X

Slope, mw = 0.0458 Intercept, bw : -0.0308
 Correlation coefficient* = 0.9970

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 3.82

Remarks: _____

Conducted by: Wk-Tang Signature: [Signature]
 Checked by: [Signature] Signature: [Signature]

Date: 19/9/06
 Date: 19 Sep 2006

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA3024/17/0022

Station Government Quarter
Date: 18-Nov-06
Equipment No.: A-01-17

Operator: WK
Next Due Date: 17-Jan-07
Serial No. 3460

Ambient Condition			
Temperature, Ta (K)	299	Pressure, Pa (mmHg)	765

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	13-Mar-06	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	12-Mar-07	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.0	3.61	62.12	7.9	2.82
2	10.9	3.31	56.82	6.7	2.59
3	8.3	2.89	49.50	5.4	2.33
4	5.5	2.35	40.16	3.3	1.82
5	3.2	1.79	30.47	1.9	1.38

By Linear Regression of Y on X

Slope, $m_w = \underline{0.0458}$

Intercept, $b_w = \underline{-0.0029}$

Correlation coefficient* = 0.9981

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take $Qstd = 43$ CFM

From the Regression Equation, the "Y" value according to

$$m_w \times Qstd + b_w = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (m_w \times Qstd + b_w)^2 \times (760 / Pa) \times (Ta / 298) = \underline{3.85}$

Remarks: _____

Conducted by: Wk Tang Signature: G Kwai
Checked by: [Signature] Signature: [Signature]

Date: 18/11/06
Date: 18 Nov 2006

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/06/60502
Date of Issue:	2006-05-02
Date Received:	2006-05-01
Date Tested:	2006-05-01
Date Completed:	2006-05-02

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description : RS232 Integral Vane Digital Anemometer
Manufacturer : AZ Instrument
Model No. : 451104
Serial No. : 9020746
Equipment No. : A-03-01

Test conditions:

Room Temperature : 21 degree Celsius
Relative Humidity : 66%
Pressure : 1018.4 kPa

Methodology:

The anemometer has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

	Reference Set Point	Instrument Readings
Measuring Air Velocity, m/s	2.00	2.00
Temperature, °C	21.0	21.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 13, 2006 Rootsmeter S/N 9833620 Ta (K) - 294
 Operator Tisch Orifice I.D. - 0993 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3890	3.2	2.00
2	NA	NA	1.00	0.9850	6.3	4.00
3	NA	NA	1.00	0.8810	7.8	5.00
4	NA	NA	1.00	0.8410	8.6	5.50
5	NA	NA	1.00	0.6950	12.5	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9917	0.7139	1.4113	0.9957	0.7168	0.8874
0.9876	1.0026	1.9959	0.9916	1.0067	1.2549
0.9854	1.1185	2.2315	0.9894	1.1231	1.4030
0.9844	1.1706	2.3405	0.9884	1.1753	1.4715
0.9792	1.4090	2.8227	0.9832	1.4147	1.7747
Qstd slope (m) = 2.03154			Qa slope (m) = 1.27212		
intercept (b) = -0.03970			intercept (b) = -0.02496		
coefficient (r) = 0.99999			coefficient (r) = 0.99999		
y axis = SQRT[H2O(Pa/760)(298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

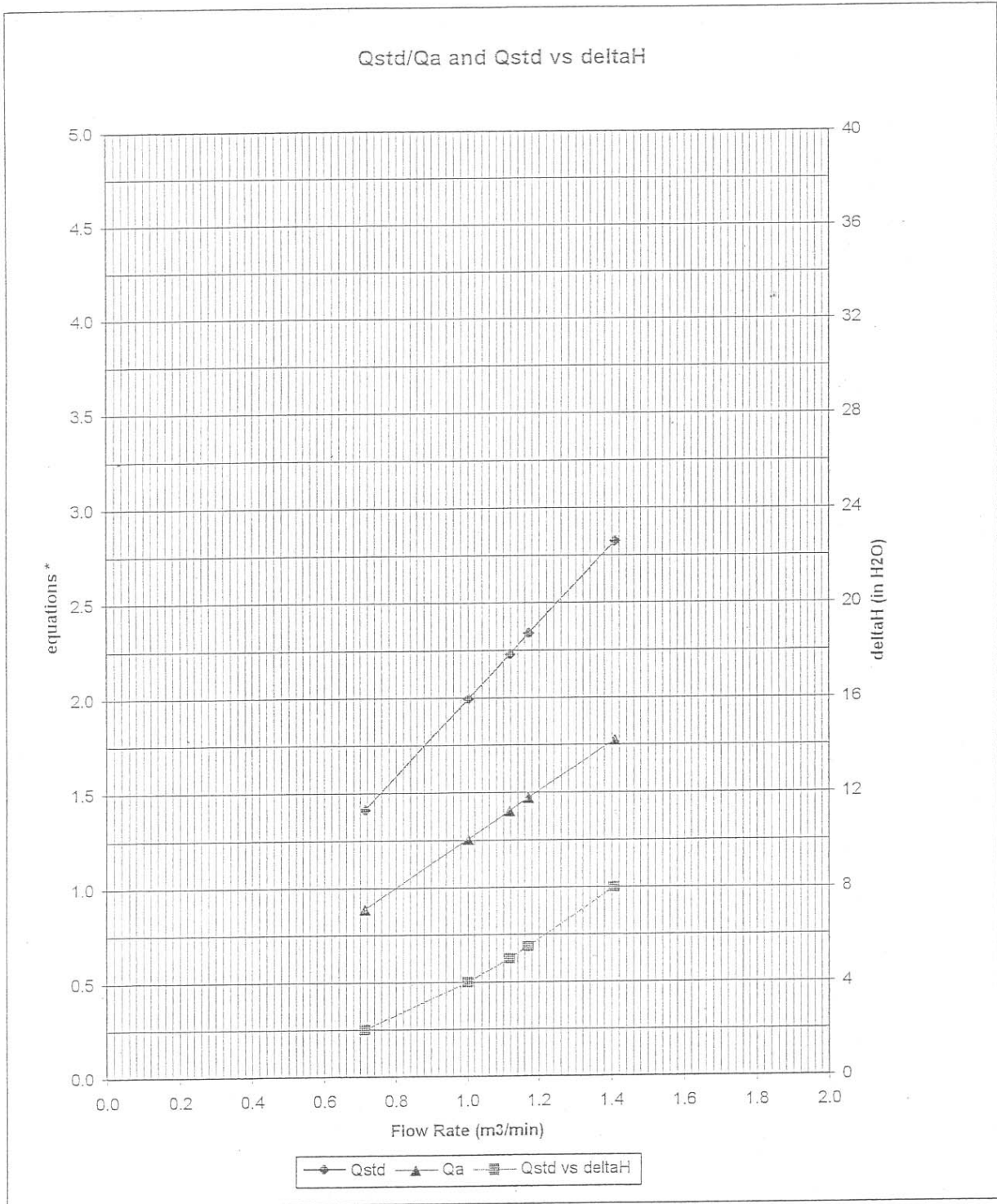
For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760)(298/Ta))] - b}
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



TISCH ENVIROMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVES, OH 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:
$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:
$$\sqrt{(\Delta H (T_a / P_a))}$$

#0993

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/51216/1
Date of Issue:	2005-12-16
Date Received:	2005-12-15
Date Tested:	2005-12-15
Date Completed:	2005-12-16
Next Due Date:	2006-12-15

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2337665
Microphone No.	: 2289749
Equipment No.	: N-01-01

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 63%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/51116/1
Date of Issue:	2005-11-16
Date Received:	2005-11-15
Date Tested:	2005-11-15
Date Completed:	2005-11-16
Next Due Date:	2006-11-15

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2337666
Microphone No.	: 2289750
Equipment No.	: N-01-02

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

Patrick

PATRICK TSE
Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/61116/1
Date of Issue:	2006-11-16
Date Received:	2006-11-15
Date Tested:	2006-11-15
Date Completed:	2006-11-16
Next Due Date:	2007-11-15

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2337666
Microphone No.	: 2289750
Equipment No.	: N-01-02

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 59%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1601-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/60904-1
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359311
Microphone No.	: 2346382
Equipment No.	: N-01-03

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

Patrick

PATRICK TSE
Laborary Manager

This test document cannot be reproduced in any way, except in full context, without the prior approval in writing of the laboratory.

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/60904-2
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359303
Equipment No.	: N-01-04

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 63%
Pressure	: 1006.5hPa

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Operation Manager

This test document cannot be reproduced in any way, except in full context, without the prior approval in writing of the laboratory.

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/61014/1
Date of Issue:	2006-10-14
Date Received:	2006-10-13
Date Tested:	2006-10-14
Date Completed:	2006-10-14
Next Due Date:	2007-10-13

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2394976
Microphone No.	: 2407349
Equipment No.	: N-01-05

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Operation Manager

This test document cannot be reproduced in any way, except in full context, without the prior approval in writing of the laboratory.

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/05/1115-1
Date of Issue:	2005-11-15
Date Received:	2005-11-14
Date Tested:	2005-11-15
Date Completed:	2005-11-15
Next Due Date:	2006-11-14

ATTN: Mr. Henry Leung

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Project No.	: C13
Equipment No.	: N-02-01

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 65%
Pressure	: 1015.2 hPa

Methodology:

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/61116/2
Date of Issue:	2006-11-16
Date Received:	2006-11-15
Date Tested:	2006-11-15
Date Completed:	2006-11-16
Next Due Date:	2007-11-15

ATTN: Mr. Henry Leung

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Project No.	: C13
Equipment No.	: N-02-01

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 59%
Pressure	: 1015.2 hPa

Methodology:

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

Patrick .

PATRICK TSE

Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/06/60304
Date of Issue:	2006-03-04
Date Received:	2006-03-03
Date Tested:	2006-03-03
Date Completed:	2006-03-04
Next Due Date:	2007-03-04

ATTN: Mr. Henry Leung

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2343007
Project No.	: C13
Equipment No.	: N-02-02

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 71%
Pressure	: 1020.1hPa

Methodology:

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.2 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Operation Manager

WELLAB LTD.

606 - 608 Cornell Centre,
50 Wing Tai Road,
Chai Wan, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: Cinotech Consultants Limited
1601-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/60904-3
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03

ATTN: Mr. Henry Leung

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 63%
Pressure	: 1020.1hPa

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Operation Manager

**APPENDIX C
ENVIRONMENTAL MONITORING AND
AUDIT SCHEDULE**

**Environmental Monitoring for Eagle's Nest Tunnel
Tentative Air Quality and Noise Monitoring Schedule for November 2006**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29-Oct	30-Oct	31-Oct	1-Nov	2-Nov	3-Nov	4-Nov
		1 hr TSP Noise	1 hr TSP		1 hr TSP 24 hr TSP	
5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov
	1 hr TSP Noise	1 hr TSP		24 hr TSP	1 hr TSP	
12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov
		1 hr TSP	24 hr TSP	1 hr TSP Noise	1 hr TSP	
19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov
		1 hr TSP 24 hr TSP	1 hr TSP Noise	1 hr TSP		
26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	1-Dec	2-Dec
	24 hr TSP	1 hr TSP Noise	1 hr TSP		1 hr TSP	24 hrs TSP

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

AM1 Yew Chung International School /Po Leung Kuk Choi Kai Yau School
AM3 Garden Villa
AM4 Government Quarters

NM1 Yew Chung International School /Po Leung Kuk Choi Kai Yau School
NM5 Villa Carlton
NM6 Government Quarters
NM7 Garden Villa

**Environmental Monitoring for Eagle's Nest Tunnel
Tentative Air Quality and Noise Monitoring Schedule for December 2006**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	1-Dec	2-Dec
	24 hr TSP	1 hr TSP Noise	1 hr TSP		1 hr TSP	24 hr TSP
3-Dec	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	9-Dec
	1 hr TSP Noise	1 hr TSP		1 hr TSP	24 hr TSP	
10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec
	1 hr TSP Noise			1 hr TSP 24 hr TSP	1 hr TSP	
17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec
		1 hr TSP Noise	24 hr TSP	1 hr TSP	1 hr TSP	
24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec	30-Dec
			1 hr TSP Noise 24 hr TSP	1 hr TSP	1 hr TSP	

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

AM1 Yew Chung International School /Po Leung Kuk Choi Kai Yau School
 AM3 Garden Villa
 AM4 Government Quarters

NM1 Yew Chung International School /Po Leung Kuk Choi Kai Yau School
 NM5 Villa Carlton
 NM6 Government Quarters
 NM7 Garden Villa

APPENDIX D
WIND DATA

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Nov-2006	00:00	0.9	W
1-Nov-2006	01:00	0.8	W
1-Nov-2006	02:00	0.7	WNW
1-Nov-2006	03:00	0.7	W
1-Nov-2006	04:00	0.6	W
1-Nov-2006	05:00	0.6	WSW
1-Nov-2006	06:00	0.8	WSW
1-Nov-2006	07:00	0.7	SW
1-Nov-2006	08:00	0.6	SW
1-Nov-2006	09:00	0.6	SW
1-Nov-2006	10:00	0.5	WSW
1-Nov-2006	11:00	0.9	W
1-Nov-2006	12:00	0.9	WNW
1-Nov-2006	13:00	0.7	W
1-Nov-2006	14:00	1.1	W
1-Nov-2006	15:00	1.2	W
1-Nov-2006	16:00	1.2	W
1-Nov-2006	17:00	0.8	WNW
1-Nov-2006	18:00	0.6	WNW
1-Nov-2006	19:00	0.6	WNW
1-Nov-2006	20:00	0.6	SW
1-Nov-2006	21:00	0.6	SSW
1-Nov-2006	22:00	1.6	SW
1-Nov-2006	23:00	1.4	SW
2-Nov-2006	00:00	1.6	SW
2-Nov-2006	01:00	1.2	SSW
2-Nov-2006	02:00	1.3	W
2-Nov-2006	03:00	1.6	SSW
2-Nov-2006	04:00	1.6	W
2-Nov-2006	05:00	1.4	WNW
2-Nov-2006	06:00	1.3	W
2-Nov-2006	07:00	1.2	W
2-Nov-2006	08:00	1.0	W
2-Nov-2006	09:00	1.2	SSW
2-Nov-2006	10:00	1.2	SW
2-Nov-2006	11:00	1.0	WSW
2-Nov-2006	12:00	1.3	W
2-Nov-2006	13:00	1.8	W
2-Nov-2006	14:00	1.4	WNW
2-Nov-2006	15:00	1.5	W
2-Nov-2006	16:00	1.5	SSW
2-Nov-2006	17:00	1.2	WSW
2-Nov-2006	18:00	1.1	S
2-Nov-2006	19:00	1.2	E
2-Nov-2006	20:00	1.4	SSW
2-Nov-2006	21:00	1.4	SSW
2-Nov-2006	22:00	1.7	SSW
2-Nov-2006	23:00	1.4	WNW
3-Nov-2006	00:00	1.2	W
3-Nov-2006	01:00	1.2	W
3-Nov-2006	02:00	1.2	WNW
3-Nov-2006	03:00	1.2	WNW
3-Nov-2006	04:00	1.1	WNW
3-Nov-2006	05:00	0.9	WNW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Nov-2006	06:00	0.9	W
3-Nov-2006	07:00	1.0	WSW
3-Nov-2006	08:00	1.0	SW
3-Nov-2006	09:00	1.3	WNW
3-Nov-2006	10:00	1.4	WNW
3-Nov-2006	11:00	1.5	WNW
3-Nov-2006	12:00	1.6	WNW
3-Nov-2006	13:00	1.6	WNW
3-Nov-2006	14:00	1.4	WNW
3-Nov-2006	15:00	1.3	WNW
3-Nov-2006	16:00	1.2	WNW
3-Nov-2006	17:00	1.1	WNW
3-Nov-2006	18:00	0.7	WSW
3-Nov-2006	19:00	0.4	W
3-Nov-2006	20:00	0.5	WSW
3-Nov-2006	21:00	0.4	WSW
3-Nov-2006	22:00	0.5	W
3-Nov-2006	23:00	0.4	WNW
4-Nov-2006	00:00	0.7	WNW
4-Nov-2006	01:00	0.9	WNW
4-Nov-2006	02:00	0.8	WNW
4-Nov-2006	03:00	0.9	WNW
4-Nov-2006	04:00	0.8	WNW
4-Nov-2006	05:00	0.8	WNW
4-Nov-2006	06:00	0.9	WSW
4-Nov-2006	07:00	1.0	SSW
4-Nov-2006	08:00	0.9	SW
4-Nov-2006	09:00	1.3	WNW
4-Nov-2006	10:00	1.7	WNW
4-Nov-2006	11:00	1.6	WNW
4-Nov-2006	12:00	1.7	WNW
4-Nov-2006	13:00	1.8	WNW
4-Nov-2006	14:00	1.8	WNW
4-Nov-2006	15:00	1.4	WNW
4-Nov-2006	16:00	1.2	WNW
4-Nov-2006	17:00	0.9	W
4-Nov-2006	18:00	0.9	WSW
4-Nov-2006	19:00	0.3	W
4-Nov-2006	20:00	0.1	W
4-Nov-2006	21:00	0.0	SSW
4-Nov-2006	22:00	0.0	SSW
4-Nov-2006	23:00	0.0	SW
5-Nov-2006	00:00	0.1	SW
5-Nov-2006	01:00	0.0	SSW
5-Nov-2006	02:00	0.1	SSW
5-Nov-2006	03:00	0.0	SSW
5-Nov-2006	04:00	0.0	WSW
5-Nov-2006	05:00	0.1	SSW
5-Nov-2006	06:00	0.1	W
5-Nov-2006	07:00	0.2	SW
5-Nov-2006	08:00	0.4	W
5-Nov-2006	09:00	0.9	WNW
5-Nov-2006	10:00	0.9	W
5-Nov-2006	11:00	0.7	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Nov-2006	12:00	0.7	WNW
5-Nov-2006	13:00	1.1	W
5-Nov-2006	14:00	0.9	WSW
5-Nov-2006	15:00	1.0	W
5-Nov-2006	16:00	0.7	WSW
5-Nov-2006	17:00	0.7	SW
5-Nov-2006	18:00	0.3	SW
5-Nov-2006	19:00	0.0	SW
5-Nov-2006	20:00	0.0	WSW
5-Nov-2006	21:00	0.0	SW
5-Nov-2006	22:00	0.0	SW
5-Nov-2006	23:00	0.0	SW
6-Nov-2006	00:00	0.0	SW
6-Nov-2006	01:00	0.0	WSW
6-Nov-2006	02:00	0.0	WSW
6-Nov-2006	03:00	0.0	WSW
6-Nov-2006	04:00	0.0	WSW
6-Nov-2006	05:00	0.1	WSW
6-Nov-2006	06:00	0.1	SW
6-Nov-2006	07:00	0.0	WSW
6-Nov-2006	08:00	0.1	SW
6-Nov-2006	09:00	0.6	WSW
6-Nov-2006	10:00	0.7	SW
6-Nov-2006	11:00	1.0	W
6-Nov-2006	12:00	1.0	WNW
6-Nov-2006	13:00	1.1	WNW
6-Nov-2006	14:00	0.9	WNW
6-Nov-2006	15:00	0.9	WNW
6-Nov-2006	16:00	0.9	WSW
6-Nov-2006	17:00	0.8	WSW
6-Nov-2006	18:00	0.5	WNW
6-Nov-2006	19:00	0.2	WNW
6-Nov-2006	20:00	0.1	WNW
6-Nov-2006	21:00	0.1	W
6-Nov-2006	22:00	0.0	WSW
6-Nov-2006	23:00	0.1	WSW
7-Nov-2006	00:00	0.2	SW
7-Nov-2006	01:00	0.1	WSW
7-Nov-2006	02:00	0.2	WNW
7-Nov-2006	03:00	0.1	WSW
7-Nov-2006	04:00	0.3	WNW
7-Nov-2006	05:00	0.3	WNW
7-Nov-2006	06:00	0.2	WNW
7-Nov-2006	07:00	0.3	WNW
7-Nov-2006	08:00	0.3	WNW
7-Nov-2006	09:00	0.5	WNW
7-Nov-2006	10:00	0.7	WNW
7-Nov-2006	11:00	0.7	WNW
7-Nov-2006	12:00	0.9	NW
7-Nov-2006	13:00	0.9	WNW
7-Nov-2006	14:00	1.0	W
7-Nov-2006	15:00	0.9	WNW
7-Nov-2006	16:00	0.9	W
7-Nov-2006	17:00	0.9	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
7-Nov-2006	18:00	0.8	W
7-Nov-2006	19:00	0.6	W
7-Nov-2006	20:00	0.4	W
7-Nov-2006	21:00	0.5	W
7-Nov-2006	22:00	0.5	SSW
7-Nov-2006	23:00	0.7	W
8-Nov-2006	00:00	0.7	W
8-Nov-2006	01:00	0.7	SSW
8-Nov-2006	02:00	0.7	W
8-Nov-2006	03:00	0.9	W
8-Nov-2006	04:00	0.8	W
8-Nov-2006	05:00	0.7	W
8-Nov-2006	06:00	0.7	W
8-Nov-2006	07:00	0.8	W
8-Nov-2006	08:00	0.9	W
8-Nov-2006	09:00	1.2	W
8-Nov-2006	10:00	1.3	W
8-Nov-2006	11:00	1.4	W
8-Nov-2006	12:00	1.6	WNW
8-Nov-2006	13:00	1.7	WNW
8-Nov-2006	14:00	1.1	WNW
8-Nov-2006	15:00	1.0	W
8-Nov-2006	16:00	1.2	W
8-Nov-2006	17:00	0.8	WSW
8-Nov-2006	18:00	0.5	WSW
8-Nov-2006	19:00	0.3	S
8-Nov-2006	20:00	0.3	S
8-Nov-2006	21:00	0.3	S
8-Nov-2006	22:00	0.4	S
8-Nov-2006	23:00	0.5	SW
9-Nov-2006	00:00	0.5	SW
9-Nov-2006	01:00	0.7	WSW
9-Nov-2006	02:00	0.6	SW
9-Nov-2006	03:00	0.5	W
9-Nov-2006	04:00	0.4	S
9-Nov-2006	05:00	0.5	S
9-Nov-2006	06:00	0.5	WSW
9-Nov-2006	07:00	0.5	SW
9-Nov-2006	08:00	0.5	SW
9-Nov-2006	09:00	0.8	W
9-Nov-2006	10:00	1.4	WNW
9-Nov-2006	11:00	1.3	WNW
9-Nov-2006	12:00	1.4	WNW
9-Nov-2006	13:00	1.2	WNW
9-Nov-2006	14:00	0.9	N
9-Nov-2006	15:00	0.9	N
9-Nov-2006	16:00	1.2	NNE
9-Nov-2006	17:00	0.9	N
9-Nov-2006	18:00	0.6	E
9-Nov-2006	19:00	0.4	ENE
9-Nov-2006	20:00	0.5	ENE
9-Nov-2006	21:00	0.3	N
9-Nov-2006	22:00	0.3	WNW
9-Nov-2006	23:00	0.4	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
10-Nov-2006	00:00	0.4	SW
10-Nov-2006	01:00	0.5	SW
10-Nov-2006	02:00	0.2	W
10-Nov-2006	03:00	0.2	WSW
10-Nov-2006	04:00	0.3	WSW
10-Nov-2006	05:00	0.3	WSW
10-Nov-2006	06:00	0.3	NW
10-Nov-2006	07:00	0.3	N
10-Nov-2006	08:00	0.3	WNW
10-Nov-2006	09:00	0.3	SW
10-Nov-2006	10:00	0.6	WSW
10-Nov-2006	11:00	0.8	WSW
10-Nov-2006	12:00	0.8	W
10-Nov-2006	13:00	0.9	WSW
10-Nov-2006	14:00	1.0	NW
10-Nov-2006	15:00	1.0	N
10-Nov-2006	16:00	0.9	WNW
10-Nov-2006	17:00	0.7	WNW
10-Nov-2006	18:00	0.3	W
10-Nov-2006	19:00	0.3	WSW
10-Nov-2006	20:00	0.1	SW
10-Nov-2006	21:00	0.3	N
10-Nov-2006	22:00	0.3	N
10-Nov-2006	23:00	0.2	N
11-Nov-2006	00:00	0.3	N
11-Nov-2006	01:00	0.2	NNW
11-Nov-2006	02:00	0.1	N
11-Nov-2006	03:00	0.1	NW
11-Nov-2006	04:00	0.1	N
11-Nov-2006	05:00	0.0	N
11-Nov-2006	06:00	0.0	SW
11-Nov-2006	07:00	0.1	SW
11-Nov-2006	08:00	0.0	SW
11-Nov-2006	09:00	0.2	W
11-Nov-2006	10:00	0.3	WSW
11-Nov-2006	11:00	0.5	WNW
11-Nov-2006	12:00	0.9	W
11-Nov-2006	13:00	0.7	W
11-Nov-2006	14:00	0.8	W
11-Nov-2006	15:00	0.9	WNW
11-Nov-2006	16:00	1.0	N
11-Nov-2006	17:00	0.6	N
11-Nov-2006	18:00	0.3	W
11-Nov-2006	19:00	0.1	W
11-Nov-2006	20:00	0.1	S
11-Nov-2006	21:00	0.1	SSE
11-Nov-2006	22:00	0.0	SW
11-Nov-2006	23:00	0.0	SW
12-Nov-2006	00:00	0.0	---
12-Nov-2006	01:00	0.0	---
12-Nov-2006	02:00	0.0	---
12-Nov-2006	03:00	0.0	---
12-Nov-2006	04:00	0.0	SW
12-Nov-2006	05:00	0.0	SW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Nov-2006	06:00	0.1	W
12-Nov-2006	07:00	0.1	W
12-Nov-2006	08:00	0.3	W
12-Nov-2006	09:00	0.3	W
12-Nov-2006	10:00	0.9	SW
12-Nov-2006	11:00	1.2	SW
12-Nov-2006	12:00	1.5	WSW
12-Nov-2006	13:00	1.4	SW
12-Nov-2006	14:00	1.3	W
12-Nov-2006	15:00	1.5	W
12-Nov-2006	16:00	1.6	WNW
12-Nov-2006	17:00	1.4	WNW
12-Nov-2006	18:00	1.1	W
12-Nov-2006	19:00	1.3	WNW
12-Nov-2006	20:00	1.2	W
12-Nov-2006	21:00	1.3	W
12-Nov-2006	22:00	1.4	W
12-Nov-2006	23:00	1.1	WNW
13-Nov-2006	00:00	1.2	W
13-Nov-2006	01:00	1.2	W
13-Nov-2006	02:00	1.2	W
13-Nov-2006	03:00	1.0	W
13-Nov-2006	04:00	1.2	W
13-Nov-2006	05:00	1.2	W
13-Nov-2006	06:00	1.2	W
13-Nov-2006	07:00	0.9	W
13-Nov-2006	08:00	0.7	W
13-Nov-2006	09:00	1.4	SW
13-Nov-2006	10:00	1.6	WSW
13-Nov-2006	11:00	1.6	WSW
13-Nov-2006	12:00	1.5	W
13-Nov-2006	13:00	1.8	WSW
13-Nov-2006	14:00	1.5	W
13-Nov-2006	15:00	1.3	WNW
13-Nov-2006	16:00	1.0	W
13-Nov-2006	17:00	0.7	NW
13-Nov-2006	18:00	0.5	NNE
13-Nov-2006	19:00	0.5	NNE
13-Nov-2006	20:00	0.5	NNE
13-Nov-2006	21:00	0.3	SW
13-Nov-2006	22:00	0.5	WSW
13-Nov-2006	23:00	0.4	SSW
14-Nov-2006	00:00	0.4	W
14-Nov-2006	01:00	0.4	S
14-Nov-2006	02:00	0.5	SW
14-Nov-2006	03:00	0.5	SW
14-Nov-2006	04:00	0.5	SSW
14-Nov-2006	05:00	0.3	SSE
14-Nov-2006	06:00	0.3	NNE
14-Nov-2006	07:00	0.3	NNE
14-Nov-2006	08:00	0.4	NNE
14-Nov-2006	09:00	0.8	N
14-Nov-2006	10:00	0.8	N
14-Nov-2006	11:00	0.9	WSW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
14-Nov-2006	12:00	1.0	W
14-Nov-2006	13:00	1.0	W
14-Nov-2006	14:00	1.0	W
14-Nov-2006	15:00	1.2	N
14-Nov-2006	16:00	1.4	N
14-Nov-2006	17:00	1.4	N
14-Nov-2006	18:00	0.8	E
14-Nov-2006	19:00	0.7	NE
14-Nov-2006	20:00	0.8	NE
14-Nov-2006	21:00	0.6	NE
14-Nov-2006	22:00	0.7	WSW
14-Nov-2006	23:00	0.7	WNW
15-Nov-2006	00:00	0.7	WNW
15-Nov-2006	01:00	0.9	W
15-Nov-2006	02:00	0.7	WNW
15-Nov-2006	03:00	0.7	W
15-Nov-2006	04:00	0.7	W
15-Nov-2006	05:00	0.9	W
15-Nov-2006	06:00	0.7	SW
15-Nov-2006	07:00	0.8	SW
15-Nov-2006	08:00	0.7	SSW
15-Nov-2006	09:00	0.9	SSW
15-Nov-2006	10:00	0.0	---
15-Nov-2006	11:00	0.0	---
15-Nov-2006	12:00	0.0	---
15-Nov-2006	13:00	0.0	---
15-Nov-2006	14:00	0.0	---
15-Nov-2006	15:00	0.0	---
15-Nov-2006	16:00	0.0	---
15-Nov-2006	17:00	0.0	---
15-Nov-2006	18:00	1.2	WNW
15-Nov-2006	19:00	1.1	WNW
15-Nov-2006	20:00	0.9	WSW
15-Nov-2006	21:00	0.7	WSW
15-Nov-2006	22:00	0.6	SW
15-Nov-2006	23:00	0.7	SW
16-Nov-2006	00:00	0.7	SW
16-Nov-2006	01:00	1.1	SW
16-Nov-2006	02:00	0.7	WSW
16-Nov-2006	03:00	0.8	WNW
16-Nov-2006	04:00	0.7	SW
16-Nov-2006	05:00	0.9	WSW
16-Nov-2006	06:00	0.7	WSW
16-Nov-2006	07:00	1.0	WSW
16-Nov-2006	08:00	1.0	W
16-Nov-2006	09:00	1.3	WNW
16-Nov-2006	10:00	1.3	WNW
16-Nov-2006	11:00	1.2	W
16-Nov-2006	12:00	1.5	WSW
16-Nov-2006	13:00	1.3	W
16-Nov-2006	14:00	1.0	WNW
16-Nov-2006	15:00	0.9	WNW
16-Nov-2006	16:00	0.9	WNW
16-Nov-2006	17:00	0.7	SW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
16-Nov-2006	18:00	0.5	SSW
16-Nov-2006	19:00	0.6	SSW
16-Nov-2006	20:00	0.7	SW
16-Nov-2006	21:00	0.7	W
16-Nov-2006	22:00	1.0	WNW
16-Nov-2006	23:00	0.7	SW
17-Nov-2006	00:00	0.7	SW
17-Nov-2006	01:00	0.7	SW
17-Nov-2006	02:00	0.6	WNW
17-Nov-2006	03:00	0.6	W
17-Nov-2006	04:00	0.6	WSW
17-Nov-2006	05:00	0.5	SW
17-Nov-2006	06:00	0.5	WNW
17-Nov-2006	07:00	0.3	WNW
17-Nov-2006	08:00	0.5	WNW
17-Nov-2006	09:00	1.0	WNW
17-Nov-2006	10:00	1.0	WNW
17-Nov-2006	11:00	1.1	WNW
17-Nov-2006	12:00	1.2	WNW
17-Nov-2006	13:00	1.1	WNW
17-Nov-2006	14:00	1.2	WSW
17-Nov-2006	15:00	1.4	WNW
17-Nov-2006	16:00	1.0	WNW
17-Nov-2006	17:00	0.7	W
17-Nov-2006	18:00	0.4	W
17-Nov-2006	19:00	0.2	WNW
17-Nov-2006	20:00	0.5	WSW
17-Nov-2006	21:00	0.5	SW
17-Nov-2006	22:00	1.1	W
17-Nov-2006	23:00	1.0	WSW
18-Nov-2006	00:00	1.0	WSW
18-Nov-2006	01:00	0.8	SW
18-Nov-2006	02:00	0.9	WSW
18-Nov-2006	03:00	1.0	WSW
18-Nov-2006	04:00	0.9	WSW
18-Nov-2006	05:00	0.9	WSW
18-Nov-2006	06:00	0.8	WSW
18-Nov-2006	07:00	0.6	WSW
18-Nov-2006	08:00	0.7	WSW
18-Nov-2006	09:00	1.6	WNW
18-Nov-2006	10:00	2.0	WNW
18-Nov-2006	11:00	2.2	W
18-Nov-2006	12:00	1.7	WSW
18-Nov-2006	13:00	1.6	W
18-Nov-2006	14:00	1.6	WNW
18-Nov-2006	15:00	1.7	W
18-Nov-2006	16:00	1.3	W
18-Nov-2006	17:00	0.9	W
18-Nov-2006	18:00	0.3	SSW
18-Nov-2006	19:00	0.4	S
18-Nov-2006	20:00	0.3	---
18-Nov-2006	21:00	0.2	---
18-Nov-2006	22:00	0.3	---
18-Nov-2006	23:00	0.3	---

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
19-Nov-2006	00:00	0.4	---
19-Nov-2006	01:00	0.3	SSW
19-Nov-2006	02:00	0.3	SW
19-Nov-2006	03:00	0.4	SW
19-Nov-2006	04:00	0.5	SW
19-Nov-2006	05:00	0.6	WSW
19-Nov-2006	06:00	0.8	SW
19-Nov-2006	07:00	1.0	WSW
19-Nov-2006	08:00	1.1	WNW
19-Nov-2006	09:00	1.4	WNW
19-Nov-2006	10:00	1.6	WNW
19-Nov-2006	11:00	1.4	WNW
19-Nov-2006	12:00	1.7	WNW
19-Nov-2006	13:00	1.5	W
19-Nov-2006	14:00	1.3	WNW
19-Nov-2006	15:00	1.2	WNW
19-Nov-2006	16:00	1.1	W
19-Nov-2006	17:00	0.9	W
19-Nov-2006	18:00	0.6	W
19-Nov-2006	19:00	0.4	NW
19-Nov-2006	20:00	0.0	NW
19-Nov-2006	21:00	0.0	NW
19-Nov-2006	22:00	0.0	NW
19-Nov-2006	23:00	0.0	WNW
20-Nov-2006	00:00	0.9	WNW
20-Nov-2006	01:00	0.7	SW
20-Nov-2006	02:00	0.7	SW
20-Nov-2006	03:00	0.5	WSW
20-Nov-2006	04:00	0.6	WSW
20-Nov-2006	05:00	0.5	SW
20-Nov-2006	06:00	0.4	SW
20-Nov-2006	07:00	0.5	SW
20-Nov-2006	08:00	0.8	SW
20-Nov-2006	09:00	1.0	NW
20-Nov-2006	10:00	1.9	WNW
20-Nov-2006	11:00	2.0	WNW
20-Nov-2006	12:00	1.8	WNW
20-Nov-2006	13:00	1.7	WNW
20-Nov-2006	14:00	0.0	WNW
20-Nov-2006	15:00	0.0	W
20-Nov-2006	16:00	0.7	W
20-Nov-2006	17:00	0.5	ENE
20-Nov-2006	18:00	0.2	ENE
20-Nov-2006	19:00	0.3	ENE
20-Nov-2006	20:00	0.3	ESE
20-Nov-2006	21:00	0.3	SSE
20-Nov-2006	22:00	0.3	WSW
20-Nov-2006	23:00	0.3	SW
21-Nov-2006	00:00	0.5	W
21-Nov-2006	01:00	0.5	WSW
21-Nov-2006	02:00	0.4	WSW
21-Nov-2006	03:00	0.5	WSW
21-Nov-2006	04:00	0.5	WSW
21-Nov-2006	05:00	0.5	WSW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
21-Nov-2006	06:00	0.7	WSW
21-Nov-2006	07:00	0.6	WSW
21-Nov-2006	08:00	0.8	WSW
21-Nov-2006	09:00	0.8	WSW
21-Nov-2006	10:00	1.4	WSW
21-Nov-2006	11:00	1.8	WSW
21-Nov-2006	12:00	1.6	WSW
21-Nov-2006	13:00	1.5	WSW
21-Nov-2006	14:00	1.4	SW
21-Nov-2006	15:00	1.6	WSW
21-Nov-2006	16:00	1.4	WSW
21-Nov-2006	17:00	1.2	WSW
21-Nov-2006	18:00	0.9	SW
21-Nov-2006	19:00	0.7	WSW
21-Nov-2006	20:00	0.4	WSW
21-Nov-2006	21:00	0.3	WSW
21-Nov-2006	22:00	0.1	WSW
21-Nov-2006	23:00	0.2	WSW
22-Nov-2006	00:00	0.1	WSW
22-Nov-2006	01:00	0.4	WSW
22-Nov-2006	02:00	0.2	WSW
22-Nov-2006	03:00	0.5	SW
22-Nov-2006	04:00	0.7	WSW
22-Nov-2006	05:00	0.8	WSW
22-Nov-2006	06:00	0.5	WSW
22-Nov-2006	07:00	0.7	WNW
22-Nov-2006	08:00	1.1	WSW
22-Nov-2006	09:00	1.5	W
22-Nov-2006	10:00	1.6	WSW
22-Nov-2006	11:00	1.7	WNW
22-Nov-2006	12:00	1.3	W
22-Nov-2006	13:00	1.3	WNW
22-Nov-2006	14:00	1.4	WNW
22-Nov-2006	15:00	1.2	WNW
22-Nov-2006	16:00	1.1	W
22-Nov-2006	17:00	0.9	W
22-Nov-2006	18:00	0.6	SSW
22-Nov-2006	19:00	0.3	S
22-Nov-2006	20:00	0.5	SW
22-Nov-2006	21:00	0.4	SW
22-Nov-2006	22:00	0.0	---
22-Nov-2006	23:00	0.0	---
23-Nov-2006	00:00	0.0	---
23-Nov-2006	01:00	0.0	---
23-Nov-2006	02:00	0.0	---
23-Nov-2006	03:00	0.0	---
23-Nov-2006	04:00	0.1	WSW
23-Nov-2006	05:00	0.0	---
23-Nov-2006	06:00	0.0	---
23-Nov-2006	07:00	0.0	---
23-Nov-2006	08:00	0.8	WSW
23-Nov-2006	09:00	1.2	W
23-Nov-2006	10:00	1.4	WNW
23-Nov-2006	11:00	1.7	WNW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
23-Nov-2006	12:00	1.8	WNW
23-Nov-2006	13:00	1.5	WNW
23-Nov-2006	14:00	1.4	WNW
23-Nov-2006	15:00	1.3	W
23-Nov-2006	16:00	1.4	W
23-Nov-2006	17:00	0.9	WNW
23-Nov-2006	18:00	0.5	S
23-Nov-2006	19:00	0.0	---
23-Nov-2006	20:00	0.0	---
23-Nov-2006	21:00	0.1	SSW
23-Nov-2006	22:00	0.0	---
23-Nov-2006	23:00	0.0	---
24-Nov-2006	00:00	0.3	SSW
24-Nov-2006	01:00	0.5	WSW
24-Nov-2006	02:00	0.5	W
24-Nov-2006	03:00	0.6	WSW
24-Nov-2006	04:00	0.7	WNW
24-Nov-2006	05:00	0.8	W
24-Nov-2006	06:00	0.3	WNW
24-Nov-2006	07:00	0.5	WNW
24-Nov-2006	08:00	0.7	WNW
24-Nov-2006	09:00	1.1	SSW
24-Nov-2006	10:00	1.7	WNW
24-Nov-2006	11:00	1.5	WNW
24-Nov-2006	12:00	1.5	WNW
24-Nov-2006	13:00	1.6	W
24-Nov-2006	14:00	1.4	WNW
24-Nov-2006	15:00	1.0	W
24-Nov-2006	16:00	0.9	WNW
24-Nov-2006	17:00	0.8	W
24-Nov-2006	18:00	0.5	SW
24-Nov-2006	19:00	0.1	W
24-Nov-2006	20:00	0.3	ESE
24-Nov-2006	21:00	0.1	SSE
24-Nov-2006	22:00	0.2	WSW
24-Nov-2006	23:00	0.3	SW
25-Nov-2006	00:00	0.1	W
25-Nov-2006	01:00	0.0	W
25-Nov-2006	02:00	0.0	WNW
25-Nov-2006	03:00	0.0	WNW
25-Nov-2006	04:00	0.0	W
25-Nov-2006	05:00	0.0	SSW
25-Nov-2006	06:00	0.0	SW
25-Nov-2006	07:00	0.1	SW
25-Nov-2006	08:00	0.3	SW
25-Nov-2006	09:00	0.9	---
25-Nov-2006	10:00	1.4	SW
25-Nov-2006	11:00	1.4	SW
25-Nov-2006	12:00	1.2	WNW
25-Nov-2006	13:00	0.9	W
25-Nov-2006	14:00	0.9	WNW
25-Nov-2006	15:00	1.1	WNW
25-Nov-2006	16:00	0.7	WNW
25-Nov-2006	17:00	0.4	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
25-Nov-2006	18:00	0.2	SSW
25-Nov-2006	19:00	0.1	ESE
25-Nov-2006	20:00	0.0	WNW
25-Nov-2006	21:00	0.0	W
25-Nov-2006	22:00	0.3	SSW
25-Nov-2006	23:00	0.6	ESE
26-Nov-2006	00:00	0.5	W
26-Nov-2006	01:00	0.5	WNW
26-Nov-2006	02:00	0.6	NE
26-Nov-2006	03:00	0.5	NE
26-Nov-2006	04:00	0.7	NE
26-Nov-2006	05:00	0.9	ESE
26-Nov-2006	06:00	0.9	WNW
26-Nov-2006	07:00	1.2	WNW
26-Nov-2006	08:00	1.0	ESE
26-Nov-2006	09:00	1.2	SW
26-Nov-2006	10:00	1.3	WNW
26-Nov-2006	11:00	1.4	W
26-Nov-2006	12:00	2.0	WNW
26-Nov-2006	13:00	2.2	WNW
26-Nov-2006	14:00	1.5	W
26-Nov-2006	15:00	1.1	WNW
26-Nov-2006	16:00	1.1	NE
26-Nov-2006	17:00	1.3	NE
26-Nov-2006	18:00	0.7	NE
26-Nov-2006	19:00	0.5	---
26-Nov-2006	20:00	0.7	NE
26-Nov-2006	21:00	0.9	E
26-Nov-2006	22:00	0.0	---
26-Nov-2006	23:00	0.0	---
27-Nov-2006	00:00	0.0	---
27-Nov-2006	01:00	0.0	---
27-Nov-2006	02:00	0.0	---
27-Nov-2006	03:00	0.0	---
27-Nov-2006	04:00	0.0	---
27-Nov-2006	05:00	0.0	---
27-Nov-2006	06:00	0.0	---
27-Nov-2006	07:00	0.0	---
27-Nov-2006	08:00	1.3	S
27-Nov-2006	09:00	1.3	WNW
27-Nov-2006	10:00	1.2	NW
27-Nov-2006	11:00	1.6	WNW
27-Nov-2006	12:00	1.4	W
27-Nov-2006	13:00	1.3	WNW
27-Nov-2006	14:00	1.3	WNW
27-Nov-2006	15:00	1.1	WSW
27-Nov-2006	16:00	0.9	SW
27-Nov-2006	17:00	1.0	WSW
27-Nov-2006	18:00	0.9	W
27-Nov-2006	19:00	0.7	WSW
27-Nov-2006	20:00	0.8	WNW
27-Nov-2006	21:00	0.6	W
27-Nov-2006	22:00	0.8	WNW
27-Nov-2006	23:00	0.7	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
28-Nov-2006	00:00	0.7	WNW
28-Nov-2006	01:00	0.6	W
28-Nov-2006	02:00	0.7	W
28-Nov-2006	03:00	0.5	W
28-Nov-2006	04:00	0.4	WNW
28-Nov-2006	05:00	0.5	W
28-Nov-2006	06:00	0.7	WNW
28-Nov-2006	07:00	0.5	WNW
28-Nov-2006	08:00	0.5	W
28-Nov-2006	09:00	1.0	WNW
28-Nov-2006	10:00	1.4	W
28-Nov-2006	11:00	1.5	W
28-Nov-2006	12:00	1.6	WNW
28-Nov-2006	13:00	1.3	WNW
28-Nov-2006	14:00	1.2	WNW
28-Nov-2006	15:00	1.1	WNW
28-Nov-2006	16:00	0.8	WNW
28-Nov-2006	17:00	0.8	NE
28-Nov-2006	18:00	0.4	NE
28-Nov-2006	19:00	0.3	E
28-Nov-2006	20:00	0.3	NE
28-Nov-2006	21:00	0.4	ENE
28-Nov-2006	22:00	0.0	---
28-Nov-2006	23:00	0.0	---
29-Nov-2006	00:00	0.9	SW
29-Nov-2006	01:00	1.0	WSW
29-Nov-2006	02:00	1.1	SW
29-Nov-2006	03:00	1.1	SW
29-Nov-2006	04:00	0.9	SW
29-Nov-2006	05:00	1.1	WSW
29-Nov-2006	06:00	0.9	SW
29-Nov-2006	07:00	1.2	WSW
29-Nov-2006	08:00	1.0	SW
29-Nov-2006	09:00	1.6	W
29-Nov-2006	10:00	1.6	W
29-Nov-2006	11:00	1.8	W
29-Nov-2006	12:00	1.8	W
29-Nov-2006	13:00	1.6	W
29-Nov-2006	14:00	1.5	WSW
29-Nov-2006	15:00	1.6	WSW
29-Nov-2006	16:00	1.2	SW
29-Nov-2006	17:00	1.2	SW
29-Nov-2006	18:00	0.9	SW
29-Nov-2006	19:00	0.7	SSW
29-Nov-2006	20:00	0.4	SSW
29-Nov-2006	21:00	0.5	SSW
29-Nov-2006	22:00	0.6	SW
29-Nov-2006	23:00	0.7	SW
30-Nov-2006	00:00	0.4	WSW
30-Nov-2006	01:00	0.4	W
30-Nov-2006	02:00	0.7	WSW
30-Nov-2006	03:00	0.8	SW
30-Nov-2006	04:00	0.7	WSW
30-Nov-2006	05:00	0.9	SW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
30-Nov-2006	06:00	0.7	SW
30-Nov-2006	07:00	0.9	SW
30-Nov-2006	08:00	0.7	SW
30-Nov-2006	09:00	1.1	WSW
30-Nov-2006	10:00	1.5	WSW
30-Nov-2006	11:00	1.5	WSW
30-Nov-2006	12:00	1.5	SW
30-Nov-2006	13:00	1.4	SSW
30-Nov-2006	14:00	1.2	WSW
30-Nov-2006	15:00	1.3	W
30-Nov-2006	16:00	1.0	W
30-Nov-2006	17:00	0.9	W
30-Nov-2006	18:00	0.7	W
30-Nov-2006	19:00	0.6	W
30-Nov-2006	20:00	0.7	W
30-Nov-2006	21:00	0.3	W
30-Nov-2006	22:00	0.5	W
30-Nov-2006	23:00	0.6	W

**APPENDIX E
1-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION**

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Po Leung Kuk Choi Kai Yau School

Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
1-Nov-06	Sunny	2.8760	2.8937	1.23	1.23	5020.0	5021.0	297.5	762.4	0.0177	1.23	73.8	1.0	239.8
3-Nov-06	Sunny	2.8953	2.9100	1.23	1.23	5021.0	5022.0	296.1	763.5	0.0147	1.23	74.0	1.0	198.6
6-Nov-06	Sunny	2.8941	2.9017	1.23	1.23	5046.0	5047.0	297.3	763.7	0.0076	1.23	73.9	1.0	102.9
7-Nov-06	Sunny	2.8724	2.8842	1.24	1.24	5047.0	5048.0	295.7	766.1	0.0118	1.24	74.2	1.0	159.1
10-Nov-06	Sunny	2.8784	2.8876	1.23	1.23	5072.0	5073.0	297.5	765.9	0.0092	1.23	74.0	1.0	124.4
14-Nov-06	Sunny	2.9125	2.9252	1.23	1.23	5073.0	5074.0	297.6	765.0	0.0127	1.23	73.9	1.0	171.8
16-Nov-06	Cloudy	2.8706	2.8768	1.22	1.22	5098.0	5099.0	300.5	762.0	0.0062	1.22	73.5	1.0	84.4
17-Nov-06	Cloudy	2.8766	2.8874	1.23	1.23	5099.0	5100.0	297.6	763.9	0.0108	1.23	73.9	1.0	146.2
21-Nov-06	Cloudy	2.8644	2.8767	1.21	1.21	5100.0	5101.0	297.2	760.5	0.0123	1.21	72.8	1.0	169.0
22-Nov-06	Cloudy	2.8602	2.8708	1.22	1.22	5125.0	5126.0	293.9	760.7	0.0106	1.22	73.2	1.0	144.9
23-Nov-06	Sunny	2.8604	2.8668	1.22	1.22	5126.0	5127.0	294.9	763.0	0.0064	1.22	73.2	1.0	87.4
28-Nov-06	Cloudy	2.8742	2.8834	1.22	1.22	5159.1	5160.1	292.4	762.7	0.0092	1.22	73.4	1.0	125.3
29-Nov-06	Cloudy	2.8749	2.8841	1.22	1.22	5152.0	5153.0	293.3	765.5	0.0092	1.22	73.5	1.0	125.3
													Min	84.4
													Max	239.8
													Average	144.5

Location AM 3 - Garden Villa

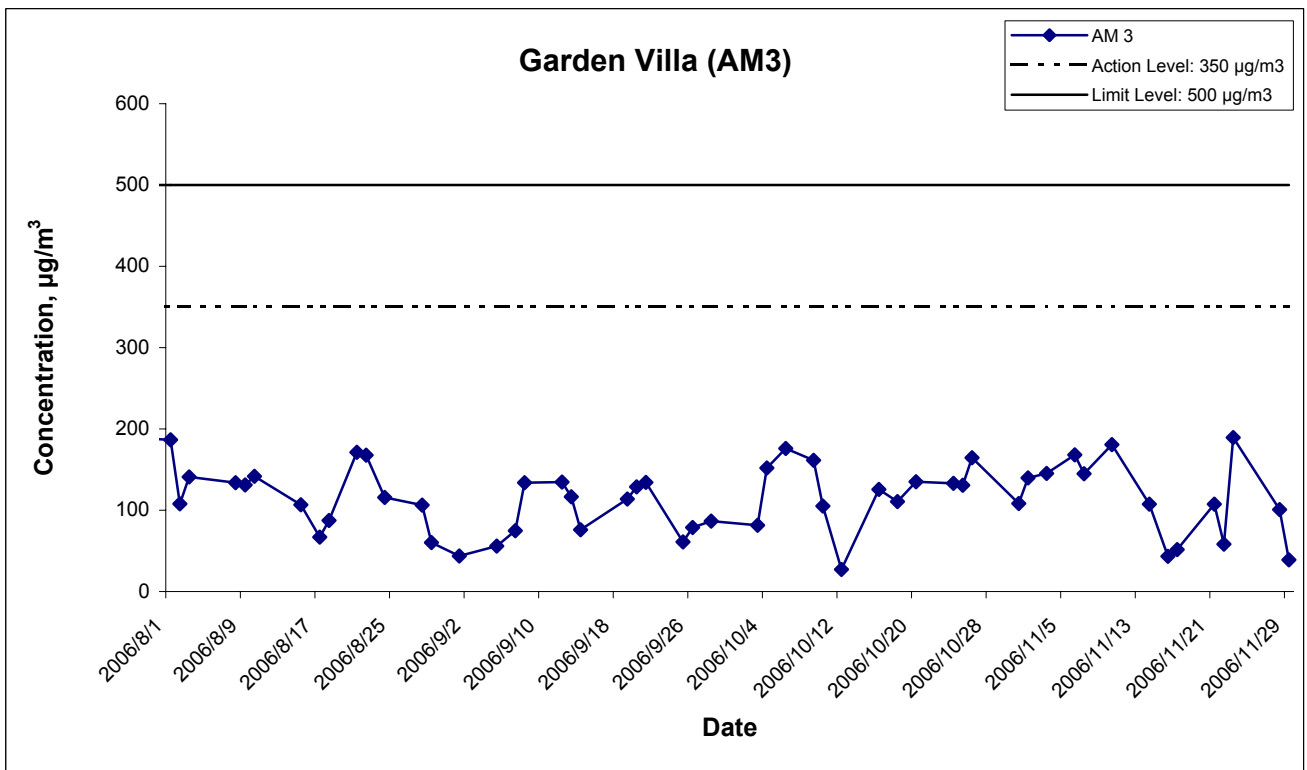
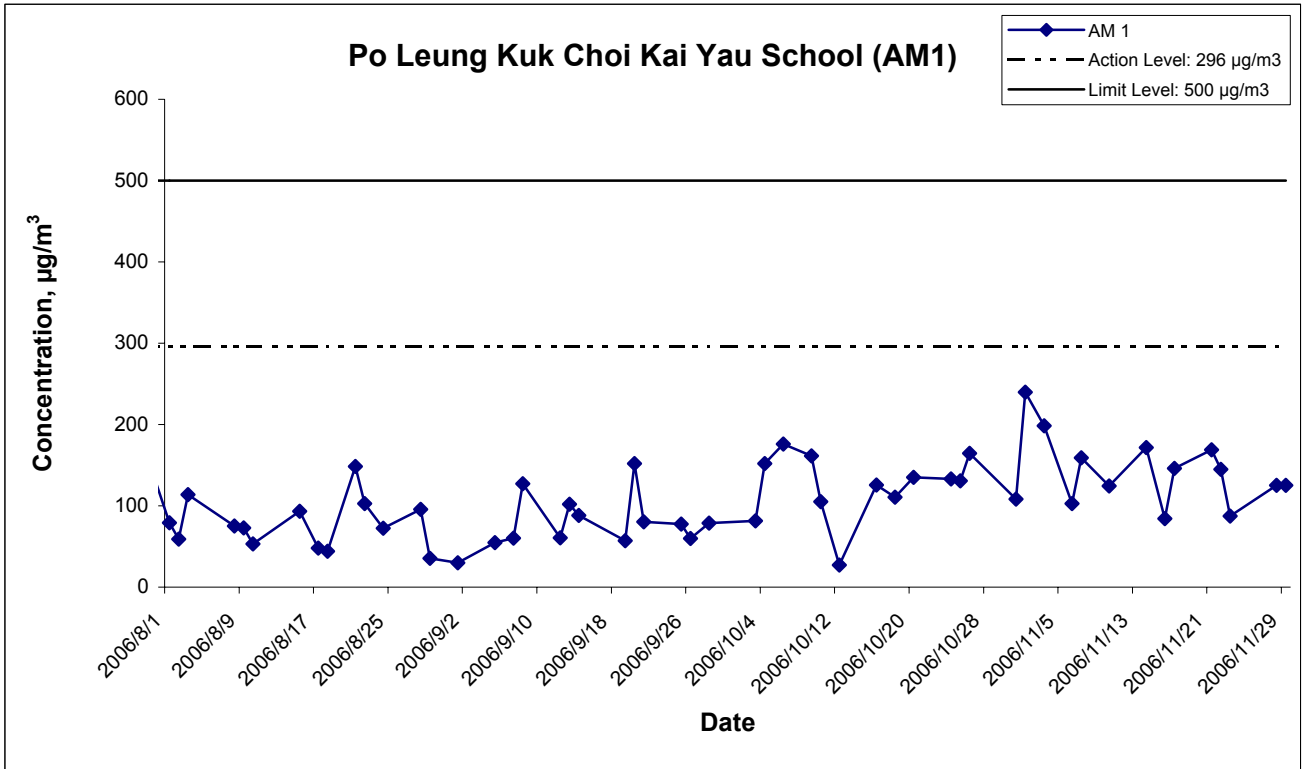
Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
1-Nov-06	Sunny	2.8465	2.8568	1.23	1.23	5363.1	5364.1	296.1	763.5	0.0103	1.23	73.7	1.0	139.8
3-Nov-06	Sunny	2.8742	2.8849	1.23	1.23	5364.1	5365.1	296.1	763.5	0.0107	1.23	73.7	1.0	145.2
6-Nov-06	Sunny	2.8732	2.8854	1.21	1.21	5389.1	5390.1	303.3	761.9	0.0122	1.21	72.6	1.0	168.1
7-Nov-06	Sunny	2.8718	2.8825	1.23	1.23	5390.1	5391.1	295.7	766.1	0.0107	1.23	73.9	1.0	144.8
10-Nov-06	Sunny	2.8738	2.8871	1.23	1.23	5415.1	5416.1	297.3	766.0	0.0133	1.23	73.6	1.0	180.6
14-Nov-06	Cloudy	2.8347	2.8426	1.23	1.23	5416.1	5417.1	297.6	765.0	0.0079	1.23	73.5	1.0	107.4
16-Nov-06	Cloudy	2.8485	2.8517	1.23	1.23	5441.1	5442.1	295.9	764.6	0.0032	1.23	73.8	1.0	43.4
17-Nov-06	Cloudy	2.8712	2.8750	1.23	1.22	5442.1	5443.1	297.4	764.0	0.0038	1.23	73.5	1.0	51.7
21-Nov-06	Cloudy	2.8568	2.8647	1.22	1.22	5443.1	5444.1	296.6	761.0	0.0079	1.22	73.5	1.0	107.5
22-Nov-06	Cloudy	2.8539	2.8582	1.23	1.23	5468.1	5469.1	294.3	760.3	0.0043	1.23	73.8	1.0	58.3
23-Nov-06	Cloudy	2.8538	2.8678	1.23	1.23	5469.1	5470.1	294.7	763.2	0.0140	1.23	73.9	1.0	189.5
28-Nov-06	Cloudy	2.8075	2.8150	1.24	1.24	5494.1	5495.1	291.5	764.3	0.0075	1.24	74.4	1.0	100.8
29-Nov-06	Cloudy	2.8583	2.8612	1.24	1.24	5495.1	5496.1	293.3	765.5	0.0029	1.24	74.2	1.0	39.1
													Min	39.1
													Max	189.5
													Average	113.6

Appendix E - 1-hour TSP Monitoring Results

Location AM 4 - Government Quarters

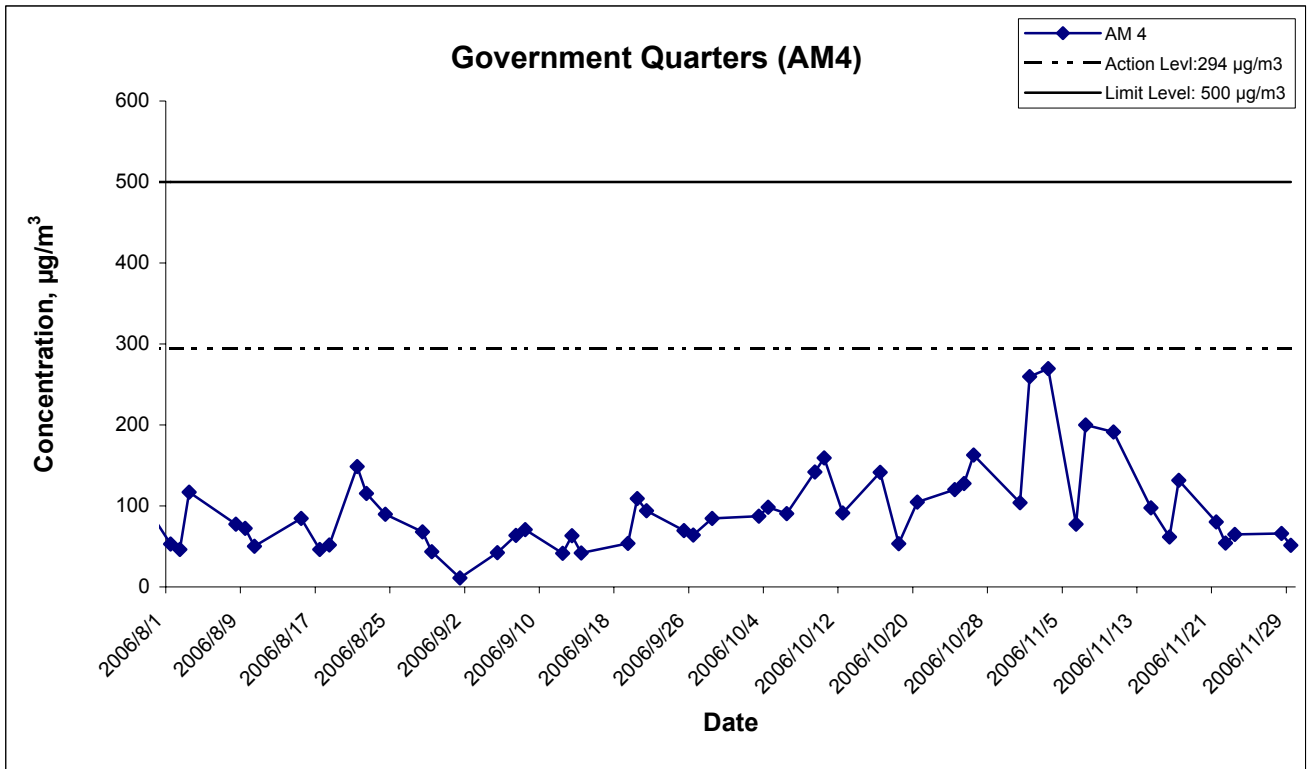
Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
1-Nov-06	Sunny	2.8673	2.8864	1.23	1.23	4975.5	4976.5	297.5	762.4	0.0191	1.23	73.6	1.0	259.5
3-Nov-06	Sunny	2.8443	2.8642	1.23	1.23	4976.5	4977.5	296.1	763.5	0.0199	1.23	73.8	1.0	269.6
6-Nov-06	Sunny	2.8738	2.8795	1.23	1.23	5001.5	5002.5	297.3	763.7	0.0057	1.23	73.7	1.0	77.4
7-Nov-06	Sunny	2.8616	2.8764	1.23	1.23	5002.5	5003.5	295.7	766.1	0.0148	1.23	74.0	1.0	200.1
10-Nov-06	Sunny	2.8882	2.9023	1.23	1.23	5027.5	5028.5	297.5	765.9	0.0141	1.23	73.8	1.0	191.2
14-Nov-06	Sunny	2.8873	2.8945	1.23	1.23	5028.5	5029.5	297.6	765.0	0.0072	1.23	73.7	1.0	97.7
16-Nov-06	Cloudy	2.8737	2.8782	1.22	1.22	5053.5	5054.5	300.5	762.0	0.0045	1.22	73.2	1.0	61.5
17-Nov-06	Cloudy	2.8640	2.8737	1.23	1.23	5054.5	5055.5	297.6	763.9	0.0097	1.23	73.6	1.0	131.7
21-Nov-06	Cloudy	2.8593	2.8652	1.22	1.22	5035.5	5056.5	297.2	760.5	0.0059	1.22	73.5	21.0	80.3
22-Nov-06	Cloudy	2.8716	2.8756	1.23	1.23	5080.5	5081.5	293.9	760.7	0.0040	1.23	73.9	1.0	54.2
23-Nov-06	Sunny	2.8565	2.8613	1.23	1.23	5081.5	5082.5	294.9	763.0	0.0048	1.23	73.9	1.0	65.0
28-Nov-06	Cloudy	2.8567	2.8616	1.24	1.24	5106.5	5107.5	292.4	762.7	0.0049	1.24	74.2	1.0	66.1
29-Nov-06	Cloudy	2.8740	2.8778	1.24	1.24	5107.5	5108.5	293.3	765.5	0.0038	1.24	74.2	1.0	51.2
													Min	51.2
													Max	269.6
													Average	123.5

1-hr TSP Levels



Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 1-hour TSP Impact Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix E	

1-hr TSP Levels



Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 1-hour TSP Impact Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix E	

**APPENDIX F
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION**

Appendix F - 24-hour TSP Monitoring Results

Location AM1 - Po Leung Kuk Choi Kai Yau School

Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
3-Nov-06	Sunny	2.8441	2.9857	1.23	1.23	5022.0	5046.0	299.9	761.8	0.1416	1.23	1764.5	24.0	80.2
9-Nov-06	Sunny	2.8792	3.0598	1.23	1.23	5048.0	5072.0	297.5	767.4	0.1806	1.23	1776.6	24.0	101.7
15-Nov-06	Cloudy	2.8723	2.9562	1.24	1.24	5074.0	5098.0	295.7	764.6	0.0839	1.24	1778.5	24.0	47.2
21-Nov-06	Cloudy	2.8596	2.9666	1.21	1.21	5101.0	5125.0	295.8	757.8	0.1070	1.21	1747.8	24.0	61.2
27-Nov-06	Cloudy	2.8574	2.9631	1.21	1.21	5127.0	5151.0	296.9	760.7	0.1057	1.21	1747.9	24.0	60.5
													Min	47.2
													Max	101.7
													Average	70.2

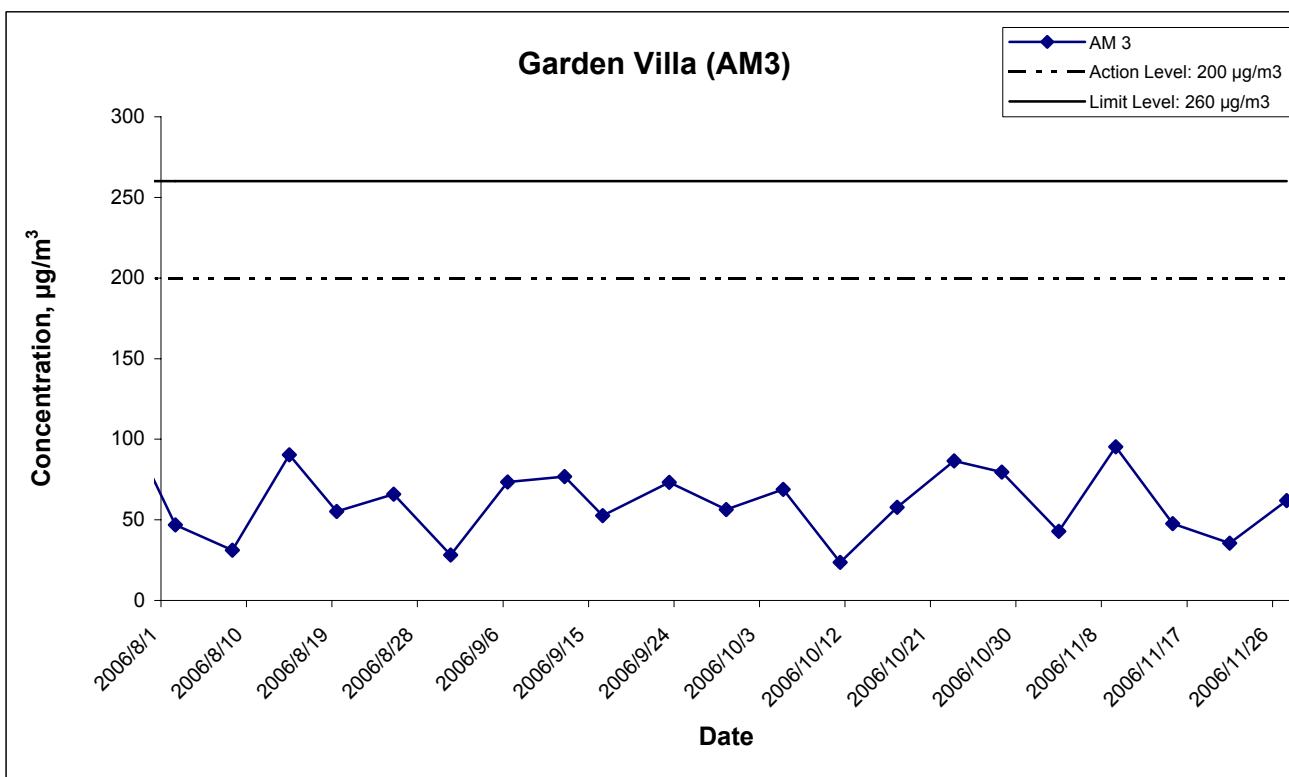
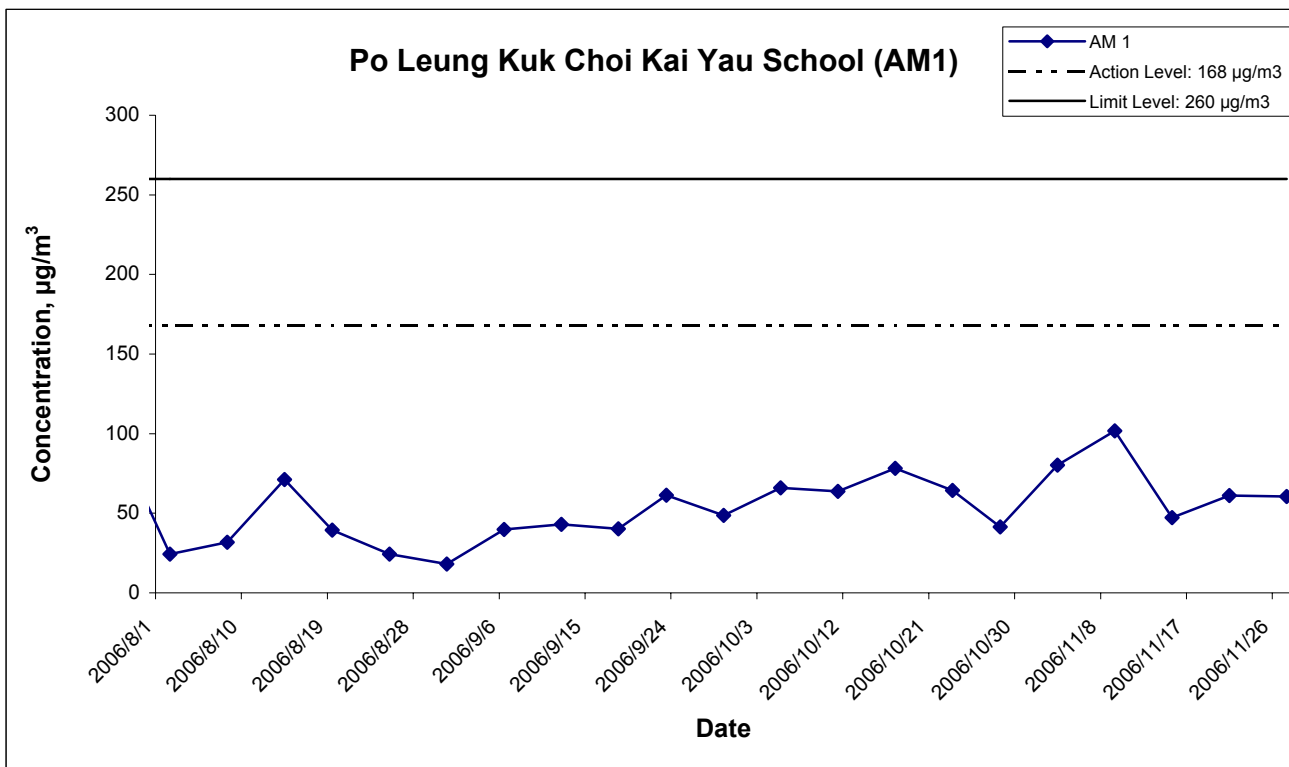
Location AM 3 - Garden Villa

Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
3-Nov-06	Sunny	2.8947	2.9704	1.23	1.23	5365.1	5389.1	296.7	763.0	0.0757	1.23	1765.4	24.0	42.9
9-Nov-06	Sunny	2.8033	2.9720	1.23	1.23	5391.1	5415.1	297.3	767.7	0.1687	1.23	1769.6	24.0	95.3
15-Nov-06	Cloudy	2.8374	2.9218	1.23	1.23	5417.1	5441.1	297.4	766.4	0.0844	1.23	1767.6	24.0	47.7
21-Nov-06	Cloudy	2.8897	2.9528	1.23	1.23	5444.1	5468.1	296.4	767.5	0.0631	1.23	1772.5	24.0	35.6
27-Nov-06	Cloudy	2.8311	2.9404	1.22	1.22	5470.1	5494.1	296.9	760.7	0.1093	1.22	1761.7	24.0	62.0
													Min	35.6
													Max	95.3
													Average	56.7

Location AM 4 - Government Quarters

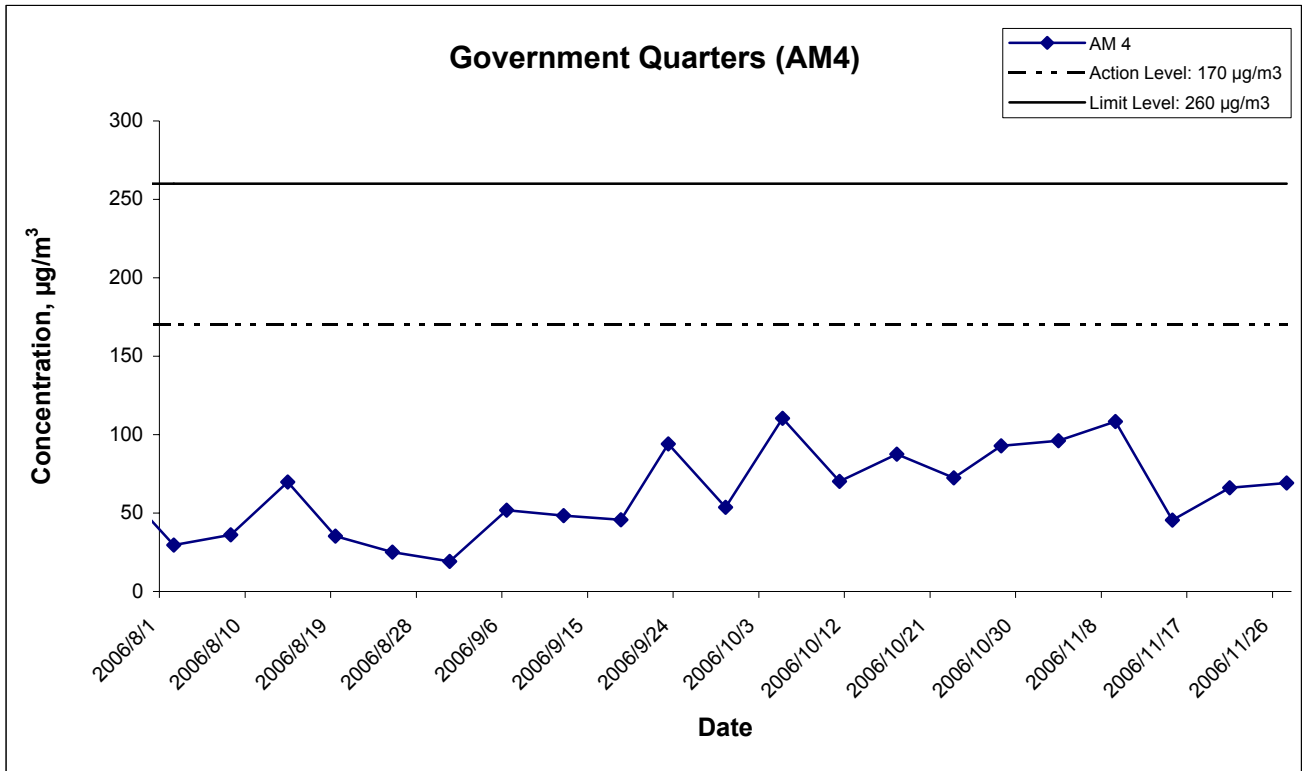
Date	Weather Condition	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)	Sampling Time(hrs.)	Conc. (µg/m ³)
		Initial	Final	Initial	Final	Initial	Final							
3-Nov-06	Sunny	2.8616	3.0307	1.22	1.22	4977.5	5001.5	299.9	761.8	0.1691	1.22	1758.5	24.0	96.2
9-Nov-06	Sunny	2.8901	3.0822	1.23	1.23	5003.5	5027.5	297.5	767.4	0.1921	1.23	1771.8	24.0	108.4
15-Nov-06	Cloudy	2.8638	2.9447	1.23	1.23	5029.5	5053.5	295.7	764.6	0.0809	1.23	1773.9	24.0	45.6
21-Nov-06	Cloudy	2.9010	3.0177	1.23	1.23	5056.5	5080.5	295.8	757.8	0.1167	1.23	1763.7	24.0	66.2
27-Nov-06	Cloudy	2.8488	2.9707	1.23	1.23	5082.5	5106.5	296.9	760.7	0.1219	1.23	1763.8	24.0	69.1
													Min	45.6
													Max	108.4
													Average	77.1

24-hr TSP Levels



Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 24-hour TSP Impact Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix F	

24-hr TSP Levels



Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 24-hour TSP Impact Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix F	

**APPENDIX G
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

Appendix G - Noise Monitoring Results

Location NM1 - Po Leung Kuk Choi Kai Yau School						
Date	Time	Weather	Unit: dB (A) (30-min)			Remarks
			Measured Noise Level			
			L _{eq}	L ₁₀	L ₉₀	
6-Nov-06	15:10	Sunny	65.8	69.5	60.5	
16-Nov-06	16:00	Cloudy	62.5	64.5	58.5	
22-Nov-06	14:00	Cloudy	64.7	68.0	61.5	
28-Nov-06	14:00	Cloudy	66.1	70.0	62.5	

Location NM5 - Villa Carlton								
Date	Time	Weather	Unit: dB (A) (30-min)			Remarks		
			Measured Noise Level				Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀		L _{eq}	L _{eq}
6-Nov-06	14:15	Sunny	77.8	79.5	74.0	77.1	The major noise source was identified as traffic noise from Tai Po Road.	
16-Nov-06	15:20	Cloudy	68.9	71.0	65.5			69.5
22-Nov-06	13:00	Cloudy	76.9	79.5	72.5			68.9, Measured ≤ Baseline
28-Nov-06	13:00	Cloudy	74.7	77.0	64.5			76.9, Measured ≤ Baseline 74.7, Measured ≤ Baseline

Location NM6 - Government Quarters						
Date	Time	Weather	Unit: dB (A) (30-min)			Remarks
			Measured Noise Level			
			L _{eq}	L ₁₀	L ₉₀	
6-Nov-06	16:00	Sunny	64.2	67.5	60.0	
16-Nov-06	16:50	Cloudy	61.2	63.5	58.0	
22-Nov-06	15:15	Cloudy	65.6	69.0	62.5	
28-Nov-06	15:00	Cloudy	67.1	70.5	60.5	

Location NM7 - Garden Vilia								
Date	Time	Weather	Unit: dB (A) (30-min)			Remarks		
			Measured Noise Level				Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀		L _{eq}	L _{eq}
6-Nov-06	17:05	Sunny	67.0	69.5	63.0	59.0		
16-Nov-06	09:00	Cloudy	69.4	72.0	64.0			66.3
22-Nov-06	16:45	Cloudy	67.2	69.0	63.0			69.0
28-Nov-06	17:00	Cloudy	68.4	71.0	64.0			66.5 67.9

Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolted value indicated limit level exceedance

Appendix G - Noise Monitoring Results

Restricted Hours - 19:00 to 23:00 on normal weekdays

Location NM5 - Villa Carlton															
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks					
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}							
6-Nov-06	19:00	Fine	72.6	76.0	70.5	72.6	75.8	72.6, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	19:05		72.9	76.0	70.5										
	19:10		72.4	76.5	70.0										
16-Nov-06	19:00	Fine	73.9	76.0	69.5	74.2				75.8	74.2, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.			
	19:05		74.2	76.0	70.0										
	19:10		74.5	76.0	70.0										
22-Nov-06	19:40	Fine	71.4	75.5	68.5	71.8							75.8	71.8, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	19:45		71.8	75.5	69.0										
	19:50		72.2	76.5	69.0										
28-Nov-06	19:35	Fine	74.7	77.0	72.0	74.6	75.8	74.6, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	19:40		74.8	77.5	72.0										
	19:45		74.2	77.0	71.0										

Location NM6 - Government Quarters															
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks					
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}							
6-Nov-06	19:35	Fine	55.1	57.5	52.5	54.8	56.1	54.8, Measured ≤ Baseline	-						
	19:40		54.8	57.0	52.0										
	19:45		54.5	57.5	51.5										
16-Nov-06	19:30	Fine	54.7	56.0	52.0	55.0				56.1	55.0, Measured ≤ Baseline	-			
	19:35		55.2	56.5	52.0										
	19:40		55.0	56.5	52.0										
22-Nov-06	19:00	Fine	54.6	57.5	51.0	54.6							56.1	54.6, Measured ≤ Baseline	-
	19:05		54.6	58.0	51.0										
	19:10		54.7	58.0	51.5										
28-Nov-06	19:00	Fine	54.7	57.5	50.5	54.6	56.1	54.6, Measured ≤ Baseline	-						
	19:05		54.8	58.0	51.0										
	19:10		54.2	57.5	50.5										

Location NM7 - Garden Villa															
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks					
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}							
6-Nov-06	19:00	Cloudy	58.1	60.5	54.5	58.3	58.3	58.3, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	19:05		58.4	61.5	55.0										
	19:10		58.5	61.5	54.5										
16-Nov-06	19:10	Cloudy	58.4	61.0	53.0	58.4				58.3	42.0	The major noise source was identified as traffic noise from Tai Po Road.			
	19:15		58.7	61.0	53.5										
	19:20		58.2	61.5	53.0										
22-Nov-06	19:00	Cloudy	58.2	59.5	53.5	58.3							58.3	58.3, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	19:05		58.6	59.5	54.0										
	19:10		58.2	59.0	54.0										
28-Nov-06	19:00	Cloudy	58.2	59.5	54.0	58.2	58.3	58.2, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	19:05		58.3	59.5	53.5										
	19:10		58.1	60.0	54.0										

Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolded value indicated limit level exceedance

Appendix G - Noise Monitoring Results

Restricted Hours - 23:00 to 07:00 on normal weekdays

Location NM5 - Villa Carlton																
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks						
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}								
6-Nov-06	23:00	Fine	69.7	75.5	68.5	69.8	74.3	74.3	69.8, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	23:05		70.1	76.0	68.5											
	23:10		69.5	76.0	68.5											
16-Nov-06	23:00	Fine	68.9	73.0	66.5	69.2			74.3		74.3	69.2, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.			
	23:05		69.3	73.0	66.5											
	23:10		69.5	73.5	66.5											
22-Nov-06	23:00	Fine	70.6	73.5	69.0	70.8						74.3		74.3	70.8, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	23:05		70.4	73.5	69.0											
	23:10		71.3	74.0	69.0											
28-Nov-06	23:00	Fine	70.5	73.5	68.0	70.2									74.3	
	23:05		69.9	73.0	68.0											
	23:10		70.3	73.5	68.5											

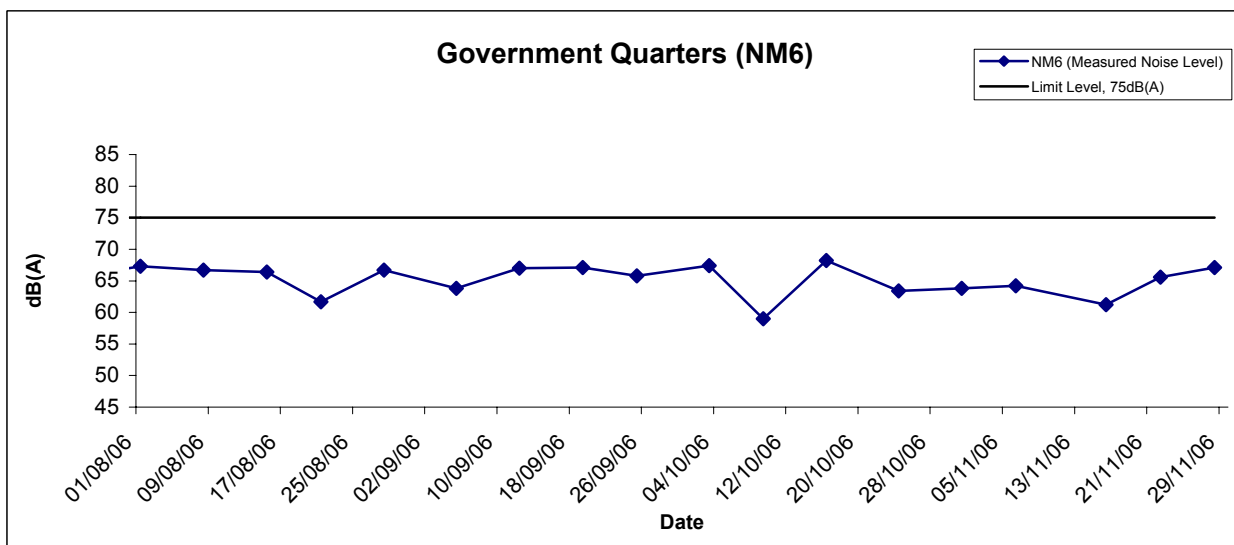
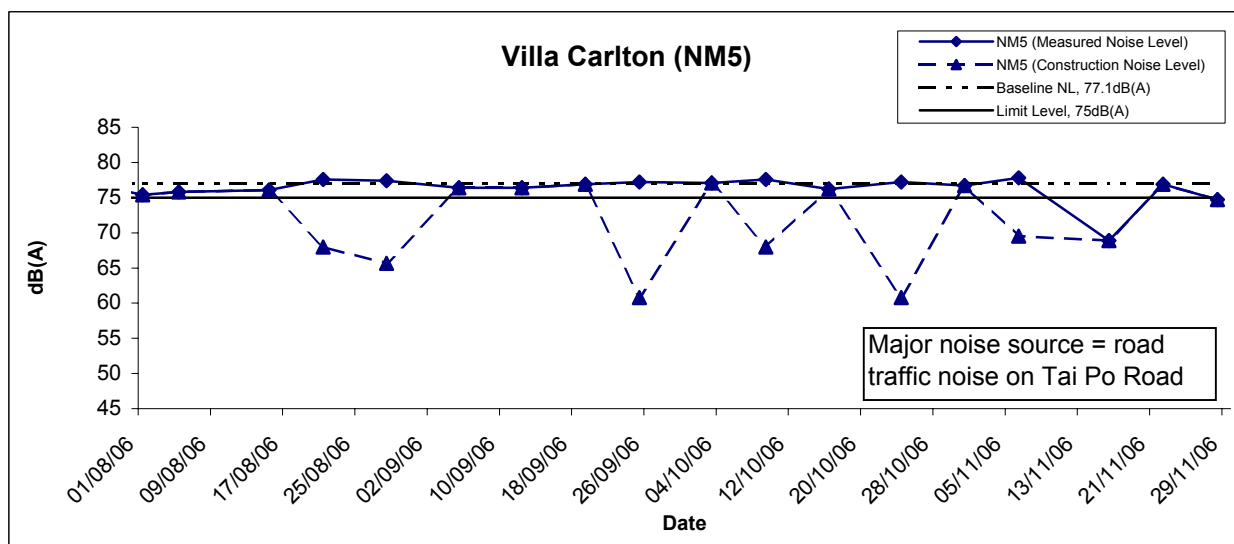
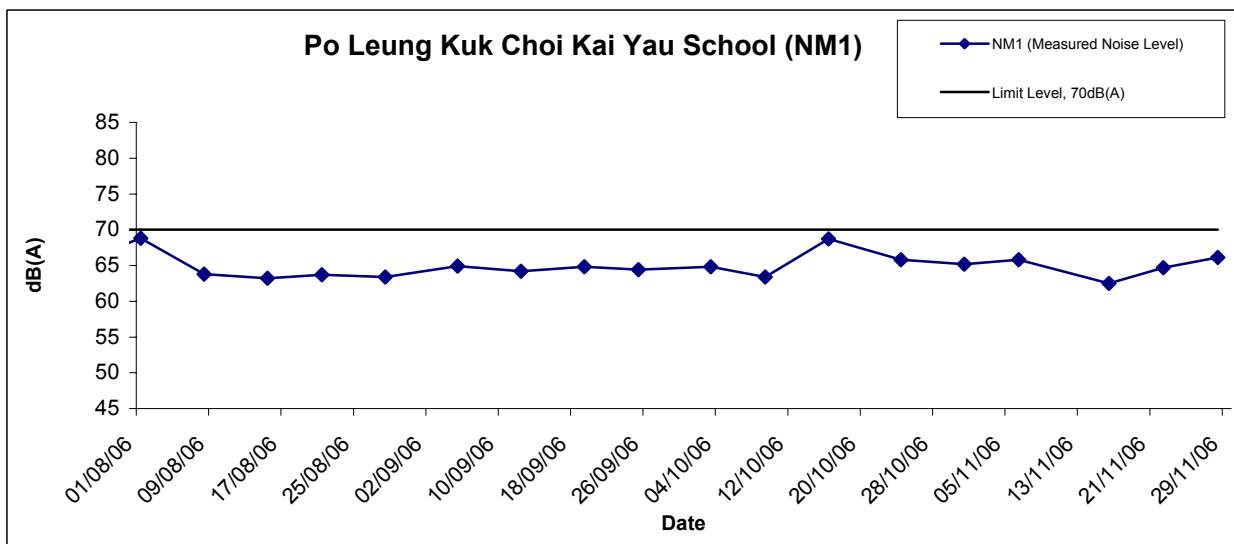
Location NM6 - Government Quarters																
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks						
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}								
6-Nov-06	23:25	Fine	50.8	53.5	46.5	51.0	52.8	52.8	51.0, Measured ≤ Baseline	The noise monitoring results are well within the range of Baseline Monitoring Level and there is no evidence showing that the dominant noise was generated from the construction activities.						
	23:30		51.3	54.0	47.0											
	23:35		50.9	54.0	47.0											
16-Nov-06	23:25	Fine	49.8	52.0	48.0	50.1			52.8		52.8	50.1, Measured ≤ Baseline	The noise monitoring results are well within the range of Baseline Monitoring Level and there is no evidence showing that the dominant noise was generated from the construction activities.			
	23:30		50.3	52.0	48.0											
	23:35		50.3	52.0	48.0											
22-Nov-06	23:25	Fine	50.3	52.0	47.0	50.5						52.8		52.8	50.5, Measured ≤ Baseline	The noise monitoring results are well within the range of Baseline Monitoring Level and there is no evidence showing that the dominant noise was generated from the construction activities.
	23:30		50.2	52.0	47.0											
	23:35		50.9	53.0	47.5											
28-Nov-06	23:25	Fine	51.4	53.0	48.5	51.5									52.8	
	23:30		51.6	53.0	48.5											
	23:35		51.6	53.5	48.5											

Location NM7 - Garden Villa																
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level	Construction Noise Level	Remarks						
			L _{eq}	L ₁₀	L ₉₀	L _{eq}		L _{eq}								
6-Nov-06	23:50	Fine	54.1	59.5	50.0	54.7	56.5	56.5	54.7, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.						
	23:55		55.1	60.0	51.0											
	00:00		54.8	59.5	51.0											
16-Nov-06	23:50	Fine	55.6	59.5	51.5	55.1			56.5		56.5	55.1, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.			
	23:55		54.6	54.0	51.0											
	00:00		54.9	54.0	51.5											
22-Nov-06	23:50	Fine	54.8	57.5	51.0	55.1						56.5		56.5	55.1, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	23:55		55.4	58.0	52.0											
	00:00		55.2	58.0	52.0											
28-Nov-06	23:50	Fine	55.8	56.5	51.0	55.4									56.5	
	23:55		55.2	57.5	51.5											
	00:00		55.1	57.5	51.5											

Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolted value indicated limit level exceedance

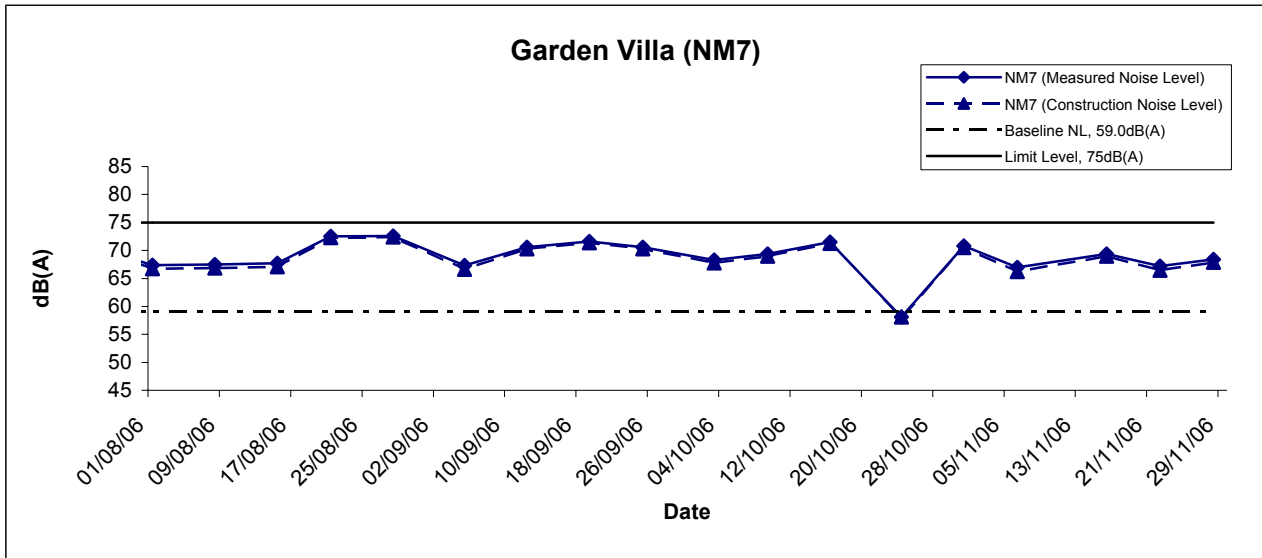
Noise Levels



* Construction Noise Level = Measured Noise Level - Baseline Level
 (If the measured noise level is lower than the baseline level, the construction noise level will be taken as the measured one)

Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix G	

Noise Levels

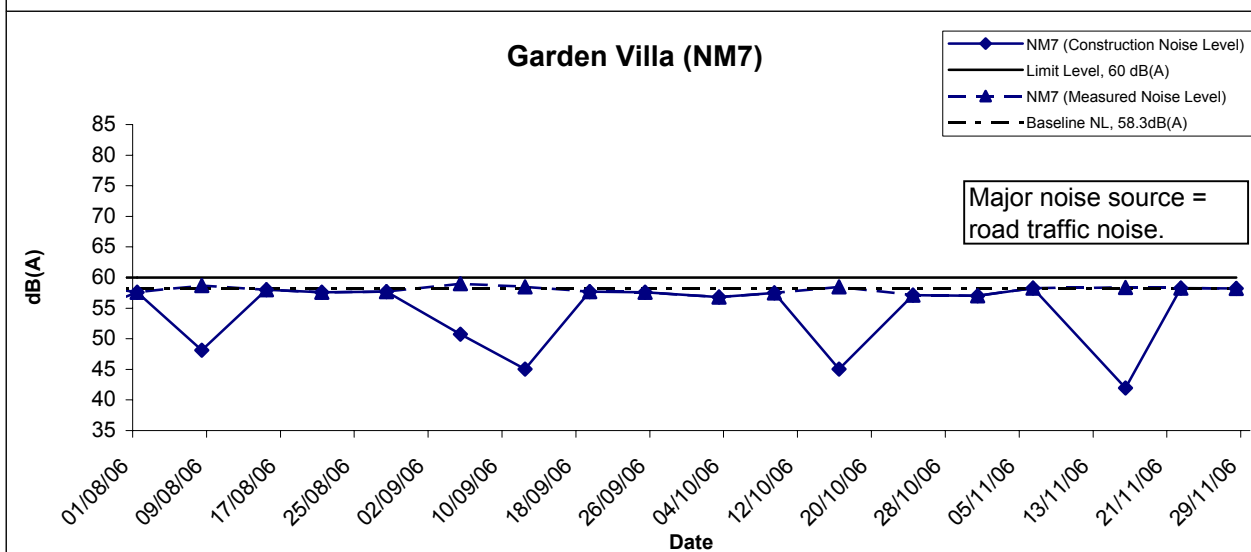
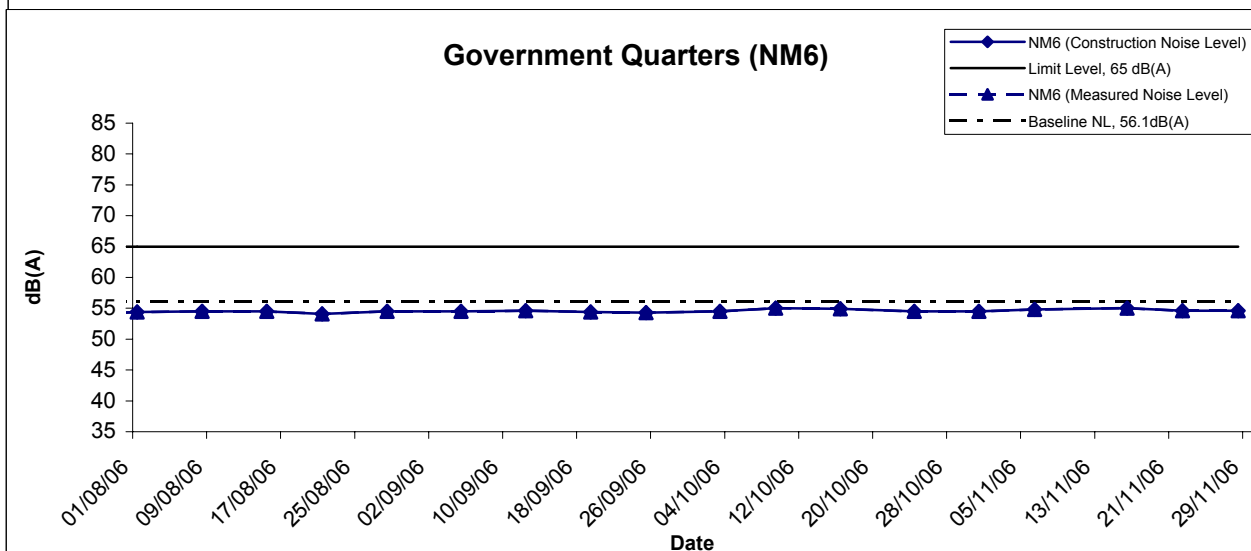
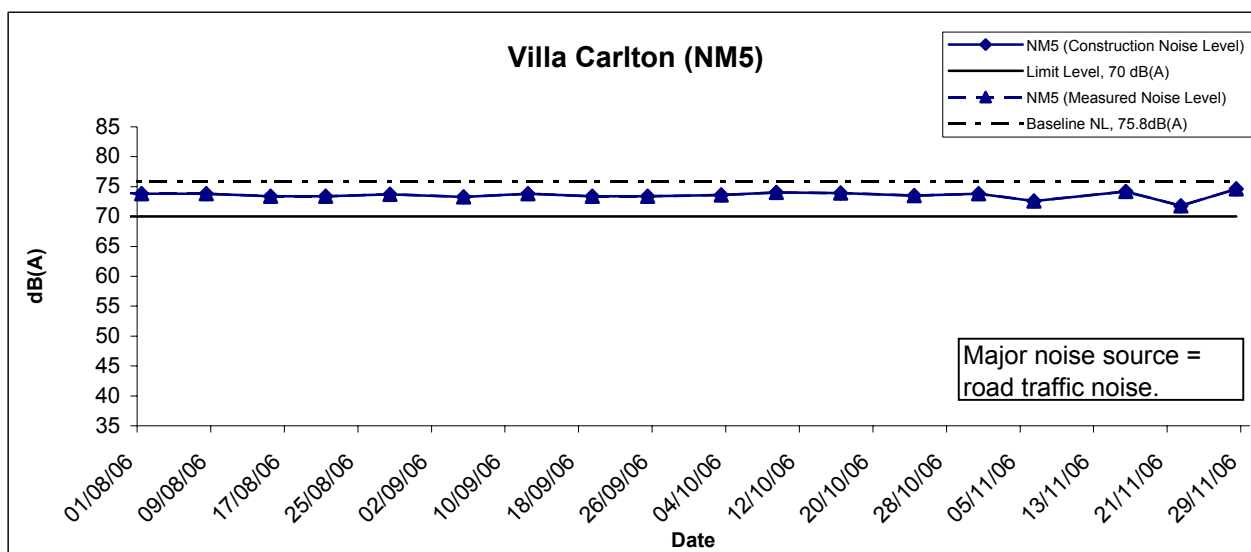


* Construction Noise Level = Measured Noise Level - Baseline Level

(If the measured noise level is lower than the baseline level, the construction noise level will be taken as the measured one)

Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix G	

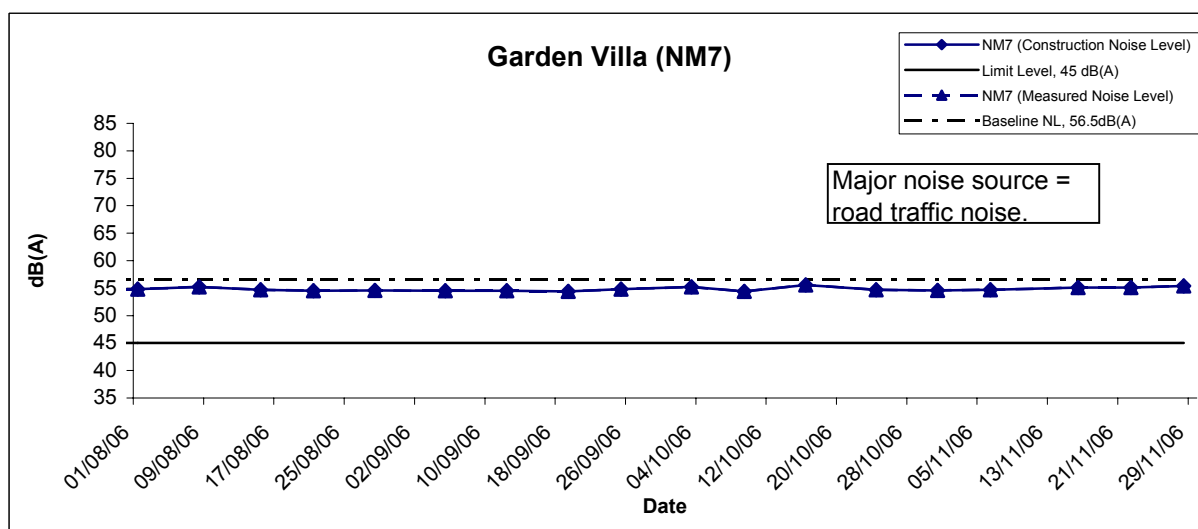
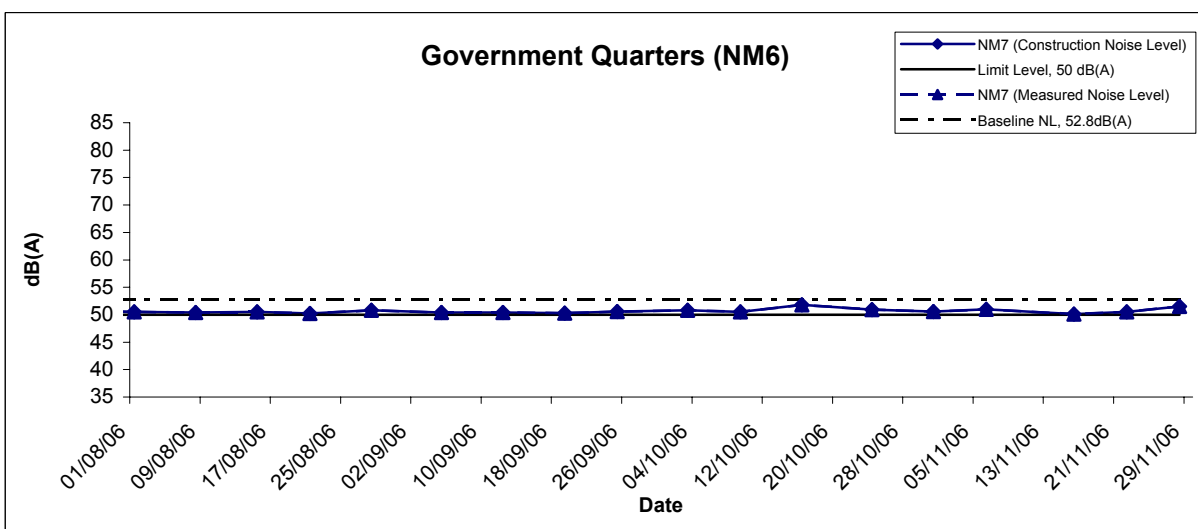
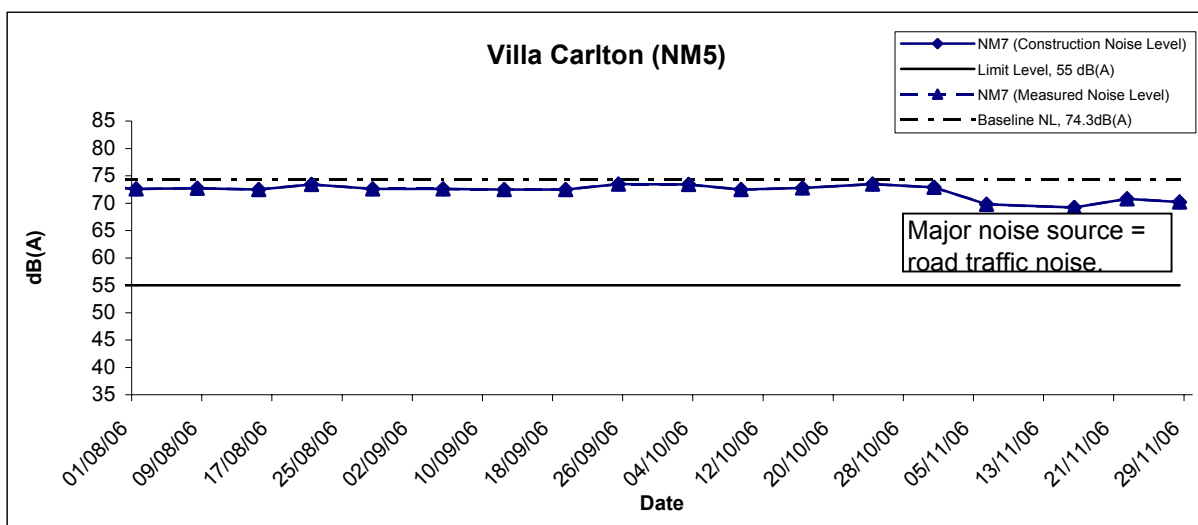
Restricted Hours (19:00 to 23:00) - Noise Levels



* Construction Noise Level = Measured Noise Level - Baseline Level
 (If the measured noise level is lower than the baseline level, the construction noise level will be taken as the measured one)

Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Nov 06	Appendix G	

Restricted Hours (23:00 to 07:00) - Noise Levels



* Construction Noise Level = Measured Noise Level - Baseline Level
 (If the measured noise level is lower than the baseline level, the construction noise level will be taken as the measured one)

Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA3024	CINOTECH
	Date Nov 06	Appendix G	

APPENDIX H
SUMMARY OF EXCEEDANCE

Summary of Exceedances Recorded in the Reporting Month

a) Exceedance Report for 1-hr TSP: (NIL)

b) Exceedance Report for 24-hr TSP: (NIL)

c) Exceedance Report for Construction Noise: (NIL)

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

**APPENDIX I
SITE AUDIT SUMMARY**

*Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin
 Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel
 Contract No. HY/2003/02 – Eagle's Nest Tunnel and Associated Works*

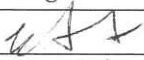

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	61101-ENT
Date	1 November 2006 (Wed)
Time	1400-1630

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
61101E-02R	<p>A. Water Quality</p> <ul style="list-style-type: none"> Accumulation of silts and debris were observed at the drainage channel near RE Wall near SHT Tunnel. The Contractor was reminded to clear the silts and debris to prevent stagnant water. 	B14
61101E-01R	<p>B. Air Quality</p> <ul style="list-style-type: none"> The haul road and exposed slope at Butterfly Valley was observed to be dry. The Contractor was reminded to spray water on the haul road and exposed slope frequently for dust suppression. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> All environmental deficiencies identified in last audit (Ref. No.: 61025-ENT) on 25 October 2006 were rectified by the Contractor. Spot checking for dump truck (loaded) was carried out during site inspection. There was no loaded dump truck leaving the construction site. 	C7

	Name	Signature	Date
Recorded by	Edmond Wu		2 November 2006
Checked by	Dr. Priscilla Choy		2 November 2006

*Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin
 Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel
 Contract No. HY/2003/02 – Eagle's Nest Tunnel and Associated Works*



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	61108-ENT
Date	8 November 2006 (Wed)
Time	0930-1140

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
61108E-01R	<p>A. Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>B. Air Quality</p> <ul style="list-style-type: none"> Dust generation by wind erosion was observed at unpaved road near administration building. The contractor should provide watering for the unpaved road more frequent in this dry season. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> All environmental deficiencies identified in last audit (Ref. No.: 61101-ENT) on 1 November 2006 were rectified by the Contractor. Spot checking for dump truck (loaded) was carried out during site inspection. There was no loaded dump truck leaving the construction site. 	C7

	Name	Signature	Date
Recorded by	Tommy Ho		9 November 2006
Checked by	Dr. Priscilla Choy		9 November 2006

**Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin
Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel
Contract No. HY/2003/02 – Eagle's Nest Tunnel and Associated Works**



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	61114-ENT
Date	14 November 2006 (Tue)
Time	0930-1140

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>A. Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>B. Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> All environmental deficiencies identified in last audit (Ref. No.: 61108-ENT) on 8 November 2006 were rectified by the Contractor. Spot checking for dump truck (loaded) was carried out during site inspection. There was no loaded dump truck leaving the construction site. 	

	Name	Signature	Date
Recorded by	Tommy Ho		14 November 2006
Checked by	Dr. Priscilla Choy		14 November 2006

*Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin
Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel
Contract No. HY/2003/02 – Eagle's Nest Tunnel and Associated Works*



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	61122-ENT
Date	22 November 2006 (Wed)
Time	0930-1120

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
61122E-01O	<p>A. Water Quality</p> <ul style="list-style-type: none"> Yellow surface runoff directly flowed to the step channel was observed. A temporary ditches should be constructed for the runoff flowed into the desilting facility before discharge. 	B5i
61122E-01R	<ul style="list-style-type: none"> The contractor was reminded to turn on the power of de-silting facility at portion D4 when rainy in order to avoid accumulating yellow water at u-channel and de-silt before discharge. <p>B. Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> No environmental deficiencies was identified in last audit (Ref. No.: 61114-ENT) on 14 November 2006. Spot checking for dump truck (loaded) was carried out during site inspection. There was no loaded dump truck leaving the construction site. 	B7i & B9

	Name	Signature	Date
Recorded by	Tommy Ho		22 November 2006
Checked by	Dr. Priscilla Choy		22 November 2006

*Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin
Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel
Contract No. HY/2003/02 – Eagle's Nest Tunnel and Associated Works*


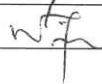
Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	61129-ENT
Date	29 November 2006 (Wed)
Time	9:15 – 11:40 a.m.

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
61129E-01R	<p>A. Water Quality</p> <ul style="list-style-type: none"> Stagnant water was observed at 2/F Shatin Heights North Portal Building and G/F ENT South Portal Building. The Contractor was reminded to clean it up to avoid mosquito breeding. <p>B. Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>F. Others</p> <ul style="list-style-type: none"> All environmental deficiencies identified in last audit (Ref. No.: 61122-ENT) on 22nd November 2006 were rectified by the Contractor. Spot checking for dump truck (loaded) was carried out during site inspection. There was no loaded dump truck leaving the construction site. 	G1

	Name	Signature	Date
Recorded by	Tommy Ho		4 December 2006
Checked by	Dr. Priscilla Choy		4 December 2006

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	Contractor
ACTION LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source 2. Inform ER & IEC 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check Contractor's working methods 	<ol style="list-style-type: none"> 1. Notify Contractor 2. Check monitoring data and Contractor's working methods 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source 2. Inform ER & IEC 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with ER & for remedial actions required 6. If exceedance continues, arrange meeting with ER & IEC 7. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET 2. Check Contractor's working methods 3. Discuss with ET and Contractor on possible remedial measure 4. Advise the ER & ET on the effectiveness of the proposed remedial measures 5. Supervise the implementation of the remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Check Contractor's working methods 4. Discuss with ET, IEC and Contractor on proposed remedial actions 5. Ensure remedial actions properly implemented 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to ER within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source 2. Inform ER & IEC and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET 2. Check Contractor's working methods 3. Discuss with ET and Contractor on possible remedial measure 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Check Contractor's working methods 4. Discuss with ET, IEC and Contractor on 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification

EVENT	ACTION			
	ET	IEC	ER	Contractor
	remedial actions and keep EPD and ER & IEC informed of the results	4. Advise the ER & ET on the effectiveness of the proposed remedial measures 5. Supervise the implementation of the remedial measures	proposed remedial actions 5. Ensure remedial actions properly implemented	3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER, IEC, Contractor and EPD the cause & actions taken for the exceedances 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Carry out analysis of contractor's working procedures to determine possible mitigation to be implemented. 7. Arrange meeting with EPD, IEC and ER to discuss the remedial actions to be taken 8. Assess effectiveness of Contractor's remedial actions and keep EPD and ER & IEC informed of the results 9. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET 2. Discuss amongst ER, ET and Contractor on possible remedial measures 3. Review Contractor's remedial measures whenever necessary to ensure their effectiveness and advise the ER accordingly 4. Supervise the implementation of the remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 4. Discuss amongst ET, IEC and the Contractor on proposed remedial actions 5. In consultation with IEC, agree with the contractor remedial measures to be implemented 6. Ensure remedial measure are properly implemented 7. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC, ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event/Action Plan for Construction Noise

Exceedance	ACTION			
	ET	IEC	ER	Contractor
Action Level	<p>1. Discuss with the IEC and ER and seek to identify potential noise source</p> <p>2. Undertake noise measurement to confirm the validity of complaint</p> <p>3. Inform ER&IEC in writing Discuss remedial actions required with ER&IEC if an exceedance is recorded</p> <p>4. Increase monitoring frequency to demonstrate efficacy of remedial measures</p> <p>5. If exceedance continues, meet with ER&IEC to review implementation of appropriate mitigation measures.</p> <p>6. If exceedance stops, cease additional monitoring</p>	<p>1. Review the analyzed results submitted by the ET</p> <p>2. Review the proposed remedial measures by the Contractor and advise the ER & ET accordingly</p> <p>3. Supervise the implementation of remedial measures</p>	<p>1. Confirm receipt of notification of complaint and notify Contractor immediately</p> <p>2. Check monitoring data trends and Contractor's working methods</p> <p>3. Remind the Contractor of his contractual obligations and discuss with ET, IEC and Contractor on proposed remedial actions</p> <p>4. Assess the efficacy of remedial actions and keep the Contractor informed</p> <p>5. Inform complainant of actions taken</p>	<p>1. Submit proposals for remedial actions to ER within three working days of notification</p> <p>2. Amend proposals if required by the Engineer</p> <p>3. Implement the remedial actions immediately upon instruction</p> <p>4. Liaise with the ER to optimize the effectiveness of the agreed mitigation</p> <p>5. Amend proposal if appropriate</p>

Exceedance	ACTION			
	ET	IEC	ER	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Repeat measurement to confirm findings 2. Investigate the cause of the exceedance and identify the main source(s) of impact 3. Inform ER&IEC and EPD in writing 4. Discuss remedial actions required with ER&IEC 5. Increase monitoring frequency to demonstrate efficacy of remedial measures 6. Assess efficacy of remedial actions and keep ER & IEC informed of the results 7. If exceedance continues, meet with ER&IEC to identify appropriate mitigation measures 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Review Contractor's remedial actions to assure their effectiveness and advise the ER &ET accordingly 3. Supervise the implementation of the remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance and notify Contractor 2. Check monitoring data trends and Contractor's working methods 3. Discuss with ET, IEC and Contractor on proposed remedial actions to be implemented 4. Assess the efficacy of remedial actions and keep the Contractor informed 5. If exceedance continuous, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is aborted 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER immediately not more than 3 working days of notification 3. Amend proposals if required by the ER 4. Implement remedial actions immediately upon instruction 5. Liaise with the ER to optimize the effectiveness of the agreed mitigation 6. Resubmit proposals if problem still not under control 7. Stop the relevant portion of works as determined by the ER until the exceedance is aborted

**APPENDIX K
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

Appendix K - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	<ul style="list-style-type: none"> • Any stockpile of dusty materials or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet. • A stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones. • Vehicle washing facilities should be provided at every exit point. • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores. • Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit. • Every main haul road should be sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet. • The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials. • Any stockpile of dusty materials should be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet. • All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. • Every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site. • The working area of any excavation should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
Construction Noise	<ul style="list-style-type: none"> • Only well-maintained plant should be operated on –site and plant should be serviced regularly during the construction works. • Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction, should where possible, be orientated to direct noise away from the NSRS. • Mobile plant should be sited as far away from NSRs as possible. • Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. • Use quiet plant and Working Method • Reduce the number of plant operating in critical areas close NSRs. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> Construct temporary and movable noise barriers 	^
Water Quality	<i>Construction Runoff and Drainage</i>	
	<ul style="list-style-type: none"> Use of sediment traps and the adequate maintenance of drainage systems to prevent flooding and overflow. Boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilities runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment traps should be regularly cleaned and maintained. The temporarily diverted drainage should be reinstated to its original condition when the construction works has finished or the temporary diversion is no longer required Sand silt in the wash water from the wheel washing facilities, which ensure no earth, mud and debris is deposited on roads, should be settled out the removed before discharging into storm drains. A section of the road between the wheel washing bay and the public road should be paved with backfill to prevent wash water or other site runoff form entering public road drains. Oil interceptors should be provided in the drainage system and regularly emptied to prevent the release of oils and grease into the storm water drainage system after accidental spillage. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks. Silt removal facilities, channels and manholes shall be suitably maintained with the deposited silt and grit being removed at least once a week, and at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate intercepting channels shall be provided along the site boundary or at the locations agreed with the ET Leader. Rainwater pumped out from trenches or foundation excavations shall be discharged into silt removal facilities before discharge into storm drains. All generators, fuel and oil storage shall be within bunded areas. Drainage from the areas shall be connected to storm drains via a petrol interceptor. 	^ ^ ^ ^ ^ ^ ^ ^
	<i>Tunnelling Work</i>	
	<ul style="list-style-type: none"> Temporary open storage of excavated materials should be covered with tarpaulin or similar fabric during rainstorms. Any washout of construction or excavated materials form the drill and blast tunnelling work should be diverted to the drainage system via appropriate sediment traps. Ground water pumped out of tunnels should be discharged into the drainage channels which incorporated sediment traps to enhance deposition rates and to remove silt. 	^ ^

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> • Spent grouts used in diaphragm wall construction should be collected in a separate slurry collection system, reconditioned and reused wherever practicable. The disposal of used grouting materials will only be permitted if it is treated to the TM standards before discharge to the storm drains or disposal to landfill. 	N/A
	<i>General Construction Activities</i>	
	<ul style="list-style-type: none"> • Debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column and cause water quality impacts. • All fuel tanks and storage areas will be provided with locks and be located on sealed areas (within bunds of a capacity equal to 110% of the storage capacity of the largest tank or 20% by volume of the fuel stored in that areas, whichever in the greatest). 	^ ^
	<i>Sewage Effluent</i>	
	<ul style="list-style-type: none"> • Construction work force sewage discharges from fixed toilet facilities on-site should be connected to the nearby existing trunk sewer wherever feasible. However, for areas where existing trunk sewer is not available, it is recommended that appropriate and adequate on site portable chemical toilets should be provided by a licensed contractor who will be responsible for appropriate disposal and maintenance of these facilities. • It is considered that sewage discharges could also be treated by on-site septic tanks and soakaway. Minimum clearance away from streams and catchments and other requirements for the proposed septic tank and soakaway should be referred to EPD's Practice Note for Professional Persons, Drainage Plans. 	^ N/A
	<i>General</i>	
Waste	<ul style="list-style-type: none"> • Training and instruction shall be given at a site to construction staff to increase awareness and draw attention to waste management issues and the need to minimise waste generation. The training requirement shall be included in the site waste management plan. 	^
	<i>Storage, Collection and Transportation of Waste</i>	
	<ul style="list-style-type: none"> • Wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage. • Authorised or licensed waste hauliers shall be used and they shall only collect wastes prescribed by their permits. • Waste shall be removed on a daily basis. • Waste storage area shall be maintained and cleaned on a daily basis. • Windblown litter and dust during transportation shall be minimised by either covering trucks or transporting wastes in enclosed containers. • Obtain necessary waste disposal permits from the appropriate authorities if they are required. • Wastes shall be disposed of at licensed waste disposal facilities. • Develop procedure such as ticketing system to facilitate tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur. • Maintain records of the quantities of wastes generated, recycled and disposed. 	^ ^ ^ ^ ^ ^ ^ ^

Types of Impacts	Mitigation Measures	Status
	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> General refuse generated on-site shall be stored in enclosed bins or compaction unit separate from C&D and chemical wastes. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D and chemical wastes, on a daily for every second day basis to minimise odour, pest and litter impacts. The burning of refuse on construction sites is prohibited by law. Reusable rather than disposable dishware shall be used if feasible. 	<p>^</p> <p>^</p>
<p>Ecology</p>	<ul style="list-style-type: none"> A sediment barrier shall be erected to minimize stream sedimentation at downstream of the project boundary of the Toll Plaza. Conduct a tree survey before commencement of the construction work. All measures recommended in the approved landscape proposals under Condition 2.4 in EP above shall be fully implemented in accordance with the details and time schedule set out in the submission. Loss of the adjacent woodland due to temporary land take shall be returned to the original status immediately. Wild and uncontrolled fire shall be strictly prohibited Fences shall be erected along the boundary of the construction sites at the Toll Plaza before commencement of works, to prevent tipping, vehicle movements, and encroachment of personnel onto adjacent wooded areas. 	<p>N/A</p> <p>^</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>N/A</p>
<p>Landscape and Visual Impact</p>	<ul style="list-style-type: none"> Landscape mitigation measure 1 (LMM1) – Construction programming and management. The periphery of the works areas at street level shall be managed so that they do not appear cluttered, untidy and unattractive and inconvenient to pedestrians. For example, all hoarding shall be colorfully designed with interesting motifs demonstrating the work of Highways Department. Hoardings with bland colours shall be avoided. Landscape mitigation measure 2 (LMM2) – Advanced planting and erosion control works. Where possible, the transplantation of existing valuable trees, the stockpiling of topsoil, new planting and erosion control works shall be carried out as early as possible in the construction period instead of at the end. This will assist in maximizing the time for carrying out transplantation and new planting, resulting in a higher success rate for the survival of transplantation and new planting, resulting in a higher success rate for the survival of transplanted trees and the establishment of new screen trees. The stockpiling of topsoil will provide an abundant use of on-site material for growing media. During detailed design, the issue of stockpiling of topsoil in a manner that would avoid washing into the drainage scheme should be examined comprehensively. Measurement of vibration would also be carried out on a need basis during the piling work 	<p>^</p> <p>^</p> <p>^</p>

Remarks:

- | | | | |
|-----|-----------------------------------|---|--|
| ^ | Compliance of mitigation measure; | X | Non-compliance of mitigation measure; |
| N/A | Not Applicable; | • | Non-compliance but rectified by the contractor |

APPENDIX L
CONSTRUCTION PROGRAMME

Data Date 20NOV06
Run Date 29NOV06 09:32

3 MONTH ROLLING PROGRAMME

Monthly Update
 Detailed Works Progr.(DWP) r
 Progress Bar
 Critical Activity

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
										36	37	38	39	40	41	42	
GENERAL																	
Contract defined dates, stages and sections																	
Area Access & Vacation Dates																	
VCT_W2	Release of Portions - W2	0		22DEC06	0	0	0	337	0				◇				
Stages of the Works																	
KD07A	KD-7 TCSS Access Toll Plaza east (30.Jun.06)	0		02NOV06A	100	0	0		-105			◇					
Submittals & Approvals																	
Drawing Submittal & Approval																	
8034	Prep.& Sub. Independ't Serv. Dwgs for SHT&T3&LCK	48	04AUG04A	02DEC06	98	98	12	261	-165	[Gantt bar: 04AUG04A to 02DEC06, 98% completion]							
8024	Engineer Comment / Approve ENT ISD Submissions	18	06AUG04A	28NOV06	85	85	8	-61	-165	[Gantt bar: 06AUG04A to 28NOV06, 85% completion]							
8030	Res-sub. & Approv of ENT ISD	24	06SEP04A	02DEC06	70	70	12	-61	-165	[Gantt bar: 06SEP04A to 02DEC06, 70% completion]							
8035	Engineer Comment / Approve SHT&T3LCK ISD Sub.	24	13SEP04A	03JAN07	85	85	36	261	-165	[Gantt bar: 13SEP04A to 03JAN07, 85% completion]							
8032	Engineer Comment / Approve SHT&T3&LCK CSD Sub.	18	25OCT04A	06DEC06	90	90	15	261	-165	[Gantt bar: 25OCT04A to 06DEC06, 90% completion]							
8036	Re-sub. & Approv of SHT & T3 & LCK ISD	36	31MAR05A	03JAN07	70	70	36	261	-165	[Gantt bar: 31MAR05A to 03JAN07, 70% completion]							
8033	Re-sub. & Approv. of SHT & T3 & LCK CSD	24	28JUN05A	16DEC06	60	60	24	261	-165	[Gantt bar: 28JUN05A to 16DEC06, 60% completion]							
8022	Engineer Comment / Approve ENT CSD Submissions	12	20NOV06	02DEC06	0	0	12	261	-165	[Gantt bar: 20NOV06 to 02DEC06, 0% completion]							
8029	Re-sub. & Approv. of ENT CSD	24	04DEC06	03JAN07	0	0	24	261	-165	[Gantt bar: 04DEC06 to 03JAN07, 0% completion]							



LEIGHTON - KUMUGAI JV
R8 - EAGLES'S NEST TUNNEL
CONTRACTORS TARGET PROGRAMME REV.1

Proj. Name: W25E
 Layout: 3 MONTHS ROLLING PROGRAMME
 Filter: 3 MONTH ROLLING PROGRAMME
 Current Proj: W25E
 Target 1 Proj: BE02
 Sheet 1 of 42

LKJV/ENT/DWP/B

Date	Revision	Checked	Approved
20NOV06	Prog update Nov 06	GW	RB

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
EARTHWORKS & SLOPEWORKS																	
BV-R1 Remaining Works																	
S3240	BV-R1 - Construction of Lagging Wall	91	20MAR06A	18NOV06A	100	5	0		-90								
S2360	BV-R1 - Backfill	48	10MAY06A	30NOV06	70	0	10	287	-103								
SLOPE SP-S2 & SP-S3																	
S2370	Remaining Works to Slopes SP-S3 & SP-S2	24	19JUL06A	12DEC06	5	0	20	-14	-143								
SLOPE BV-S2																	
<small>20.500.130.180.035</small>																	
103811	BV-S2 Berm 9 hydro-seeding & tensor mat	12	24OCT06A	14DEC06	50	0	6	-28	-163								
103812	BV-S2 Berm 10 hydro-seeding & tensor mat	12	27DEC06	10JAN07	0	0	12	-36	-171								
SURFACE DRAINAGE																	
103696	BV-S2 Berm 9 Surface drainage	14	01MAR06A	07DEC06	30	30	16	-36	-171								
103697	BV-S2 Berm 10 Surface drainage	14	08DEC06	23DEC06	0	0	14	-36	-171								
SLOPE BV-S4																	
S3580	Additional Soil Nails - Base of Pier 19	24	26SEP06A	31OCT06A	100	0	0		-107								
S3050	Complete Outstanding Soil Nails for BVS4 (5No.)	10	26OCT06A	13NOV06A	100	0	0		-42								
S3520	Remaining Raking Drains (11No.) & Hydroseeding	12	04NOV06A	13NOV06A	100	0	0		-30								
SLOPE FINISHES																	
102380	BV-S4/3a-4a & 5 hydro-seeding & tensarmat	12	12SEP05A	12JAN07	80	70	30	-222	-179								
101139	11nw/434 BV-S4/1-2-3bcd-4b Hydro-seed/Tensarmat	18	13DEC06	05JAN07	0	0	18	-216	-179								
SURFACE DRAINAGE																	
103705	BV-S4/3 Surface Drainage	8	17MAR05A	12DEC06	75	70	20	-222	-179								
103706	BV-S4/4 Surface Drainage	12	07SEP05A	28DEC06	75	5	18	-222	-179								
SLOPE SP-S1																	
SURFACE DRAINAGE																	
103711	Sp-S1/4 Surface Drainage	7	06JUL04A	12DEC06	40	40	20	-14	-178								
RC STRUCTURES																	
RETAINING WALL BV-R2																	
BACKFILLING																	
101126	BV-R2(C) Granular Drain & Compacted Backfill	6	20NOV06	25NOV06	0	0	6	-13	-161								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
ROADWORKS - North End of BV																	
Stormwater Drainage																	
S2430	West Loop Rd. Drainage	20	19JAN06A	02DEC06	40	30	12	-49	-120								
S2420	Outstanding East Loop Rd. Drainage	28	24AUG06A	22NOV06	90	0	3	-57	-150								
S2630	250mm pipe connect E./W. stream + 3No. Chamber	24	11OCT06A	20NOV06A	100	0	0		-79								
Road Pavement & Associated Work																	
S2890	BV North - Kerbs & CPB to Sth Bound Carriageway	36	20SEP06A	20NOV06A	100	0	0		-21								
S2252	BV North - Bitu Pavement to Sth Bnd Carrig'way	24	29SEP06A	25NOV06	85	0	4	-18	-20								
S2232	BV North - Subbase to Sth Bound Carriageway	40	03OCT06A	16NOV06A	100	0	0		-36								
S2262	BV North - Typ IV Pavement	40	19OCT06A	12JAN07	60	0	16	253	-48								
S2222	BV North - Subbase to Nrth Bound Carriageway	43	11NOV06A	08JAN07	5	0	40	-52	-62								
S2540	BV North - Kerbs & CPB to Nrth Bound Carriageway	36	13NOV06A	21DEC06	20	0	28	-40	-48								
S2242	BV North - Bitu. Pavement to Nrth Bnd Carrig'way	24	27NOV06	15JAN07	0	0	24	-52	-60								
S2920	Road Works to East Loop Rd Typ III (EVA)	13	06DEC06	20DEC06	0	0	13	-21	-143								
S2900	Road Marking & White Lining (Staged for Access)	24	11DEC06	29JAN07	0	0	24	-52	-60								
S3010	Installation of Road Signage (Sign Plates Only)	24	11DEC06	29JAN07	0	0	24	-52	-60								
S2930	Road Works to West Loop Road Typ III (EVA)	13	11JAN07	25JAN07	0	0	13	-49	-120								
Miscellaenous Works																	
S2870	Erect HML 1	4	04DEC06	07DEC06	0	0	4	-10	-148								
S3100	Erect HML 2	4	04DEC06	07DEC06	0	0	4	-10	-177								
S3450	Erect HML 3	4	04DEC06	07DEC06	0	0	4	-10	-126								
S2670	Install Twin DN200 Pipes to SPB via E. Loop Rd	18	20OCT06A	05DEC06	40	0	11	-57	-143								
S2590	Installation of DN200 Fire Hydrant Pipe and FH's	24	18NOV06A	14DEC06	5	0	22	-52	-76								
S2690	Installation of Drip Feed Irrigation System	12	22DEC06	08JAN07	0	0	12	-34	-48								
S2760	Kiosk K3 - required for TCSS	10	05OCT06A	16NOV06A	100	0	0		8								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP		OCT			NOV			DEC			JAN			FEB			MAR							
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
Miscellaneous Works																																		
S3000	Construct Recreated Stream	30	04DEC06	10JAN07	0	0	30	-49	-120																									
ROADWORKS - South End of BV																																		
Noise Barrier Footings & Sign Gantries																																		
S2461	Sign gantry Installation MLS-CAP12	3	20NOV06	22NOV06	0	0	3	-137	-153																									
S3370	Signal Gantry Installation MLS-CAP14 & 15	4	20NOV06	23NOV06	0	0	4	-138	-153																									
S3380	Sign Gantry Installation MLS-CAP11,13	3	20NOV06	22NOV06	0	0	3	-159	-153																									
Ducting & Drawpits																																		
S2740	BV South - LV Ducts & Drawpits	20	01JUN06A	25NOV06	70	0	6	-55	-88																									
Road Pavement & Associated Work																																		
S2940	BV Sth - Trim Formation & S'base - Sth Bnd	26	01AUG06A	29NOV06	97	0	3	-39	-65																									
S2960	BV Sth - Kerbs & CPB to Sth Bound Carriageway	30	12AUG06A	06DEC06	90	0	3	-39	-49																									
S2510	BV Sth - Trim Formation & S'base - Nth Bnd	35	14AUG06A	28NOV06	75	0	8	-39	-55																									
S2950	BV Sth - Kerbs & CPB to Nrth Bound Carriageway	30	18SEP06A	06DEC06	50	0	15	-39	-44																									
S2970	BV Sth - Bitu. Pavement to Sth Bnd Carrig'way	20	20SEP06A	20DEC06	75	0	5	-39	-38																									
S2980	BV Sth - Bitu. Pavement to Nrth Bnd Carrig'way	23	06NOV06A	20DEC06	20	0	23	-39	-33																									
S2990	Road Marking & White Lining (Staged Access)	18	21DEC06	13JAN07	0	0	18	-39	-33																									
S3190	Installation of Road Signage (Sign Plates Only)	18	21DEC06	13JAN07	0	0	18	-39	-33																									
Miscellaneous Works																																		
S2750	Kiosk K4	6	21SEP06A	16NOV06A	100	0	0		2																									
S2790	Installation of DN 200 Fire Hydrant Pipe & FH's	12	19OCT06A	29NOV06	24	0	9	288	-99																									
S2780	Install & Commission Weighbridge	24	21DEC06	20JAN07	0	0	24	-27	-33																									
S2850	Erect HML9	4	21DEC06	27DEC06	0	0	4	-25	-154																									
LKJV Works at Abutment M																																		
S3440	200mm Watermain, valve pit & FH-6	12	19OCT06A	15NOV06A	100	0	0		-118																									
S3470	Ducting & drawpits in Portion B	12	20NOV06	02DEC06	0	0	12	-42	-121																									
S3420	Complete remaining roadworks within Portion B	36	04DEC06	17JAN07	0	0	36	-42	-121																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Calendar							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
PROCUREMENT - MATERIAL																	
ABWF WORKS																	
1951	SP.Bldg. - Procure aluminium composite cladding	180	19APR05A	01NOV06A	100	80	0		-128								
1979	SP.Bldg. - Procure expanded metal mesh cladding	180	06JUN05A	29NOV06	80	80	9	-82	-165								
2029	SP.Bldg. - Initial deliv alum composite cladding	0	02NOV06A		100	0	0		-52								
2018	SP.Bldg. - Initial deliver fall arrest roof syst	0	20NOV06*		0	0	0	-25	-118								
2019	SP.Bldg. - Initial deliver of slate cladding	0	20NOV06*		0	0	0	-49	-93								
2030	SP.Bldg. - Initial deliver balust & metal works	0	20NOV06*		0	0	0	-25	-118								
2025	SP.Bldg- Initial deliver exp metal mesh cladding	0	30DEC06*		0	0	0	-82	-113								
MAJOR EQUIPMENT DELIVERY																	
6033	EntSpBldg-Del. PD pump & tank to G/F	48	06MAR06A	30NOV06	80	55	10	287	-165								
6034	EntSpBldg-Del. PD irrig. pump & tank to G/F	48	02MAY06A	30NOV06	80	0	10	287	-127								
6163	EntSpBldg-Del. AFA & FM200 sys	48	15MAY06A	30NOV06	80	0	10	287	-105								
6744	EntSpBldg-Del. MVAC MCC, & control sys to 3/F	48	15MAY06A	29DEC06	90	0	33	264	-140								
6194	EntSpBldg-Del. CMCS & ELV equip't	48	01JUN06A	05JAN07	90	0	38	259	-116								
CONSTRUCTION																	
South Portal Bldg. - CIVIL & ABWF WORKS																	
STRUCTURES																	
T2920	Backfilling at South Portal Building	18	18APR06A	08NOV06A	100	60	0		-146								
ABWF WORKS																	
SB Bldg - Internal Works GF																	
T2650	ABWF Initial finishes & Doors to CLP Rm & GF	18	06APR06A	22NOV06	95	5	3	-24	-146								
T2760	GF - Paint touch up & Doors	12	22NOV06	05DEC06	0	0	12	-8	-91								
SP Bldg - Internal Works 1F & LP																	
T2770	1F & LP - Paint touch up & Doors	12	11DEC06	23DEC06	0	0	12	-24	-143								
SP Bldg - Internal Works 2F																	
T2780	2F - Paint touch up & Doors	12	29NOV06	12DEC06	0	0	12	-14	-56								
SP Bldg - Internal Works 3/F																	
T2800	3F - Paint touch up & Doors	12	06DEC06	19DEC06	0	0	12	-20	-100								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Calendar											
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42					
ENT South Portal Bldg (3F/ Fan Rm) - E & M Works																					
EM1070	LV Sw, MCC, UPS, LCC Installation	30	25JUL06A	05DEC06	95	0	2	-120	-100												
EM1060	BS Works for LV Sw, MCC, UPS, LCC	12	31JUL06A	21NOV06	95	0	2	-120	-118												
EM1150	E&M Works in Corridors 3/F	24	31JUL06A	21NOV06	95	0	2	-133	-94												
EM1090	BS Works for 110V Charger Rm	12	01AUG06A	28NOV06	95	0	2	-133	-88												
EM1170	Termination of overall Elect HV & LV Sys	30	15OCT06A	17JAN07	40	0	18	-138	-66												
ENT South Portal Bldg (4F/Upr Plen) - E & M Work																					
EM1180	TVS Installation	100	22AUG06A	16JAN07	55	0	45	-96	-55												
Testing and Commissioning																					
EM1100	110V Charger Rm Installation + T&C	12	20NOV06	05DEC06	0	0	12	-133	-82												
EM1130	Genset Termination + T&C	12	20NOV06	16DEC06	0	0	12	-89	-87												
EM1080	LV Sw, MCC, UPS, LCC Termination + T&C	30	04DEC06	10JAN07	0	0	30	-132	-80												
EM1050	HV Sw + Tx Termination + T&C	30	06DEC06	12JAN07	0	0	30	-133	-62												
EM1190	Integrated E&M System T&C	52	16FEB07	04MAY07	0	0	52	-141	-70												
Statutory Inspection & Issued Certificates																					
EM1200	Submit WR1 to CLP	1	25JAN07	25JAN07	0	0	1	-144	-72												
EM1210	CLP insp.	18	26JAN07	15FEB07	0	0	18	-144	-72												
EM1220	energization at ENT SP Bldg	0		15FEB07	0	0	0	-144	-72												
EM1320	Submit Form WWO46 for Water Supply to WSD	30	12JAN07	15FEB07	0	0	30	-86	-165												
EM1340	Water Supply Certificate issued	0		15FEB07	0	0	0	-86	-165												
EAGLES NEST TUNNEL																					
Contract defined dates, stages & sections																					
Area access & vacation dates																					
ACS_F1	Access to Portions - F1 (U/Gnd Sth Portal)	0	20OCT03A		100	100	0		-200												
ACS_F2	Access to Portions - F2 (U/Gnd Sth Tunnel)	0	20OCT03A		100	100	0		-200												
T_F12345	Release of Portions - F1,F2,F3,F4,F5	0		22DEC06	0	0	0	337	0												
T_GH134	Release of Portions - G,H1,H3,H4	0		22DEC06	0	0	0	337	0												

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR									
										36	37	38	39	40	41	42	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29
Design & Engineering - Temporary Works																																					
Permanent Works																																					
Tunnel																																					
1668	Eng Approve Dsg X-passage/Adit Fire Doors	12	20NOV06	02DEC06	0	0	12	235	-165																												
1669	Issue Constr Dwgs X-passage/Adit Fire Doors	0		02DEC06	0	0	0	235	-165																												
Procurement - Material																																					
Tunnelling Project Wide																																					
1685	Order/Manufact/Del Fire Doors	50	04DEC06	02FEB07	0	0	50	235	-165																												
Major Equipemnt Delivery																																					
Tunnelling Project Wide																																					
NB Tunnel																																					
6891	EntRtNb-Del. TVS control sys	48	14JAN06A	10NOV06A	100	90	0		-152																												
6888	EntRtNb-Del. AFA & Linear sys	48	15MAY06A	10NOV06A	100	0	0		-125																												
6886	EntRtNb-Del. CMCS & ELV sys	35	01JUN06A	10NOV06A	100	0	0		-61																												
SB Tunnel																																					
6797	EntRtSb&VA-Del. TVS control sys	48	14JAN06A	10NOV06A	100	90	0		-152																												
6787	EntRtSb&VA-Del. AFA & Linear sys	48	15MAY06A	10NOV06A	100	0	0		-77																												
6801	EntRtSb&VA-Del. CMCS & ELV sys	72	01JUN06A	10NOV06A	100	0	0		-61																												
Construction Works																																					
Tunnel Drive North Bound																																					
Tunnel Finishing Works																																					
Bituminous Pavement																																					
3599	NB Base Course - RHS 650m Ch 3030->2380	4	28NOV06	01DEC06	0	0	4	-49	-156																												
3600	NB Base Course - RHS 650m Ch 2380->1730	4	02DEC06	06DEC06	0	0	4	-49	-156																												
3601	NB Base Course - RHS 650m Ch 1730->1080	4	07DEC06	11DEC06	0	0	4	-49	-156																												
3603	NB Base Course - LHS 650m Ch 3030->2380	4	12DEC06	15DEC06	0	0	4	-49	-156																												
3604	NB Base Course - LHS 650m Ch 2380->1730	4	16DEC06	20DEC06	0	0	4	-49	-156																												
3605	NB Base Course - LHS 650m Ch 1730->1080	4	21DEC06	27DEC06	0	0	4	-49	-156																												

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP	OCT	NOV	DEC	JAN	FEB	MAR		
										36	37	38	39	40	41	42		
										11 18 25 2	9 16 23 30 6	13 20 27 4	11 18 25 1	8 15 22 29 5	12 19 26 5 12 1			
Electrical Works Below OHVD																		
278010	Ent NB - Earthing & Lighting Fixture @ C/Lvl	72	02MAY06A	30NOV06	98	2	8	-141	-104									
278012	Ent NB - Cabling,Wirings&Term @ Ceiling/ Grd Lvl	48	13JUN06A	12FEB07	20	0	60	-141	-127									
278011	Ent NB-Install CCTV,Camera,Eqpt @C/Lvl (By TCSS)	72	20NOV06	14FEB07	0	0	72	-71	-147									
278083	Place Covers on C, Trough	18	13FEB07	13MAR07	0	0	18	-106	-127									
278013	Ent NB - Lighting / Equipt Testing and T&C	60	16FEB07	04MAY07	0	0	55	-144	-161									
Tunnel Drive South Bound																		
Tunnel Finishing Works																		
Bituminous Pavement																		
1350	SB Wearing Course - RHS 650m Ch3030->2380	4	30JAN07	02FEB07	0	0	4	-82	-38									
1370	SB Wearing Course - RHS 650m Ch 2380->1730	4	03FEB07	07FEB07	0	0	4	-82	-38									
1390	SB Wearing Course - RHS 650m Ch1730->1080	4	08FEB07	12FEB07	0	0	4	-82	-38									
1360	SB Wearing Course - LHS 650m Ch3030->2380	4	13FEB07	16FEB07	0	0	4	-82	-38									
1380	SB Wearing Course - LHS 650m Ch2380->1730	4	26FEB07	01MAR07	0	0	4	-82	-38									
VE Panel Installation																		
3623	SB - VE Panel Sub-Frame Installation	60	21JUL06A	17NOV06A	100	0	0		0									
3643	SB - VE Panel Installation	55	16AUG06A	11DEC06	67	0	19	-92	0									
3663	SB - Niche Cabinets	50	20NOV06	19JAN07	0	0	50	-78	0									
3653	SB - Bespoke Panels (Niches)	20	20JAN07	12FEB07	0	0	20	-78	0									
ENT SB TUNNEL - (E&M) BUILDING SERVICES																		
MVAC / Tunnel Ventillation System Above OHVD																		
278014	Ent SB - Install Motorised Smoke & Fire Dampers	72	31DEC05A	01DEC06	85	40	11	-113	-145									
278015	Ent SB - Comp Air Pipes/Condts to E/P16 to E/P21	36	27MAR06A	21NOV06	95	58	2	-104	-148									
278017	Ent SB - Comp Air Pipes/ Condts to E/P1 to E/P7	36	13JUN06A	01DEC06	95	0	2	-113	-109									
278018	Ent SB - Cabling, Wiring and Termination	60	13JUN06A	15DEC06	90	0	8	-113	-61									
278019	Ent SB - MVAC Testing and T&C	36	20NOV06	16JAN07	0	0	36	-112	-53									
Fire Protection System																		
278035	Ent SB - Install detection system @ Ceiling Lvl	42	20SEP06A	24NOV06	90	0	5	-92	-84									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
										36 11 18 25 2	37 9 16 23 30 6	38 13 20 27 4	39 11 18 25 1	40 8 15 22 29 5	41 12 19 26 5 12 1	42	
Fire Protection System																	
278038	Ent SB - 100d FH / HR Pipeworks & Fittings @ G/L	60	10OCT06A	31JAN07	95	0	7	-123	-133								
278039	Ent SB - FS Wiring and Terminations	30	10OCT06A	31JAN07	20	0	24	-123	-103								
278037	Ent SB - Install Hose Reel Cabinets & Eqpt @ G/L	48	20NOV06	17JAN07	0	0	48	-123	-145								
278040	Ent SB - FS Testing and T&C	24	01FEB07	08MAR07	0	0	24	-123	-103								
Electrical Works Above OHVD																	
278044	Ent SB - HV & LV Mn/submain Cables to CP01-CP10	72	09JUN06A	28NOV06	88	0	8	-138	-64								
278043	Ent SB - HV & LV Mn/Submain Cables to CP21-CP11	72	15JUN06A	28NOV06	88	0	8	-138	-89								
278046	Ent SB - Placing Sandfill and PC Covers	36	07JUL06A	23NOV06	90	0	4	-75	-24								
Electrical Works Below OHVD																	
278052	Ent SB - Conduit Works (Above & Below OHVD)	60	01MAR06A	23NOV06	98	30	4	-93	-115								
278053	Ent SB - Earthing & Lighting Fixture @ C/Lvl	72	02MAY06A	30NOV06	98	2	2	-111	-97								
278055	Ent SB - Cabling,Wirings&Term @ Ceiling/ Grd Lvl	48	07AUG06A	08JAN07	86	0	40	-111	-73								
278054	Ent SB-Install CCTV,Camera,Eqpt @C/Lvl (by TCSS)	72	24NOV06	27FEB07	0	0	72	-75	-133								
278096	Place Covers on C. Trough	18	09JAN07	29JAN07	0	0	18	-82	-73								
278056	Ent SB - Lighting / Equipt Testing and T&C	60	16FEB07	04MAY07	0	0	55	-144	-137								
Vent Adit Tunnel / Cross Passage 7																	
ENT CROSS PASSAGE CP07 - (E&M) BUILDING SERVICES																	
MVAC / Tunnel Ventillation System Above OHVD																	
278059	CP7 - Cabling, Wiring, Termination & Test	18	28AUG06A	23NOV06	90	0	2	-69	-99								
Fire Protection System																	
278062	CP7 - Cabling, Wiring, FS detectn & Alarm Bell	48	10OCT06A	30DEC06	30	0	34	-123	-99								
278063	CP7 - FS Termination & Test	24	02JAN07	29JAN07	0	0	24	-123	-99								
Electrical Works																	
278086	HGC - Cabling	36	20NOV06	03JAN07	0	0	36	-125	-92								
278066	CP7 - Install Conduit, lighting & switches @ C/L	48	03JUL06A	30DEC06	30	0	34	-123	-99								
278069	CP7 - HV/ LV Cabling, Wiring & Term to CP7 LV Rm	48	20SEP06A	16DEC06	50	0	24	-113	-89								
278070	CP7 - HV / LV Cables Testing and T&C	24	18DEC06	17JAN07	0	0	24	-113	-89								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
Electrical Works																	
278067	CP7 - Cabling, Wiring & Termination and Test	24	04JAN07	31JAN07	0	0	24	-125	-101								
ENT Cross Passages																	
CROSS PASSAGES (CP1-CP6 & CP8-CP21) - (E&M) WORK																	
Electrical Works																	
278074	(CP1-CP21) - Cable Containment & Equipt Support	60	07FEB06A	21NOV06	98	80	2	-134	-155								
278077	(CP21-CP11) - MCCB/ MCB Brd,CMCS,Busbar,Switches	72	03MAY06A	05DEC06	90	0	7	-138	-107								
278078	(CP1-CP10) - MCCB/ MCB Brd,CMCS,Busbar,Switches	72	03MAY06A	05DEC06	90	0	10	-138	-109								
278075	(CP1-CP21) - Conduit,light,Signage fixt,Switches	60	17JUL06A	03JAN07	40	0	36	-144	-141								
278079	(CP1-CP21) - HV & LV Cables Terminations & Test	60	08AUG06A	17JAN07	20	0	48	-138	-66								
278076	(CP1-CP21) - Cabling, Wiring, Termination & Test	36	15AUG06A	24JAN07	70	0	11	-144	-123								
278080	(CP1-CP21) - Cables Testing and T&C	36	20NOV06	14FEB07	0	0	36	-137	-66								
VENTILATION ADIT & BUILDING																	
Submittals & Approvals																	
ABWF & Builders Works																	
1972	VA Bldg. - Approve door details	24	07MAY05A	29NOV06	70	70	9	-99	-165								
PROCUREMENT																	
ARCHITECTURAL																	
1995	VA Bldg. - Procure aluminium composite cladding	90	19APR05A	01NOV06A	100	60	0		-128								
2026	VA Bldg. - Procure expanded metal mesh cladding	60	06JUN05A	29NOV06	50	50	9	-86	-165								
2032	VA Bldg. - Initial delivery doors	0	20OCT06A		100	0	0		-68								
2038	VA Bldg. - Initial delivery alum comp cladding	0	02NOV06A		100	0	0		-68								
2031	VA Bldg. - Initial delivery slate cladding	0	20NOV06*		0	0	0	-69	-80								
2034	VA Bldg. - Initial delivery fall arrest roof sys	0	20NOV06*		0	0	0	-31	-111								
2035	VA Bldg. - Initial delivery balust & metal works	0	20NOV06*		0	0	0	-31	-111								
2043	VA Bldg. - Initial deliv exp metal mesh cladding	0	08JAN07		0	0	0	-86	-119								
MAJOR EQUIPMENT DELIVERY																	
7592	VaBldg-Del. PD irrig. pump & tank to G/F	48	07MAR06A	10NOV06A	100	55	0		-149								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP	OCT	NOV	DEC	JAN	FEB	MAR											
										36	37	38	39	40	41	42											
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8
MAJOR EQUIPMENT DELIVERY																											
6608	VaBldg-Del. PD pump & tank to G/F	48	02MAY06A	10NOV06A	100	0	0		-105																		
6609	VaBldg-Del. FS pumps & tank to G/F	48	02MAY06A	10NOV06A	100	0	0		-106																		
6698	VaBldg-Del. AFA & FM200 sys	48	15MAY06A	10NOV06A	100	0	0		-101																		
6666	VaBldg-Del. CMCS & ELV equip't	48	01JUN06A	10NOV06A	100	0	0		-73																		
CONSTRUCTION WORKS																											
EXTERNAL WORKS																											
Drainage																											
S1900	Petrol interceptor & Storm Drain at East Side	48	20NOV06	17JAN07	0	0	48	-137	-134																		
S1940	Foul Drain Pipe & Holding Tank	24	20NOV06	16DEC06	0	0	24	-121	-134																		
S1960	Storm Drain at West Side	24	20NOV06	16DEC06	0	0	24	-121	-148																		
S1970	Storm Drain & Gullies at Access Apron	24	18DEC06	17JAN07	0	0	24	-121	-148																		
Ducting & Drawpits																											
S1910	Ducting & Drawpits	18	03JAN07	29JAN07	0	0	18	-137	-116																		
S1980	HGC Ducting & Drawpits	18	30JAN07	27FEB07	0	0	18	-137	-116																		
Watermain Works																											
S1950	Watermain & Valve Chambers at Building Apron	24	04JAN07	31JAN07	0	0	24	-121	-136																		
S1990	Irrigation Pipework	18	01FEB07	01MAR07	0	0	18	-121	-136																		
Construction of Watermains Across Tai Po Rd																											
SB3080	Stage 2 - Watermain Crossing Tai Po Rd	22	11OCT06A	06NOV06A	100	0	0		-53																		
SB3090	Stage 3 - Watermain Crossing Tai Po Rd	22	07NOV06A	05DEC06	35	0	14	-79	-59																		
SB3100	Stage 4 - Watermain Crossing Tai Po Rd	22	06DEC06	03JAN07	0	0	22	-79	-32																		
SB3110	Stage 5 - Watermain Crossing Tai Po Rd	4	13JAN07	17JAN07	0	0	4	-51	-33																		
SB3120	Stage 6 - Watermain Crossing Tai Po Rd	4	18JAN07	22JAN07	0	0	4	-51	-25																		
SB3130	Stage 7 - Watermain Crossing Tai Po Rd	4	23JAN07	26JAN07	0	0	4	-51	-16																		
SB3150	Stage 4(R) - Watermain Crossing Tai Po Rd	4	09JAN07	12JAN07	0	0	4	-51	0																		

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP							OCT							NOV							DEC							JAN							FEB							MAR						
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	1	8	15	22	29	5	12	19	26	1	8	15	22	29	5	12	19	26	1	8	15	22	29	5
VENTILATION BUILDING																																																										
VA Building - Structure																																																										
T2130	Installation of Exhaust Shaft Steelwork	18	20NOV06	09DEC06	0	0	18	-83	-151																																																	
T3130	Installation of Earth mat	30	20DEC06	26JAN07	0	0	30	-121	-144																																																	
T3140	Backfilling Around Ventillation Building	24	20NOV06	19DEC06	0	0	24	-121	0																																																	
VA Building - ABWF																																																										
T3030	ABWF - GL Paint Touch Up & Doors	12	27JAN07	09FEB07	0	0	12	-63	-91																																																	
T3040	ABWF - 1FL Paint Touch Up & Doors	12	27JAN07	09FEB07	0	0	12	-63	-91																																																	
T3050	ABWF - Fan Rooms & Plenums Touch Up & Doors	12	27JAN07	09FEB07	0	0	12	-63	-91																																																	
VA Building - External Finishes																																																										
T2050	VA Bldg. - Ext. Wall Waterproof Render	20	10JUL06A	23NOV06	80	0	4	-121	-132																																																	
T3060	VA Bldg. - Ext. Wall Waterproof Membrane	21	25JUL06A	30NOV06	85	0	10	-95	-137																																																	
T3080	VA Bldg. - Roof Waterproofing & Test	12	02NOV06A	25NOV06	80	0	6	-67	-121																																																	
T3110	VA Bldg. - Install Aluminum louvres & doors	60	11NOV06A	16FEB07	50	0	40	-99	-137																																																	
T3070	VA Bldg. - External Wall Painting	22	24NOV06	19DEC06	0	0	22	-121	-126																																																	
T2140	VA Bldg. - Slate Cladding	44	01DEC06	24JAN07	0	0	44	-79	-90																																																	
T3120	VA Bldg. - Alum Comp Panel Cladding to Ext Walls	60	01DEC06	12FEB07	0	0	60	-95	-93																																																	
T3090	VA Bldg. - 25thk Roof Screed & Roofing Tiles	18	11DEC06	03JAN07	0	0	18	-67	-121																																																	
T3100	VA Bldg. - GMS,S/S Channel, Balustrade & Railing	18	04JAN07	24JAN07	0	0	18	-67	-121																																																	
T2110	VA Bldg. - Expanded metal cladding to Ext Walls	22	08JAN07	01FEB07	0	0	22	-86	-119																																																	
T3105	VA Bldg. - Removed External Scaffolding	12	26FEB07	10MAR07	0	0	12	-99	-97																																																	
E & M WORKS																																																										
Ventilation Adit Bldg (GF/Lwr Plen) - E & M Work																																																										
EM2040	BS Works for HV Sw + Tx	12	17JUL06A	21NOV06	98	0	2	-121	-139																																																	
EM2200	BS Works for Genset	18	01AUG06A	28NOV06	70	0	5	-115	-127																																																	
EM2260	E&M Works in Corridors G/F	24	01AUG06A	06DEC06	80	0	5	-116	-126																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP		OCT			NOV			DEC			JAN			FEB			MAR																				
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	42								
Ventilation Adit Bldg (GF/Lwr Plen) - E & M Work																																															
EM2300	E&M Works in Risers	48	04AUG06A	20DEC06	95	0	5	-116	-92																																						
EM2310	BS Works in TVS Plenums	30	14AUG06A	06DEC06	50	0	15	-128	-115																																						
EM2220	Genset Installation	36	13SEP06A	12DEC06	60	0	15	-115	-103																																						
Ventilation Adit Bldg (1F) - E & M Work																																															
EM2100	BS Works for LV Sw, MCC, UPS, LCC	12	18JUL06A	22NOV06	90	0	3	-119	-138																																						
EM2280	E&M Works in Corridors 1/F	24	04AUG06A	24NOV06	80	0	5	-106	-118																																						
EM2160	BS Works for 110V Charger Rm	12	11SEP06A	29NOV06	95	0	2	-119	-132																																						
EM2120	LV Sw, MCC, UPS, LCC Installation	30	02OCT06A	24NOV06	95	0	2	-110	-95																																						
EM2340	Termination of overall Elect HV & LV Sys	30	10OCT06A	26JAN07	20	0	24	-121	-91																																						
Ventilation Adit Bldg (2F/Upr Plen) - E & M Work																																															
EM2320	TVS Installation	90	23AUG06A	03FEB07	81	0	18	-128	-83																																						
Testing and Commissioning																																															
EM2080	HV Sw + Tx Termination + T&C	30	20NOV06	23DEC06	0	0	30	-95	-76																																						
EM2180	110V Charger Rm Installation + T&C	12	20NOV06	06DEC06	0	0	12	-119	-126																																						
EM2240	Genset Termination + T&C	12	20NOV06	19DEC06	0	0	12	-115	-97																																						
EM2140	LV Sw, MCC, UPS, LCC Termination + T&C	30	04DEC06	10JAN07	0	0	30	-119	-102																																						
EM2360	Integrated E&M System T&C	52	15FEB07	28APR07	0	0	52	-137	-72																																						
Statutory Inspection & Issued Certificates																																															
EM2440	Permanent power energization from SHT NP Bldg	6	08FEB07	14FEB07	0	0	6	-137	-72																																						
EM3001	Submit Form WWO46 for Water Supply to WSD	30	01FEB07	15MAR07	0	0	30	-103	-56																																						
EXTERNAL AREAS																																															
LANDSCAPING & ESTABLISHMENT WORKS																																															
T3180	Planting Works	18	02SEP06A	01MAR07	65	0	18	-73	-118																																						
ENT NORTH PORTAL VENTILATION BUILDING																																															
SUBMITTALS & APPROVALS																																															
ABWF & Builders Works																																															
1954	NP.Bldg. - Approve door details	24	06APR05A	29NOV06	80	80	9	-134	-165																																						

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
PROCUREMENT - MATERIAL																	
ABWF WORKS																	
1967	NP.Bldg. - Procure aluminium composite cladding	180	19APR05A	01NOV06A	100	50	0		-128								
1981	NP.Bldg. - Procure expanded metal cladding	180	06JUN05A	29NOV06	50	50	9	-88	-165								
2050	NP.Bldg. - Initial deliv alum composite cladding	0	02NOV06A		100	0	0		-52								
2051	NP.Bldg. - Initial delivery slate cladding	0	20NOV06*		0	0	0	-49	-106								
2052	NP.Bldg. - Initial delivery balust & metal works	0	20NOV06*		0	0	0	-37	-118								
2053	NP.Bldg. - Initial delivery fall arrest roof sys	0	20NOV06*		0	0	0	-37	-118								
2039	NP.Bldg. - Initial delivery of doors	0	08JAN07*		0	0	0	-134	-157								
2066	NP.Bldg. - Initial deliv expanded metal cladding	0	08JAN07*		0	0	0	-88	-119								
MAJOR EQUIPMENT DELIVERY																	
ENT NORTH PORTAL BUILDING																	
6231	EntNpBldg-Del. FS pumps & tank to G/F	48	06MAR06A	10NOV06A	100	50	0		-148								
6229	EntNpBldg-Del. PD pump & tank to G/F	48	15MAY06A	10NOV06A	100	0	0		-101								
6359	EntNpBldg-Del. AFA & FM200 sys	48	15MAY06A	10NOV06A	100	0	0		-88								
6288	EntNpBldg-Del. CMCS & ELV equip't	48	01JUN06A	10NOV06A	100	0	0		-71								
CONSTRUCTION																	
North Portal Bldg. - CIVIL & ABWF WORKS																	
STRUCTURE																	
T1390	NP Bldg - Exhaust Shaft (+110.38mPD)	18	24MAY06A	28NOV06	80	0	8	-101	-147								
S1370	Construct earth mat	36	26OCT06A	28NOV06	80	0	8	-79	-129								
ABWF WORKS																	
Internal Works GF																	
T1650	GF ABWF Initial finishes	18	04MAR06A	21NOV06	90	28	2	-47	-154								
NP Bldg - Internal Works 2F																	
T1600	2F ABWF Initial Finishes	18	06APR06A	24NOV06	95	28	5	-138	-158								
NP Bldg Internal Works 3F																	
T1880	3F - paint touch up & doors	12	11DEC06	23DEC06	0	0	12	-25	-117								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart																												
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42																						
ENT North Portal Bldg (3F/ Fan Rm) - E & M Works											11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19
EM2640	BS Works for MCC, UPS, LCC	12	20JUN06A	21NOV06	95	0	2	-113	-141	[Gantt bar: 20JUN06 to 21NOV06]																												
EM2880	E&M Works in Corridors 3/F	24	17JUL06A	21NOV06	95	0	2	-97	-129	[Gantt bar: 17JUL06 to 21NOV06]																												
EM2760	BS Works for 110V Charger Rm	12	01AUG06A	24NOV06	95	0	5	-133	-144	[Gantt bar: 01AUG06 to 24NOV06]																												
EM2820	Genset Installation	30	01SEP06A	06DEC06	50	0	15	-118	-114	[Gantt bar: 01SEP06 to 06DEC06]																												
EM2660	MCC, UPS, LCC Installation	30	18SEP06A	05DEC06	90	0	4	-113	-129	[Gantt bar: 18SEP06 to 05DEC06]																												
EM2920	Termination of overall Elect HV & LV Sys	30	15OCT06A	09FEB07	15	0	26	-133	-125	[Gantt bar: 15OCT06 to 09FEB07]																												
EM2890	Compressor Room Installation	18	20NOV06	09DEC06	0	0	18	-83	-151	[Gantt bar: 20NOV06 to 09DEC06]																												
ENT North Portal Bldg (4F/Upr Plen) - E & M Work																																						
EM2940	TVS Installation	100	02AUG06A	26FEB07	59	0	41	-136	-108	[Gantt bar: 02AUG06 to 26FEB07]																												
Testing and Commissioning																																						
EM2780	110V Charger Rm Installation + T&C	12	20NOV06	02DEC06	0	0	12	-133	-139	[Gantt bar: 20NOV06 to 02DEC06]																												
EM2620	HV Sw + Tx Termination + T&C	30	04DEC06	10JAN07	0	0	30	-133	-60	[Gantt bar: 04DEC06 to 10JAN07]																												
EM2680	MCC, LCC Termination + T&C	30	04DEC06	10JAN07	0	0	30	-125	-127	[Gantt bar: 04DEC06 to 10JAN07]																												
EM2740	LV Sw Termination + T&C	30	04DEC06	10JAN07	0	0	30	-125	-123	[Gantt bar: 04DEC06 to 10JAN07]																												
EM2840	Genset Termination + T&C	12	07DEC06	20DEC06	0	0	12	-118	-114	[Gantt bar: 07DEC06 to 20DEC06]																												
Statutory Inspection & Issued Certificates																																						
EM3040	Permanent power energization from ENT SP Bldg	6	16FEB07	02MAR07	0	0	6	-144	-72	[Gantt bar: 16FEB07 to 02MAR07]																												
TOLL PLAZA & ANCILLIARY STRUCTURES																																						
CONTRACT DEFINED DATES & SECTIONS																																						
AREA ACCESS & VACATION DATES																																						
T_D1234	Release of Portions - D1,D2,D3,D4	0		22DEC06	0	0	0	337	0	[Gantt bar: 22DEC06 to 22DEC06]																												
T_D5678	Release of Portions - D5,D6,D7,D8	0		22DEC06	0	0	0	337	0	[Gantt bar: 22DEC06 to 22DEC06]																												
SUBMITTALS & APPROVALS																																						
ABWF & BW SUBMITTALS																																						
1522	TP/FB - Approve footbridge details	24	28JUL05A	02DEC06	50	50	12	285	-165	[Gantt bar: 28JUL05 to 02DEC06]																												

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP		OCT			NOV			DEC			JAN			FEB			MAR							
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
Design & Engineering - Temporary Works																																		
50.030.020																																		
1244	Design/ICE Check Tool Booth Canopy	24	01DEC05A	28OCT06A	100	0	0		-124																									
1341	Eng Approve Dsg Tool Booth Canopy	12	01DEC05A	28OCT06A	100	0	0		-112																									
1358	Issue Constr Dwgs Tool Booth Canopy	0	01DEC05A	28OCT06A	100	0	0		-105																									
Procurement - Major Material																																		
2185	Order/Fabricate/Deliver Tool Booth Canopy	90	01DEC05A	28OCT06A	100	11	0		-68																									
Construction Works																																		
Toll Plaza - TCSS Access																																		
K1162	Toll Plaza - TCSS Access (East Side)	0		28NOV06	0	0	0	-125	-109																									
TOLL PLAZA EAST SIDE																																		
K1282	Provision of micro-satellite-office at East Loop	186	13MAR06A	31JAN07	35	17	60	-91	-95																									
K1232	Carriageway Drainage Prior to TCSS	36	27APR06A	23NOV06	90	10	4	-125	-137																									
K1222	Main carriageway Ducting & Drawpits	54	02MAY06A	30DEC06	80	0	10	-87	-114																									
S1170	FW Watermains Centre to Admin Bldg & FH12, FH13	36	02MAY06A	30NOV06	90	0	10	-71	-115																									
S1160	Installation of Ducting and Drawpits for TCSS	32	08MAY06A	28NOV06	90	0	4	-125	-109																									
K1212	Main Carid'way Drain (D3 & D4) - after stockpile	57	20MAY06A	25NOV06	90	0	6	-87	-114																									
K1242	Main carriageway - East Subbase and kerbs	53	16OCT06A	30JAN07	30	0	33	-87	-98																									
S1420	Road Pavement Surfacing (Flex & Rigid)	56	18OCT06A	16FEB07	25	0	42	-87	-98																									
K1182	East Loop Road - Drainage	28	20NOV06	21DEC06	0	0	28	-59	-165																									
K1252	E&M / Lighting works	24	20NOV06	16DEC06	0	0	24	-43	-153																									
K1192	East Loop Road - Formation & Roadworks	36	01FEB07	22MAR07	0	0	36	-91	-95																									
S1140	Furniture, signage (face only), white lining	18	26FEB07	17MAR07	0	0	18	-87	-98																									
S1190	HGC Ducting & Drawpits	24	08MAY06A	30DEC06	85	0	4	-87	-114																									
TOLL PLAZA WEST SIDE																																		
K1161	CSJV, Remove TAR1, drainage, formation (RE Wall)	56	24SEP05A	07NOV06A	100	60	0		-135																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
										36 11 18 25 2	37 9 16 23 30 6	38 13 20 27 4	39 11 18 25 1	40 8 15 22 29 5	41 12 19 26 5 12 1	42	
TOLL PLAZA WEST SIDE																	
K1231	CSJV Complete Drainage & Vacate part	24	31DEC05A	07NOV06A	100	60	0		-146								
K1201	West Loop Drainage Works	38	15JUN06A	12DEC06	95	25	2	241	-146								
K1241	Main Carriageway - West side drainage - FB-SHT	45	19JUN06A	24NOV06	90	0	5	-118	-105								
S1510	FW Waterminam Centre to Admin Bldg & FH12, FH13	24	10JUL06A	02DEC06	50	0	12	-113	-106								
K1221	Main Carriageway - West Subbase & kerbs	54	14OCT06A	25JAN07	30	0	38	-118	-62								
K1211	E&M / Lighting works	24	20NOV06	25JAN07	0	0	24	-74	-62								
S1310	Road Pavement Surfacing	57	09DEC06	16FEB07	0	0	57	-87	-65								
K1171	West Loop road - Roadworks	36	13DEC06	26JAN07	0	0	36	241	-146								
S1410	Furniture, signage (face only), white lining	18	26FEB07	17MAR07	0	0	18	-87	-65								
TOLL PLAZA - works adjacent to building																	
S1415	SHT SPB - Drainage & Ducting	18	28FEB06A	28NOV06	90	90	8	-3	-165								
S1427	Admin Bldg & Wshop - Drainage & ducting	36	07MAR06A	28NOV06	80	25	8	-33	-156								
S1380	ENT NPB - Drainage & Ducting	18	01APR06A	21NOV06	95	25	2	3	-159								
S1440	Install Earth Mat for Admin Bldg & SHT NP Bldg	36	06NOV06A	14DEC06	40	0	22	-93	-151								
S1400	ENT NPB - Kerbs & Rwks & misc Finishes	12	15NOV06A	02DEC06	10	0	12	-7	-157								
S1417	SHT SPB - Kerbs & Rwks & misc finishes	12	20NOV06	02DEC06	0	0	12	-7	-155								
S1437	Admin Bldg & Wshop - kerbs, Rwks & misc finishes	30	29NOV06	05JAN07	0	0	30	-33	-117								
TOLL PLAZA COLLECTOR'S SUBWAY																	
ABWF																	
101471	TP/CS - Internal Finishes Ptn A, B & C	24	20NOV06	16DEC06	0	0	24	-85	-151								
101472	TP/CS - Internal Finishes Ptn D	12	18DEC06	03JAN07	0	0	12	-85	-151								
S1290	Toll Subway - E&M	54	04JAN07	15MAR07	0	0	54	-85	-151								
TOLL PLAZA FOOTBRIDGE																	
ABWF																	
S1264	Installation of Aluminium Cladding	38	20NOV06	05JAN07	0	0	38	-117	-157								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR																								
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	5	12											
ABWF																																																				
S1250	Toll Ftbrdge - Finishes	54	10FEB07	26APR07	0	0	54	-117	-157																																											
S1340	Toll Plaza - Erection of Lift Steel Work	24	30MAY06A	23NOV06	95	0	4	-95	-145																																											
E & M WORKS																																																				
S1200	Toll Plaza Footbridge - Lift Installation	72	24NOV06	27FEB07	0	0	72	-95	-145																																											
S1470	E&M Installation at Footbridge	30	06JAN07	09FEB07	0	0	30	-117	-157																																											
S1500	E&M Footbridge T&C	18	10FEB07	10MAR07	0	0	18	-81	-157																																											
TOLL PLAZA BOOTHS																																																				
S1220	Construct Toll Booths - 22No.	88	28OCT06A	03FEB07	50	0	44	-119	-60																																											
S1210	Construct Toll Islands 17 No.	51	13NOV06A	02JAN07	5	0	35	-119	-141																																											
S1300	Toll Booths All E&M, CMCS & TCS	54	16JAN07	27MAR07	0	0	54	-119	-69																																											
ADMIN.BLDG. - WORKSHOP																																																				
S1350	Workshop - External Finishes	60	03AUG06A	09DEC06	70	0	18	-13	-81																																											
S1320	Workshop - Remaining internal Finishes	36	20AUG06A	27NOV06	70	0	7	-2	-70																																											
S1280	Workshop - Install Roller Shutters	12	20NOV06	02DEC06	0	0	12	-7	-89																																											
ADMINISTRATION BUILDING																																																				
SUBMITTALS & APPROVALS																																																				
ABWF. MTRL SUBMITTALS																																																				
1885	Admin.Bldg. - Prep & submit wood ceiling details	24	20NOV04A	02DEC06	50	50	12	237	-165																																											
1881	Admin.Bldg. - Prep & sub GRP water tank details	24	12JAN05A	02DEC06	50	50	12	231	-165																																											
1887	Admin.Bldg. - Prep & sub suspend ceiling details	24	12AUG05A	02DEC06	50	50	12	201	-165																																											
1882	Admin.Bldg. - Approve GRP water tank details	24	04DEC06	03JAN07	0	0	24	231	-165																																											
1886	Admin.Bldg. - Approve wood ceiling details	24	04DEC06	03JAN07	0	0	24	237	-165																																											
1888	Admin.Bldg. - Approve suspended ceiling details	24	04DEC06	03JAN07	0	0	24	201	-165																																											
E&M EQPT. / MTRL. SUBMITTALS																																																				
8248	AdmBldg-Engineer to provide Cater'g equip detail	0	07APR05A		100	100	0		-165																																											

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR						
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
DESIGN & ENGINEERING																																		
TEMPORARY WORKS																																		
1373	Design/ICE Temp False/Formwork Admin Bldg	48	20NOV06	17JAN07	0	0	48	249	-165																									
PROCUREMENT - MATERIAL																																		
ABWF WORKS																																		
1904	Admin.Bldg. - Procure wood ceiling	90	19JAN05A	02DEC06	87	87	12	235	-165																									
1902	Admin.Bldg. - Procure GRP water tank	90	16MAR05A	02DEC06	87	87	12	255	-165																									
1905	Admin.Bldg. - Procure suspended ceiling	120	09MAY05A	03JAN07	70	70	36	201	-165																									
1910	Admin.Bldg. - Procure expanded metal cladding	90	06JUN05A	12DEC06	87	87	20	-113	-165																									
1938	Admin.Bldg. - Initial delivery glass canopy	0	20NOV06*		0	0	0	-55	-144																									
2056	Admin.Bldg. - Initial delivery sheet decking	0	20NOV06		0	0	0	297	-123																									
2059	Admin.Bldg.- Initial deliv fall arrest roof syst	0	20NOV06*		0	0	0	-34	-118																									
2060	Admin.Bldg. - Initial deliver balust & metal wks	0	20NOV06*		0	0	0	-34	-118																									
2058	Admin.Bldg. - Initial delivery wood ceiling	0	03FEB07		0	0	0	235	-165																									
2063	Admin.Bldg. - Initial delivery GRP water tank	0	08FEB07		0	0	0	231	-165																									
2061	Admin.Bldg.- Initial del expanded metal cladding	0	13FEB07*		0	0	0	-113	-163																									
MAJOR EQUIPMENT DELIVERY																																		
ADMINISTRATION BUILDING																																		
6428	AdmBldg-Del. building vent. fans	48	06APR06A	10NOV06A	100	20	0		-136																									
6534	AdmBldg-Del. AFA & FM200 sys	48	15MAY06A	10NOV06A	100	0	0		-77																									
6476	AdmBldg-Del. CMCS, ELV & TCS equip't	72	01JUN06A	10NOV06A	100	0	0		-72																									
CONSTRUCTION																																		
TCSS Access at Admin Bldg																																		
T3350	TCSS Works Within Admin Bldg / Tunnel & Ext	140	15SEP06A	27APR07	0	0	110	-124	-99																									
CIVIL & ABWF WORKS																																		
ABWF																																		
Admin Bldg (G/F) - Internal Work @ Grid 1 to 21																																		
T1682	AB (G/F to 1/F) - Staircase Finishing Works	30	18APR06A	01DEC06	65	5	11	-126	-148																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR														
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12						
Admin Bldg (Roof/Fir) - Inter Works Grid 3 to 16																																										
T3280	AB R/F (Grid 3-16) - Wall Plaster & Fir Screed	18	28APR06A	20NOV06	95	50	1	-124	-157																																	
T2250	AB R/F (Grid 3-16) - Ceiling & Wall Base Paint	12	15JUN06A	04DEC06	95	0	2	-124	-150																																	
T2235	AB R/F (Grid 3-16) - Door Leaf & Final Paints	6	28DEC06	04JAN07	0	0	6	-32	-123																																	
Admin Bldg - Upper Roof & External Facade																																										
T2890	AB Ext (GL 11-21) - Wall Waterproofing	18	28MAR06A	21OCT06A	100	40	0		-131																																	
T2340	AB Ext (GL 11-21) - Slate Cladding	30	03APR06A	06DEC06	50	30	15	-49	-159																																	
T2850	AB Ext (GL 1-11) - Install Louvres & Wdw Glazing	60	03APR06A	09DEC06	70	70	18	-83	-165																																	
T2860	AB Ext (GL 11-21) - Install Louvres & Wdw Glazing	60	03APR06A	09DEC06	70	70	18	-83	-165																																	
T2870	AB Ext UR/LR - Roof Screeding	18	30JUN06A	21NOV06	90	0	2	-90	-149																																	
T2230	AB Ext (GL 6-11) - Curtain Wall & Glass Canopy	30	03JUL06A	23DEC06	80	0	6	-55	-123																																	
T2232	AB Ext (GL 11-18) - Curtain Wall Installation	21	03JUL06A	09DEC06	80	0	5	-55	-141																																	
T2880	AB Ext (GL 1-11) - Wall Waterproofing	18	20JUL06A	08NOV06A	100	0	0		-138																																	
T2841	AB Ext UR/LR - Render&wall paint to Open Area Rf	12	25JUL06A	05DEC06	50	0	6	-90	-125																																	
T2840	AB Ext UR/LR - Roof Waterproofing & Test	24	12AUG06A	19DEC06	40	0	15	-90	-149																																	
T2330	AB Ext (GL 1-11) - Slate Cladding	45	15OCT06A	16DEC06	80	0	9	-49	-123																																	
T2900	AB Ext UR/LR - Insulation & Conc Roof Tile	30	06NOV06A	26JAN07	20	0	24	-90	-137																																	
T2830	AB Ext (GL 11-21) - Ceramic Wall Tiles	30	20NOV06	23DEC06	0	0	30	-85	-154																																	
T2350	AB Ext (GL 1-11) - Ceramic Wall Tiles	30	27DEC06	31JAN07	0	0	30	-85	-154																																	
T2915	AB Ext UR/LR- Install GMS, Balustrades & Railing	21	27JAN07	28FEB07	0	0	21	-90	-119																																	
T2245	AB Ext (GL 1-21) - Remove External Scaffolding	12	13FEB07	27MAR07	0	0	12	-113	-139																																	
T2270	AB Ext (GL 3-11) - Expanded metal mesh cladding	24	13FEB07	20MAR07	0	0	24	-89	-139																																	
T2280	AB Ext (GL 11-16) - Expanded metal mesh cladding	24	13FEB07	20MAR07	0	0	24	-113	-163																																	
BUILDING SERVICES																																										
Admin Bldg (G/F) - E & M Works																																										
EM3540	BS Works in G/F	90	01JUN06A	09JAN07	85	12	13	-126	-127																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR						
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
Admin Bldg (G/F) - E & M Works																																		
EM3620	E&M Works in Risers	90	12JUN06A	04DEC06	85	0	13	-98	-80																									
EM3220	BS Works for HV Sw + Tx	12	14JUN06A	21NOV06	95	0	2	-120	-155																									
EM3280	BS Works for LV Sw	12	14JUN06A	21NOV06	95	0	2	-120	-143																									
EM3340	BS Works for 110V Charger Rm	12	14JUN06A	21NOV06	95	0	2	-129	-155																									
EM3420	BS Works for Genset	12	14JUN06A	24NOV06	98	0	5	-120	-134																									
EM3300	LV Sw Installation	30	01OCT06A	20DEC06	40	0	18	-124	-130																									
Admin Bldg (1/F) - E & M Works																																		
EM3560	BS Works in 1/F	90	08JUN06A	20DEC06	89	12	10	-112	-113																									
EM3380	BS Works for UPS Rm (2x)	12	03JUL06A	20NOV06	95	0	1	-128	-135																									
Admin Bldg (2/F) - E & M Works																																		
EM3580	BS Works in 2/F	90	08JUN06A	13DEC06	85	0	18	-106	-68																									
Admin Bldg (Int. & Ext. Roof Lvl) - E & M Works																																		
EM3600	BS Works in R/F	78	06JUN06A	27DEC06	60	1	31	-116	-123																									
EM3190	Admin Bldg - Lift Installation	72	19JUN06A	27NOV06	95	0	7	-26	-16																									
EM3720	Chiller System in R/F (inc. All AC Units)	72	20JUN06A	23NOV06	95	0	4	-69	-13																									
EM3480	BS Works for MCC	12	03JUL06A	20NOV06	95	0	1	-118	-126																									
EM3500	MCC Installation	30	08AUG06A	22NOV06	90	0	3	-118	-98																									
Admin Bldg - Testing and Commissioning																																		
EM3640	Termination of overall Elect HV & LV Sys	36	10OCT06A	05FEB07	20	0	20	-129	-75																									
EM3360	110V Charger Rm Installation + T&C	12	22NOV06	05DEC06	0	0	12	-129	-105																									
EM3460	Genset Termination + T&C	12	22NOV06	05DEC06	0	0	12	-99	-93																									
EM3520	MCC Termination + T&C	30	23NOV06	29DEC06	0	0	30	-118	-98																									
EM3260	HV Sw + Tx Termination + T&C	30	06DEC06	12JAN07	0	0	30	-129	-92																									
EM3320	LV Sw Termination + T&C	30	06DEC06	12JAN07	0	0	30	-129	-105																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
Admin Bldg - Statutory Inspection and Handover																	
EM3370	Admin Bldg - Lift Commissioning	24	28NOV06	27DEC06	0	0	24	-26	-16								
EM3820	Permanent power energization from SHT NP Bldg	6	15FEB07	01MAR07	0	0	6	-143	-72								
SHATIN HEIGHTS SOUTH PORTAL BUILDING																	
CONTRACT DEFINED DATES & SECTIONS																	
AREA ACCESS & VACATION DATES																	
ACS_J2	Access to - J2 (T.Plate & above) SH-S.Vent.Bldg.	0	10DEC05A		100	100	0		-200								
ACS_D8	Access to Portion - D8	0	03JAN06A		100	100	0		-200								
SUBMITTALS & APPROVALS																	
ABWF & BW APPROVALS																	
2000	SHT SPB - Approve doors details	24	07MAY05A	29NOV06	70	70	9	-102	-165								
2074	SHT SPB - Approve aluminum composite cladding	24	13DEC05A	12DEC06	50	50	20	-33	-152								
PROCUREMENT - MATERIAL																	
ABWF WORKS																	
2079	SHT SPB - Procure aluminum composite cladding	180	19APR05A	01NOV06A	100	50	0		-117								
2077	SHT SPB - Procure expanded metal mesh cladding	180	06JUN05A	06DEC06	50	50	15	-108	-160								
2086	SHT SPB - Initial deliv alum composite claddings	0	02NOV06A		100	0	0		-68								
2082	SHT SPB - Initial delivery of slate cladding	0	20NOV06*		0	0	0	-49	-127								
2083	SHT SPB - Initial deliv fall arrest roof syst.	0	20NOV06*		0	0	0	-25	-118								
2084	SHT SPB - Initial delivery balustrd & metal work	0	20NOV06*		0	0	0	-25	-118								
2081	SHT SPB - Initial delivery of doors	0	05JAN07*		0	0	0	-102	-164								
2085	SHT SPB - Initial deliv expanded metal cladding	0	07FEB07*		0	0	0	-108	-158								
MAJOR EQUIPMENT DELIVERY																	
E&M WORKS																	
7157	ShtSpBldg-Del. FS pumps & tank to G/F	48	06MAR06A	10NOV06A	100	50	0		-149								
7211	ShtSpBldg-Del. PD pump & tank to G/F	48	10APR06A	10NOV06A	100	0	0		-101								
7231	ShtSpBldg-Del. PD irrig. pump & tank to G/F	48	10APR06A	10NOV06A	100	0	0		-101								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP		OCT			NOV			DEC			JAN			FEB			MAR													
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12			
Roof & External Facade																																								
AB6067	Sht SPB - Install Aluminum louvres & doors	75	15MAR06A	04JAN07	80	0	37	-102	-126																															
AB6077	Sht SPB - Alum. composite cladding to ext walls	60	07AUG06A	13JAN07	25	0	45	-58	-68																															
AB6047	Sht SPB - GMS, S/S Channel, Balustrade & Railing	18	14AUG06A	09FEB07	25	0	14	-81	-153																															
AB6037	Sht SPB - Roof Waterproofing & Test	12	20NOV06	19DEC06	0	0	14	-81	-165																															
AB6007	Sht SPB - Slate Cladding above NB/SB Carriageway	36	06DEC06	19JAN07	0	0	36	-63	-141																															
AB6027	Sht SPB - External Wall Painting	30	14DEC06	20JAN07	0	0	30	-76	-154																															
AB6057	Sht SPB - 25thk Roof Screed & Roofing Tiles	18	06JAN07	26JAN07	0	0	18	-81	-165																															
AB6034	Sht SPB - Expanded metal cladding to ext walls	30	07FEB07	21MAR07	0	0	30	-108	-158																															
SHT South Portal Bldg. - BUILDING SERVICES																																								
E & M WORKS																																								
SHT South Portal Bldg (G/F) - E & M Works																																								
EM6065	Installation of FS Pumps & Pipework at GF	18	15NOV06A	06DEC06	70	0	6	-80	-145																															
EM6063	E&M Access to G/F	0	30NOV06		0	0	0	-227	-157																															
SHT South Portal Bldg (2F/Silencer) - E & M Work																																								
EM6080	BS Works for HV Sw + Tx	12	17JUL06A	21NOV06	95	0	2	-118	-138																															
EM6300	E&M Works in Corridors 2/F	24	17JUL06A	21NOV06	90	0	2	-104	-114																															
EM6240	BS Works for Genset	18	01AUG06A	24NOV06	75	0	5	-102	-135																															
EM6260	Genset Installation	36	14AUG06A	09DEC06	50	0	18	-120	-112																															
EM6100	HV Sw + Tx Installation	18	11SEP06A	05DEC06	95	0	2	-118	-120																															
SHT South Portal Bldg (3F/Fan Rm) - E & M Work																																								
EM6140	BS Works for LV Sw, MCC, UPS, LCC	12	12JUN06A	21NOV06	95	0	2	-121	-138																															
EM6200	BS Works for 110V Charger Rm	12	12JUN06A	21NOV06	95	0	2	-125	-138																															
EM6320	E&M Works in Corridors 3/F	24	14JUL06A	20NOV06	95	0	1	-103	-113																															
EM6160	LV Sw, MCC, UPS, LCC Installation	30	16AUG06A	05DEC06	95	0	5	-113	-120																															
EM6360	Termination of overall Elect HV & LV Sys	30	10OCT06A	31JAN07	15	0	25	-125	-106																															

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP		OCT			NOV			DEC			JAN			FEB			MAR							
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
SHT South Portal Bldg (4F/Up Plen) - E & M Work																																		
EM6400	TVS Installation	100	12JUN06A	30NOV06	98	0	10	-75	-45																									
Testing and Commissioning																																		
EM6220	110V Charger Rm Installation + T&C	12	20NOV06	02DEC06	0	0	12	-125	-136																									
EM6120	HV Sw + Tx Termination + T&C	30	04DEC06	10JAN07	0	0	30	-107	-118																									
EM6180	LV Sw, MCC, UPS, LCC Termination + T&C	30	04DEC06	10JAN07	0	0	30	-125	-118																									
EM6280	Genset Termination + T&C	12	11DEC06	23DEC06	0	0	12	-120	-112																									
Statutory Inspection & Issued Certificates																																		
EM6500	Perm't power energ. (From ENT SPB)	6	16FEB07	02MAR07	0	0	6	-144	-72																									
SHT TUNNEL																																		
MAJOR EQUIPMENT DELIVERY																																		
SHT TUNNEL NORTHBOUND																																		
7012	ShtRtNb-Del. TVS control sys	48	24MAR06A	12DEC06	95	60	20	277	-176																									
7024	ShtRtNb-Del. AFA & Linear sys	48	01JUN06A	06DEC06	90	0	15	282	-110																									
SHT TUNNEL SOUTH BOUND																																		
6959	ShtRtSb-Del. TVS control sys	47	24MAR06A	05JAN07	90	40	38	259	-194																									
6947	ShtRtSb-Del. CMCS & ELV sys	72	01JUN06A	29DEC06	90	0	33	264	-110																									
6971	ShtRtSb-Del. AFA & Linear sys	48	01JUN06A	13DEC06	56	0	21	276	-116																									
CONSTRUCTION																																		
SHT NORTHBOUND TUNNEL																																		
(E & M) BUILDING SERVICES																																		
MVAC / Tunnel Ventilation System Above OHVD																																		
207004	Sht NB - Install Motorized Smoke & Fire Damper	48	22FEB06A	30NOV06	82	80	10	-138	-166																									
207006	Sht NB - Comp Air Pipes/Condts to E/P1 to E/P5	36	12APR06A	07DEC06	95	5	2	-138	-159																									
207005	Sht NB - Comp Air Pipes/Condts to E/P10 to E/P6	36	20JUN06A	14DEC06	95	0	2	-138	-129																									
207007	Sht NB - Cabling, wiring and termination	24	20JUN06A	22DEC06	70	0	7	-138	-112																									
207008	Sht NB - MVAC Testing and T&C	12	23DEC06	09JAN07	0	0	12	-138	-112																									
Plumbing and Drainage																																		
214030	Sht NB - Pipe Testing & T&C	12	15MAY06A	21NOV06	90	0	2	-85	-127																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP			OCT			NOV			DEC			JAN			FEB			MAR						
										36	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19
SHT CROSS PASSAGES (CP1 to CP10)																																		
(E & M) BUILDING SERVICES																																		
Electrical Works																																		
277957	(CP1-CP10) - Cable Containment & Eqipt Support	60	03MAY06A	22NOV06	98		2	3	-131	-110																								
277959	(CP1-CP10) - MCCB / MCB Bd,CMCS, Busbar, Switches	72	13JUN06A	27NOV06	90		0	7	-127	-57																								
277960	(CP1-CP10) - Conduit, light Fixture, Swt & Test	36	15AUG06A	14DEC06	40		0	22	-131	-108																								
277961	(CP1-CP10) - HV & LV Cables Termination & Test	48	15NOV06A	17JAN07	10		0	30	-145	-72																								
277962	(CP1-CP10) - Switchboard, CMCS, Eqpt, Testing	48	22NOV06	17JAN07	0		0	22	-145	-72																								
SHT NORTH PORTAL BUILDING																																		
SUBMITTALS & APPROVALS																																		
ABWF & BUILDERS WORKS																																		
2094	SHT NPB - Approve alum. composite claddings	24	13DEC05A	28NOV06	90		70	8	-110	-151																								
PROCUREMENT - MATERIAL																																		
ABWF WORKS																																		
2099	SHT NPB - Procure alum. composite claddings	180	19APR05A	09DEC06	50		50	18	-120	-161																								
2098	SHT NPB - Procure expanded metal claddings	180	06JUN05A	01NOV06A	100		50	0		-141																								
2103	SHT NPB - Initial deliv expanded metal claddings	0	02NOV06A		100		0	0		-78																								
2101	SHT NPB - Initial delivery of doors	0	20NOV06*		0		0	0	-25	-127																								
2102	SHT NPB - Initial delivery of slate claddings	0	20NOV06*		0		0	0	-79	-118																								
2104	SHT NPB - Initial deliv fall arrest roofing syst	0	20NOV06*		0		0	0	-43	-111																								
2106	SHT NPB - Initial deliv alum. composite cladding	0	20JAN07*		0		0	0	-120	-133																								
MAJOR EQUIPMENT DELIVERY																																		
SHT NORTH PORTAL BUILDING																																		
7379	ShtNpBldg-Del. FS pumps & tank to G/F	48	06MAR06A	24NOV06	90		0	5	292	-113																								
7325	ShtNpBldg-Del. Package AC Units	48	10APR06A	30NOV06	80		0	10	287	-118																								
7433	ShtNpBldg-Del. PD pump & tank to G/F	48	10APR06A	30NOV06	80		0	10	287	-118																								
7429	ShtNpBldg-Del. AFA & FM200 sys	48	15MAY06A	24NOV06	90		0	5	292	-110																								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Gantt Chart							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
SHT NORTH PORTAL BUILDING																	
7309	ShtNpBldg-Del. CMCS & ELV equip't	48	01JUN06A	29DEC06	90	0	33	264	-111								
CONSTRUCTION																	
TCSS Access to SHT North Portal Bldg																	
EM7286	TCSS Containment in 1/F	12	20NOV06	02DEC06	0	0	12	285	-149								
EM7289	TCSS Containment in Lower Plenum	18	20NOV06	09DEC06	0	0	18	279	-144								
EM7292	TCSS Containment in 2/F	18	20NOV06	09DEC06	0	0	18	279	-149								
EM7295	TCSS Containment in 3/F and above	18	20NOV06	09DEC06	0	0	18	279	-144								
EM7283	TCSS Containment in G/F	12	29NOV06	12DEC06	0	0	12	-193	-152								
EM7290	TCSS ACCESS - GF (Room G02-G03, G04-G08)	0		28NOV06	0	0	0	-189	-152								
EM7293	TCSS ACCESS - GF (Room G09,G15)	0		12DEC06	0	0	0	-193	-152								
CIVIL & ABWF WORKS																	
AB7040	11U/G Drainages and Utilities under bldg	24	20JUL06A	02DEC06	50	0	12	271	-153								
AB7060	Backfill, G/F Slabs and Walls	24	04SEP06A	19DEC06	40	0	14	271	-143								
ABWF Works																	
AB7130	Remedy defects to SHT Buildings	24	17DEC05A	21NOV06	95	50	2	-193	-158								
ABWF at GF																	
AB7080	Initial Finishes to G/F	18	25APR06A	28NOV06	95	7	8	-193	-152								
AB7330	G/F paint Touch Up & Doors	12	15DEC06	30DEC06	0	0	12	-29	-36								
ABWF at 1F & LP																	
AB7120	Initial Finishes to Lower Plenum	12	22APR06A	05DEC06	95	0	8	-87	-158								
AB7320	1F & LP Paint Touch Up & Doors	12	15DEC06	30DEC06	0	0	12	-29	-36								
ABWF at 2F																	
AB7340	2/F Paint Touch Up & Doors	12	15DEC06	30DEC06	0	0	12	-29	-36								
ABWF at 3F																	
AB7350	3/F Paint Touch Up & Doors	12	15DEC06	30DEC06	0	0	12	-29	-36								
ABWF at 4F																	
AB7180	Initial Finishes to 4/F and above	24	02MAY06A	28NOV06	90	0	8	289	-140								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	Calendar							
										SEP 36	OCT 37	NOV 38	DEC 39	JAN 40	FEB 41	MAR 42	
INTERFACE DATES																	
SHT RC FULL ENCLOSURE / T3 UNDERPASS																	
EM4020	LKJV - Possession of T3 Underpass	0	20NOV06*		0	0	0	-139	-145								
CONSTRUCTION WORKS																	
SHT RC FULL ENCLOSURE / T3 UNDERPASS																	
Kiosk S1 at Shatin North Control Point																	
EM3950	Kiosk S1 - Structure & Fittings	24	03OCT06A	05DEC06	40	0	14	-139	-155								
EM3952	Kiosk S1 - Install E&M Works	18	20NOV06	19DEC06	0	0	18	-139	-149								
EM3960	Wighbridge S1 - Install	12	20NOV06	02DEC06	0	0	12	-18	-165								
EM3970	Weighbridge S1 - Test and T&C	30	04DEC06	10JAN07	0	0	30	-18	-165								
EM3954	Kiosk S1 - E&M Testing and T&C	6	20DEC06	28DEC06	0	0	6	-139	-149								
RC Full Enclosure - LV Switch Room																	
280070	E&M Access to Southern LV Switch Room	0	20NOV06		0	0	0	-145	-165								
280072	LV SW Rm - Cable Containment & Equipt Supports	24	20NOV06	16DEC06	0	0	24	-107	-165								
280074	LV SW Rm - SWGR, MCCB/ MCB Board, FS Panels	24	27NOV06	23DEC06	0	0	24	255	-135								
280076	LV SW Rm - Elect Lightings & Conduits	18	04DEC06	03JAN07	0	0	18	-107	-159								
280079	LV SW Rm - MCCB,MCB,LV Sw,FS panels Term & Test	18	11DEC06	10JAN07	0	0	18	255	-129								
280080	LV SW Rm - Connect HV / LV Cables from SHT NPB	24	11DEC06	10JAN07	0	0	24	255	-117								
280078	LV SW Rm - Lightings wiring, term & test	6	04JAN07	10JAN07	0	0	6	-107	-159								
STN RC FULL ENCLOSURE (North Bound) - E&M WORKS																	
MVAC / Tunnel Ventillation System																	
280000	RCFE NB - Ductworks Supports / Containment @ C/L	36	18FEB06A	23NOV06	90	30	4	-119	-152								
280002	RCFE NB - MVAC Ducts, TVF & MSFD Units @ C/L	48	02MAR06A	30NOV06	95	25	5	-119	-140								
280004	RCFE NB - MVAC Pipeworks & Conduits @ C/L	30	08AUG06A	14DEC06	70	0	9	-119	-122								
280006	RCFE NB - Cabling, wiring and termination	24	15DEC06	15JAN07	0	0	24	-119	-122								
280008	RCFE NB - MVAC Testing and T&C	12	15FEB07	08MAR07	0	0	12	-145	-72								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish	SEP							OCT							NOV							DEC							JAN							FEB							MAR						
										36							37							38							39							40							41							42						
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	5	12																		
Fire Protection System																																																										
280028	RCFE NB - (100d) FH / HR Pipeworks & Fittings	18	10JUL06A	25NOV06	95	0	2	-103	-91																																																	
280026	RCFE NB - FS Conduit, Hose Reel Cabinets & Eqpt.	16	31JUL06A	21NOV06	60	0	2	-103	-91																																																	
280029	RCFE NB - Install Smoke detector @ N1-N3	10	22NOV06	02DEC06	0	0	10	-91	-91																																																	
280030	RCFE NB - FS Wiring & Termination	24	27NOV06	23DEC06	0	0	24	-103	-91																																																	
280032	RCFE NB - FS Testing and T&C	12	15FEB07	08MAR07	0	0	12	-145	-72																																																	
Electrical Works																																																										
280044	RCFE NB - Brackets for Lightings @ Ceiling Level	60	30MAY06A	09DEC06	70	0	18	-107	-123																																																	
280048	RCFE NB - Earthing, Lighting, Eqpt. @ C/L	48	26JUN06A	23DEC06	50	0	24	-83	-87																																																	
280034	RCFE NB - E&M Access to Southern LV Sw Room	0	20NOV06		0	0	0	-145	-129																																																	
280038	RCFE NB - HV & LV Cabling Works @ C Trough	36	20NOV06	03JAN07	0	0	36	-145	-129																																																	
280046	RCFE NB - Conduits Works @ Ceiling Level	36	11DEC06	24JAN07	0	0	36	-107	-123																																																	
280040	RCFE NB - Install Power Distrn Panels & Test	30	04JAN07	07FEB07	0	0	30	-119	-129																																																	
280054	RCFE NB - Tunnel Signage, Wiring, Term & Test	40	08FEB07	03APR07	0	0	40	-119	-105																																																	
STN RC FULL ENCLOSURE (South Bound) - E&M WORKS																																																										
MVAC / Tunnel Ventillation System																																																										
280082	RCFE SB - Ductworks Supports / Containment @ C/L	36	02MAR06A	23NOV06	90	30	4	-134	-152																																																	
280084	RCFE SB - MVAC Ducts, TVF & MSFD Units @ C/L	48	02MAR06A	14DEC06	95	25	5	-134	-152																																																	
280086	RCFE SB - MVAC Pipeworks & Conduits @ C/L	30	23OCT06A	04JAN07	50	0	15	-134	-137																																																	
280088	RCFE SB - Cabling, wiring and termination	24	05JAN07	01FEB07	0	0	24	-134	-137																																																	
280090	RCFE SB - MVAC Testing and T&C	12	15FEB07	08MAR07	0	0	12	-145	-72																																																	
Fire Protection System																																																										
280098	RCFE SB - (100d) FH / HR Pipeworks & Fittings	18	03JUL06A	30NOV06	95	0	2	-107	-132																																																	
280096	RCFE SB - FS Conduit, Hose Reel Cabinets & Eqpt.	16	20NOV06	25NOV06	60	0	6	-107	-132																																																	
280100	RCFE SB - Install Smoke detector @ S1-S4	10	27NOV06	07DEC06	0	0	10	-95	-132																																																	
280102	RCFE SB - FS Wiring & Termination	24	01DEC06	30DEC06	0	0	24	-107	-132																																																	

**APPENDIX M
COMPLAINT LOG**

Appendix M - Complaint Log

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40426	Butterfly Valley	26 April 2004	<p>A public noise complaint was recently received by EPD. The complaint was related to the noise generated from the Route 8 – ENT site near Butterfly Valley at the night time on 21 April 2004. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 23 April 2004.</p>	<p><u>Noise at night time</u> The information provided by the RSS indicated that no works were undertaken by the Contractor during the concerned period. The concerned noise might probably be due to a burglary case occurred at same night.</p> <p><u>Noise during day-time</u> It is believed that the day-time noise complaint was due to the site formation works of the Project. Considering the powered mechanical equipment used at the Butterfly Valley and the echo effect of the valley, ET believe that the day-time construction noise from the site at Butterfly Valley might cause nuisance to the nearby resident to some extent, though there was no noise level exceedance at the Government Quarters during our routine monitoring in last three months.</p> <p>The Contractor agreed to implement mitigation measures, including good site practices, selecting quieter plant and working methods and reduction in numbers of noisy plant operating currently, in order to mitigate noise impacts at the NSRs.</p>	Closed
40914	Garden Villa	<p>13-Sep-04 (by EPD)</p> <p>14-Sep-04 (by ET Leader)</p>	<p>Environmental Protection Department (EPD) received a public noise complaint on 13 September 2004 about construction noise generated from the Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 14 September 2004.</p> <p>The complaint was about general construction noise generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. As informed by EPD,</p>	<p><u>Environmental Permits</u> A Construction Noise Permit (No. GW-RN0405-04) was obtained by the Contractor for the use of powered mechanical equipment (PME) in the concerned works area and use of TAR no.1 during restricted hours.</p> <p><u>Blasting Works</u> According to the information provided by the Resident Site Staff (RSS), for carrying out blasting works, a blasting permit should be issued by the Mines Division of Civil Engineering and Development Department (CEDD), but not under the jurisdiction of EPD. The CNP issued by EPD only specified the use of PME but not the blasting works during restricted hours.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			<p>the complainant was particularly concerned of two issues:</p> <ol style="list-style-type: none"> 1. The complainant was informed by the Contractor (Leighton – Kumagai Joint Venture) that blasting works would be conducted during restricted hours. He worried about the noise nuisance would be induced by the blasting works. 2. Noise nuisance from some site vehicles traveling on the Temporary Access Road (TAR no.1) near Garden Villa was noted by the complainant during restricted hours. 	<p>As advised by the RSS, the Contractor did intend to apply for a permit to the Mines Division of CEDD for blasting works during restricted hours. However, up to the time of preparation of this report, the Contractor still had not obtained the approval from the Mines Division and therefore, no blasting works were performed by the Contractor during restricted hours.</p> <p><u>Use of TAR no.1</u> According to Condition 3d of the above-mentioned CNP, there was restriction on the use of site vehicles traveling on TAR no.1.</p> <p>The usage of site vehicles on TAR no.1 in a 2-week period before the date of complaint, i.e. 30th August to 12th September 2004 showed that the only vehicle type using TAR no.1 for the concerned period was concrete truck and the number of vehicle pass was limited to 4 times per hour, which was in compliance with the above CNP's conditions.</p> <p>Regular noise monitoring was undertaken by ET at Garden Villa on 30th August and 6th September 2004 during restricted hours (1900 – 2300 hours). The monitoring results were 58.7 dB(A) and 58.6 dB(A), respectively, which were below the noise limit level of 60 dB(A). However, it should be noted that site vehicles were not used by the Contractor on TAR no.1 during restricted hours on these two monitoring day.</p> <p>Based on the information obtained, the validity for the noise complaint in associated with night-time blasting works could not be concluded under ET's investigation, since no blasting works had been performed by the Contractor during restricted hours at the time of the report preparation. Also, it should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the control of EPD.</p> <p>For the use of TAR no.1, the RSS's records showed that the number of vehicle pass in the period between 30th August and 12th September 2004 was complied with the CNP's conditions. It should be noted that only a maximum of 3 concrete trucks</p>	

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p>passing the site entrance was recorded. Therefore, it was considered that the nuisance noted by the complainant was not due to the site vehicles adopted by the Contractor (LKJV).</p> <p>Nevertheless, the Contractor was reminded to ensure the compliance of the CNP conditions and adopt good site practice to minimize the construction noise.</p>	
41021	Garden Villa	<p>09-Oct-04 (by EPD)</p> <p>21-Oct-04 (by ET Leader)</p>	<p>Environmental Protection Department (EPD) received a public noise complaint on 9 October 2004 about construction noise generated from the Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 21 October 2004.</p> <p>The complaint was about nighttime construction noise generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. As informed by EPD, the complainant was particularly concerned of two issues:</p> <ul style="list-style-type: none"> • Construction works undertaken by the Contractor (Leighton–Kumagai Joint Venture) were noted after 2300 hour. • Some workers were noted leaving the site through Temporary Access Road (TAR) no.1 at around 2 am, causing nuisance to the residents in Garden Villa. 	<p>According to the information provided by the RSS, no construction activity was undertaken in the nighttime period (2300 – 0700 hours) at the concerned site area.</p> <p>LKJV did admit that some vehicles had been operating at midnight for transporting LKJV’s survey workers from the site. Inconsiderate behaviors were noted causing nuisance to Garden Villa residents:</p> <ol style="list-style-type: none"> 1. Driving the vehicles too fast, which generated excessive engine noise; 2. Noise inside the vehicles (such as staff talking or radios) escaping through the open vehicle windows; and 3. Vehicle beeping horn to request the guards to open the gate. <p>In order to rectify the situation, LKJV had notified the relevant staff with the receipt of the complaint and urged them to take appropriate measures when using TAR1 at night:</p> <ol style="list-style-type: none"> 1. to drive slowly in order to reduce the engine noise, especially when approaching Garden Villa; 2. to roll up the vehicle windows to contain any noise from talking or radios; and 3. to prohibit beeping the vehicle horn for gate opening; instead, to park the car and approach the guard on foot. 	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
41023	Government Quarters (Butterfly Valley)	20-Oct-04 (by MHJV) 23-Oct-04 (by ET Leader)	A public complaint was received by the Engineer's Representative (ER) of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project on 20 th October 2004. The complaint was raised by a resident of the Government Quarters at Caldecott Road, concerning dust generation as a result of the construction activities at Butterfly Valley. The ER subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 23 rd October 2004.	<p>The complaint was considered valid based on:</p> <ol style="list-style-type: none"> 1. ER's site observations; 2. ET's weekly site audit; and 3. 1-hr TSP exceedance record. <p>Also, the sources of dust generation were identified as</p> <ol style="list-style-type: none"> 1. 2 portions of the haul roads, one at Slope BV-S2 and one linking between South Portal Tunnel to Mui Kong Tsuen, were found to be dry. 2. Dust impact due to the haulage of excavated materials at the South Portal. <p>Enhanced dust suppression measures had been implemented by the Contractor:</p> <ul style="list-style-type: none"> • added rockfill to the haul road between South Portal Tunnel and the Gully fill area; • maintained watering to haul road at Slope BV-S2; • requested the fill material supplier to ensure the material was in a damp condition before leaving quarry; • provided for material not dampened at the Quarry to be directed to the wheel wash for water spray before entering the site; • when cleaning drill holes along slope BV-S4 to ensure adequate water was available for flushing to suppress dust emission; AND • provided damper stockpiles of cleared material at BV-S2 before loading. <p>Based on ER's site observations, most of the above mitigation measures have been implementing by the Contractor. Also, an additional water browser was delivered to site on 29th Oct 04. No significant fugitive dust emission has been found.</p> <p>During ET's site inspections on 27th Oct and 3rd Nov 2004, the situation was found improved. No deficiency relating to air quality impact was noted by ET during the two audit sessions.</p> <p>The results of air quality monitoring (1-hr and 24-hr TSP) in the period between 21st Oct and 2nd Nov 2004 were all found to be complied with the Action / Limit Levels.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
41124	Government Quarters (Butterfly Valley)	21-Nov-04 (by LKJV) 24-Nov-04 (by ET Leader)	A public complaint was received by the Contractor of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project on 21 st November 2004 (Sunday). The complaint was concerned about excessive noise generation from construction machinery at Butterfly Valley on the same day. The Engineer’s Representative (ER) subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 24 th November 2004.	According to the ER, the only construction activity at Butterfly Valley undertaken on 21 st Nov 04 was formation of access road near Slope BV-S2. The activity only involved operations of 1 no. of excavator and 1 no. of dump truck with grab, which complied with the condition stipulated in a valid CNP GW-RW0484-04, which was hold by the Contractor. Routine noise monitoring was conducted on 21 st and 28 th Nov 2004 at NM6. All the measured noise levels (48.5 to 56.4 dB(A)) were well below the noise limit level. In addition, the measurement results were within the baseline noise level. Therefore, the complaint was considered to be invalid. Nevertheless, the Contractor was reminded to ensure the compliance of the conditions stipulated in CNP. The Contractor was also recommended to adopt good site practice in order to minimize the construction noise.	Closed
41201	Government Quarters (Butterfly Valley)	01-Dec-04 (by MHJV & ET Leader)	A public complaint was received by the Engineer’s Representative (ER) of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project on 1 st December 2004. The complaint was raised by a resident of the Government Quarters at Caldecott Road, concerning dust generation at Butterfly Valley. The Environmental Team (ET) of the Project was informed with the complaint on the same day. The resident complained that a large portion of the excavated slopes was not properly covered, which caused dust nuisance to her.	The complaint was considered valid based on: 1. ER’s site observations; 2. ET’s weekly site audit Upon receipt of the complaint, a series dust control measures had been implemented by the Contractor, such as covering of the exposed slopes with appropriate sheeting, regular watering to the haul roads and excavated slope faces, etc. During the ET’s weekly site audit on 08-Dec-04 together with the representative of HyD, IEC, ER and the Contractor, the above mitigation measures were observed. The idle slopes at BVS2 had been covered by tarpaulin sheeting and erosion mat. The left exposed slope surfaces at BVS2 were under excavation, thus being unable to be covered. According to the ER, the complainant has expressed his satisfaction to the site condition on 07-Dec-04, after the implementation of dust mitigation measures by the	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p>Contractor.</p> <p>However, owing to the prevailing of the dry season, the Contractor was reminded to ensure the dust control measures are effectively implemented.</p>	
50125	Garden Villa (North Portal)	<p>21-Jan-05 (by EPD)</p> <p>25-Jan-05 (by ET Leader)</p>	<p>Environmental Protection Department (EPD) received a public noise complaint on 21 January 2005 about construction noise and dust generated from the Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 25 January 2005.</p> <p>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:</p> <ol style="list-style-type: none"> 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. 	<p>Noise from blasting For carrying out the blasting, the Contractor had obtained the permit from relevant authority. The ET’s noise monitoring results did not show any exceedance for the measurement taken when blasting was in place. It should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the control of EPD. In order to minimize the nuisance from the works, the Contractor was recommended:</p> <ul style="list-style-type: none"> • To inform the residents around the area about the time of blasting in advance; and • To re-schedule the blasting time table, if possible, in order to avoid nuisance. <p>Uncovered dump trucks In order to evaluate the situation, two inspections were carried out by the ET at Garden Villa on 27-Jan and 28-Jan-05 to identify the dump trucks leaving the site with uncovered load. On 27-Jan-05, 3 nos. of trucks, which were working for ENT Project, was noted by-passing Garden Villa without proper cover.</p> <p>Enhanced control (penalty system) was implemented by the Contractor after the inspection on 27-Jan. During the inspection on 28-Jan-05, 24 nos. of dump trucks for ENT Project were found leaving the site. No non-compliance was noted for the trucks working for ENT Project.</p> <p>LKJV was reminded to keep closely monitoring on the condition and the effectiveness of the proposed control measures.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50308	Garden Villa (North Portal)	05-Mar-05 (by EPD) 08-Mar-05 (by ET Leader)	<p>EPD received a public complaint on 5 March 2005 about construction noise and dust generated from the construction sites of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) and Route 8 - Sha Tin Heights Tunnel and Approaches (R8-SHT), nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 8 March 2005.</p> <p>The complaint was about construction noise and dust generated from the construction sites nearby Garden Villa at Tai Po Road, Sha Tin. The complainant was particularly concerned of the following issues:</p> <ol style="list-style-type: none"> 1. Nighttime & Sunday construction noise 2. Noise from tunnel blasting at early morning and nighttime 3. Dust from construction activities 	<p><i>Nighttime & Sunday construction noise</i></p> <ul style="list-style-type: none"> • no exceedance for noise monitoring • restricted hour works were found complied with the CNPs • records of vehicular trips on TAR1 did not show non-compliance of CNP conditions <p><i>Noise from tunnel blasting at early morning and nighttime</i></p> <ul style="list-style-type: none"> • no exceedance for noise monitoring • valid blasting permit had been obtained from CEDD • blasting work is not under the jurisdiction of EPD <p><i>Dust from construction activities</i></p> <ul style="list-style-type: none"> • dump trucks with uncovered / inadequately covered materials were observed leaving site • no exceedance for TSP monitoring • enhanced dust suppression measures had been implemented by the Contractor <p><u>Conclusions</u> The complaint against the dust issue (uncovered / inadequately covered dump trucks) was considered justifiable. The Contractor was reminded to review the current checking system. Continuous spot checks would be performed by ET and RSS.</p>	Closed
50330	Garden Villa (TAR1)	30-Mar-05 (by EPD & ET Leader)	<p>Environmental Protection Department (EPD) received a public complaint on 30th March 2005 about construction noise from the sites of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) near Garden Villa at Tai Po Road, Sha Tin.</p> <p>The complaint, which was lodged by a resident of Garden Villa on 29th March 2005, was about the noise generated by heavy vehicles traveling in and out of the construction site near Garden Villa. According to the complaint, the noise was made from 7am onwards.</p>	<p>The site of concern was likely to be the Temporary Access Road no.1 (TAR1) connecting Tai Po Road and the construction sites of R8-ENT and Route 8 - Sha Tin Heights Tunnel and Approaches (R8-SHT).</p> <p>The time period of concern was within normal working hours (7am to 7pm) on a weekday not being holidays. According to the EM&A Manual, the criterion of construction noise in term of $L_{eq-30min}$ within this period is 75 dB(A) for domestic premises.</p> <p>Since the commencement of the Project, no exceedance of daytime noise criterion of 75 dB(A) was recorded at Station AM3 (Garden Villa). During the 2-hour measurement period of the ad-hoc monitoring (0700-0900 hrs), all the measured noise levels ($L_{eq-30min}$) were below the daytime noise</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p>criterion of 75 dB(A).</p> <p>Based on the results of routine noise monitoring and the ad-hoc measurement on 1st April 2005 at Garden Villa, no exceedance of daytime noise criterion of 75 dB(A) was recorded. The complaint lodged is therefore considered not justifiable.</p> <p>In order to minimize the nuisance generated by the vehicle use at Garden Villa, the Contractor has proposed to limit the frequency of trucks existing from TAR1 at a rate of one truck per minute during the time period of concern (7am to 8:30am).</p>	
50415	Government Quarters	<p>09-Apr-05 (by EPD)</p> <p>15-Apr-05 (by ET Leader)</p>	<p>The complaint, which was lodged by a resident of 7/F, 38B, 8-10 Caldecott Road (Governmental Quarters) on 9th April 2005, was about the noise generated by the construction works at the Butterfly Valley during daytime. The complainant mentioned that the instant noise level taken by himself was 78 to 82 dB(A).</p> <p>EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 15th April 2005.</p> <p>The time period of concern was within normal working hours (7am to 7pm) on a weekday not being public holidays. According to the EM&A Manual, the criterion of construction noise in term of L_{eq}-30min within this period is 75 dB(A) for domestic premises.</p>	<p>Governmental Quarters (Station NM6) is one of the designated noise monitoring stations in the EM&A programme. Routine monitoring is undertaken on a weekly basis in accordance with the EM&A Manual.</p> <p>Since the commencement of the Project, no exceedance of daytime noise criterion of 75 dB(A) was recorded at this station.</p> <p>Ad-hoc measurement was conducted at the complainant's premises on 22 Apr 05. The measured noise level was 69.0 dB(A), which was well below the daytime noise criterion of 75 dB(A).</p> <p>Based on the results of routine noise monitoring and the ad-hoc measurements conducted in the complainant premises, no exceedance of daytime noise criterion of 75 dB(A) was recorded. The complaint lodged is therefore considered not justifiable.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50419	Government Quarters	<p>15-Apr-05 (by EPD)</p> <p>19-Apr-05 (by ET Leader)</p>	<p>The complaint was lodged by a resident of 8-10 Caldecott Road (Government Quarters) on 15th April 2005 to EPD as well as the Chief Resident Engineer of the Project.</p> <p>EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 19th April 2005.</p> <p>The complainant mentioned that they had experienced quite a lot of noise emanating from the tunnel drilling area after 11pm over several nights and most particularly at the night of 14th April 2005 and at 4am on 15th April 2005.</p>	<p>The site of concern was likely to be the South Portal. For carrying out construction works at this area during restricted hours, two Construction Noise Permits (CNPs no. GW-RW0085-05 and GW-RW0086-06) were obtained by the Contractor in accordance with the requirements stipulated in Noise Control Ordinance.</p> <p>According to the information provided by the Resident Site Staff and the Contractor, the construction activities undertaken in the period between 11th and 15th April 2005 from 1900 to 0700 hours included drilling, breaking, trimming, set up of rock drill, installation of arch-rib and grouting.</p> <p>The powered mechanical equipment (PME) involved in the above works included backhoe, rock drill, loader, dumper, shot-crete machine, group pump, mobile platform and grout machine, which were covered by the CNPs.</p> <p>According to the routine monitoring results, for the time period between 2300-0700 hours, the measured noise levels exceeded the corresponding noise Limit Level of 50dB(A). However, the measured levels were found within the range of baseline level and below the average baseline level.</p> <p>Based on the routine noise monitoring results at Station NM6, the measured noise levels for the period between 2300-0700 hours were below the baseline noise level, which was comparable to the ambient level. According to the RSS's record, the PME items operated during the concerned period were found covered by the 2 CNPs hold by the Contractor.</p> <p>Based on the available information, there is not enough evidence to prove whether the complaint against nighttime construction noise generated in the concerned period (11th to 15th April 2005) is justifiable or not.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50512	Yew Chung International School	12-May-05	<p>On 11 May 05, a notice was sent to Yew Chung International School (YCIS) by the Contractor, providing their tentative blasting schedule on 12 May 05. It was shown that one of the blasting operations was scheduled at 09:30am, at when an examination was being held in YCIS.</p> <p>Upon receipt of the notice, a representative of YCIS lodged a complaint to the Contractor via the Project's hotline at 07:40 on 12 May 2005. The complainant expressed her objection to the blasting operation taken at 09:30am when the examination was taken place.</p> <p>The Contractor then agreed on one occasion only to delay the tunnel blast planned for 9:30am until 9:50am (i.e. 5 min after the examination). The complainant satisfied but did expect no future blasting during the examination period. According to the Engineer's Representative, the Contractor did not wish to make any commitment to ensure no blasting would be taken within the examination period.</p>	<p>A 1-day continuous noise measurement was conducted by the Environmental Team at Station NM1 on 26 May 05. According to the ER's record, two blasting operations were taken in the vicinity of YCIS on 26 May 05. One surface blast was taken at Butterfly Valley at 15:42 and one tunnel blasting was taken at South Portal at 16:56.</p> <p>The measurement results showed that the noise impact in term of Leq-5min and Leq-30min arising from the blasting operations was insignificant. No exceedance of construction noise criterion for examination period was recorded (Leq-30min < 65dB(A)).</p> <p>The complaint lodged was therefore considered not justifiable.</p> <p>However, in order to minimize the potential nuisance arising from the blasting noise and the siren sounds prior to blasting, the Contractor was recommended to consider scheduling the blasting operations beyond the examination periods.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50610	Government Quarters	10-Jun-05	<p>On 10 June 2005, the Resident Site Staff (Maunsell-Hyder Joint Venture) received a complaint from a resident of the Government Quarters at Caldecott Road. The complaint was concerned about the construction dust generation as a result of the construction activities of the Project at Butterfly Valley.</p> <p>The complainant had not specified which construction activities had contributed to the dust generation.</p>	<p><i>Site Observations</i></p> <p>According to the RSS's preliminary investigation, it was considered that soil nailing at Slope BV-S2 was the dominant dust source and was likely to be the activity of concern. The dust suppression measures taken were found inadequate to control the dust dispersion from the works. Noticeable dust dispersion from the soil nailing work could be observed.</p> <p><i>Corrective Actions</i></p> <p>After the Contractor was notified by the RSS of the complaint, immediate action was taken by the Contractor on the same day (10 June 2005).</p> <p>The dust mitigation measures for the soil nailing were enhanced. An additional thicker cover was used. Also, continuous water spray was applied to suppress the dust emission.</p> <p><i>Environmental Outcome</i></p> <p>The RSS made a response to the complainant on 10 June 2005. The complainant was informed of the rectification actions taken by the Contractor. No further adverse comment was received from the complainant.</p> <p><i>Conclusions</i></p> <p>Based on the RSS's information, this complaint is considered to be valid and related to the construction activities of the Project. However, corrective action had been taken by the Contractor immediately and the situation was found improved.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50712	A scattered house near South Portal and Tai Po Road Water Treatment Works Staff Quarters	12-Jul-05	<p>On 12 July 2005, a resident, whose house is located near South Portal and Tai Po Road Water Treatment Works Staff Quarters, lodged a complaint to the Contractor via the Project's hotline at 11:40am. The complainant expressed his concern on the nuisance caused by the blasting works at early morning (before 07:00 hours) and late night (after 23:00 hours).</p>	<p><i>Site Activity</i></p> <p>According to the information provided by the RSS, tunnel blasting works have been taken place in the concerned period in north bound tunnel from the Ventilation Adit towards the direction of the South Portal.</p> <p><i>Environmental Requirements</i></p> <p>In the EP, the EM&A Manual of the Project and the NCO, no requirement is specified for the control of blasting operation and the associated environmental impact, such as blasting noise.</p> <p>It should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the jurisdiction of EPD.</p> <p>For carrying out the above-mentioned blasting operations, the Contractor has obtained a valid blasting permit from CEDD under the Dangerous Goods Ordinance (Cap. 295). Under this permit, the Contractor is allowed to carry out 24-hour blasting works within the designated area.</p> <p><i>Contractor's Actions</i></p> <p>Though the blasting noise is not under the control of any environmental related regulation and the Contractor is allowed to carry out 24-hour blasting, the Contractor would try to keep the blasts of concern undertaken between 07:00 to 23:00 hours. This arrangement could effectively reduce the potential nuisance to the residents within the more sensitive time period (23:00 to 07:00 on next day).</p> <p><i>Conclusions</i></p> <p>The subjected blasting operations were carried out by the Contractor under a valid blasting permit. The complaint lodged is therefore considered not justifiable.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50809	Government Quarters (8-10 Caldecott Road)	09-Aug-05	<p>On 9 August 2005, a resident of 8-10 Caldecott Road (Government Quarters) lodged a complaint to the Contractor via the Project's hotline at 14:30. The complainant expressed her concern on the nuisance caused by the blasting works undertaken at Butterfly Valley.</p> <p>Noise impact arising from the blasting works was one of the issues raised by the complainant.</p>	<p><i>Ad-hoc Noise Measurement</i></p> <p>An ad-hoc noise measurement was carried out on the roof of Government Quarters during a surface blast on 16 August 2005. According to the record of the RSS and the site observation, a surface blasting was undertaken at Butterfly Valley at around 15:38 on the monitoring day.</p> <p>The results show that the measured noise level in term of Leq-30min, i.e. 69.1 dB(A) during the surface blasting was well below the daytime construction noise criterion of 75 dB(A).</p> <p><i>Conclusion and Recommendation</i></p> <p>According to the results of ad-hoc noise measurement taken at Government Quarters on 16 August 2005, the measured noise levels (Leq-30min) did not exceed the noise criterion of 75 dB(A). In addition, the subjected blasting operations were carried out by the Contractor under a valid blasting permit. For the concern of noise impact, the complaint was considered not justifiable.</p>	Closed
50830	Government Quarters (8-10 Caldecott Road)	30-Aug-05	<p>The RSS received a public complaint from a resident of Government Quarters addressing two noise issues:</p> <ol style="list-style-type: none"> 1. Noise nuisance caused by drilling works at Butterfly Valley; 2. Noise nuisance due to blasting 0045 hrs of 28 August 2005. 	<p><i>Noise Measurement</i></p> <p>No exceedance was recorded for the routine noise monitoring at NM6 (Government Quarters). Ad-hoc noise measurement was conducted on 1 and 2 Sept 05. All measured noise levels complied with the noise criteria.</p> <p><i>Conclusion</i></p> <p>The complaint was considered not justifiable. However, the Contractor had taken proactive actions in order to minimize the nuisance of the residents, (1) to stop the rock breaking works at BVS2 and (2) to install temporary noise barriers for drilling works.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50928	Government Quarters (8-10 Caldecott Road)	28-Sept-05	A resident of Government Quarters complaint about a blast undertaken at 0215hr on 28 Sept 05.	<p><i>Environmental Monitoring</i></p> <p>After receiving the complaint, the ET carried out a continuous noise measurement at Station NM6 (Government Quarters) from 29 to 30 September 2005. All the measured noise levels in term of Leq-5min are close to the baseline noise level. The noise levels after correction of baseline levels were all below the noise criterion of 50 dB(A).</p> <p><i>Conclusion</i></p> <p>The subjected blasting operations were carried out by the Contractor under a valid blasting permit. In addition, no noise exceedance was recorded for the ad-hoc noise monitoring. The complaint lodged is therefore considered not justifiable.</p>	Closed
51025	Caldecott Hill (2 Caldecott Road)	25-Oct-05	<p>A public complaint was received by the MWPMO of Highways Department on 25 October 2005. The complaint was subsequently refereed to the RSS and Environmental Team of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project.</p> <p>The complaint was lodged by the management company of Caldecott Hill (No.2 Caldecott Road). It was about dust generation when construction vehicles, particularly dump trucks and concrete trucks, traveling along the Water Treatment Works (WTW) access road and its junction with Caldecott Road.</p> <p>According to the photos provided by the complainant, noticeable dust generation was observed during construction vehicles movement on the roads of concern.</p>	<p><i>Site Observations</i></p> <p>Ad-hoc site inspections were carried out on 25 and 26 Oct 05. On 26 Oct 05, the WTW access road was observed dry. Deposition of dusty materials was noted. Significant dust generation was identified during vehicle movement.</p> <p><i>Contractor’s Actions</i></p> <p>Mitigation actions were taken by the Contractor:</p> <ol style="list-style-type: none"> 1. One labour was appointed to water spray the concerned road junction and clear up of dusty materials deposited on the WTW access road. 2. Regular watering on access road by hose pipe was performed to keep the road wet. 3. All vehicles would be wheel-washed and loads of dusty materials would be covered before leaving the site. <p><i>Conclusions</i></p> <p>Based on the site observations, this complaint was considered to be valid and related to the Project works. However, enhanced dust mitigation measures were taken by the Contractor and the situation was found improved.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
51031	Po Leung Kuk Choi Kai Yau School	31-Oct-05	The resident site staff (MHJV) of R8-ENT received a complaint from the Principal of PLKCKY School. She commented that the blasting noise (nighttime and daytime) at Butterfly Valley became louder than before.	An ad-hoc noise measurement was taken by ET on 5 Nov 05 to evaluate the noise impact due to daytime surface blasting at the BV. The measurement results revealed that there has been no exceedance of noise level criteria. The complaint was therefore considered not justifiable.	Closed
51101	Butterfly Valley (Government Quarters)	1-Nov-05	<p>On 1 Nov 05, the Resident Site Staff received a complaint from a resident of the Government Quarters. On 2 Nov 05, a complaint of similar natures and same location was received by the Environmental Protection Department.</p> <p>The complainant was concerned about the following environmental issues:</p> <ol style="list-style-type: none"> Noise nuisance due to tunnel blasting works undertaken at midnights and in early mornings (3am to 5am); Noise nuisance due to operation of a generator after 11pm; Construction dust and daytime noise due to processing and stockpiling of crushed rocks at Butterfly Valley; Noise nuisance due to works outside tunnel in the early morning of 2 Nov 05. 	<p><u>Item 1: Noise nuisance due to tunnel blasting</u> For carrying out the above-mentioned blasting operations, the Contractor has obtained a valid blasting permit from CEDD. Under this permit, the Contractor is allowed to carry out 24-hour blasting works. As advised by the Contractor, all the blasting operations had been completed by 12 Nov 05.</p> <p><u>Item 2: Noise due to operation of a generator after 11pm</u> According to the Construction Noise Permit issued by EPD, one generator was allowed to be operated after 11pm at South Portal area outside the tunnel. In view of the provision of acoustic enclosure and the separation distance from the generator to Government Quarters (around 300m), the noise impact arising from this generator onto the residents of the Quarters was believed to be insignificant. During the ET's investigation on 11 Nov 05, no engine-like noise generated from the construction site could be identified.</p> <p><u>Item 3: Dust and noise due to handling of crushed rocks</u> No noise exceedance was recorded. During the weekly site inspections, deficiencies regarding inadequate dust mitigation measures for the crushed rock processing and stockpiling were occasionally observed. Dry / uncovered stockpiles and dust emissions from crushed rocks handling were sometimes noted.</p> <p><u>Item 4: Noise from works out of tunnel in morning of 2 Nov 05</u> According to the RSS's site records, there has been no activity outside the tunnel in the early morning of 2 November 2005. Work was undertaken deep inside the tunnel during the concerned period. The mentioned noise nuisance might not be related to R8-ENT Project. An ad-hoc noise measurement was carried out by ET from 8 to 10 November 2005 in order to evaluate the noise at Quarter's residents and no exceedance was recorded.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p><u>Conclusion</u></p> <p>Based on the information obtained, environmental monitoring results and site observations, this complaint was considered not justifiable, except for the concern of dust nuisance due to crushed rock processing.</p>	
51205	Caldecott Road junction	5-Dec-05	<p>The complaint was lodged by the management company of Villa Carlton. The complainant mentioned that several complaints from the occupants of Villa Carlton were received, against the dust emission when they drove to Kowloon via the Caldecott Road Junction. She also considered that the amount of water spraying by the Contractor was insufficient to suppress dust emission at Caldecott Road Junction.</p>	<p><u>Complaint Record</u></p> <p>A similar complaint (Log no. 51025) was received on 25 Oct 05 from Caldecott Hill. Significant dust emission was noted when construction vehicles traveling along the WTW access road and its junction with Caldecott Road.</p> <p>With implementation of enhanced dust mitigation measures, the situation was found improved and satisfactory.</p> <p><u>Site Observations</u></p> <p>Since Nov 05, in order to observe the Contractor's actions taken for the above-mentioned complaint, the area of interest was included during the weekly environmental audit. No deficiency had been noted at this area during the audit.</p> <p>After receiving this new complaint (Log no.51205), several ad-hoc site inspections were carried out on 6, 8 and 14 Dec 05. In addition, the RSS of the Project had carried out daily checking of the condition of the Caldecott Road Junction.</p> <p>Sufficient dust mitigation measures had been implemented by the Contractor. The condition was found satisfactory. Therefore, this complaint was considered not justifiable.</p> <p>However, it is noted that the Contractor had stepped up dust mitigation measures to further improve the condition at Caldecott Road junction.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60204	Garden Villa	4-Jan-06 (by ETL)	<p>A public complaint was received by the Environmental Protection Department on 3 January 2006. The complaint was subsequently referred to the Environmental Team of Route 8 – Eagle’s Nest Tunnel and Associated Works (R8-ENT) Project on 4 January 2006.</p> <p>According to EPD’s information, the complaint was lodged by a complainant, who walked along Tai Po Road on 1-2 January 2006. The following information was given by EPD for our investigation:</p> <ul style="list-style-type: none"> • Time of concern: 1-2 January 2006 (Daytime) • Suspected site area of concern: ENT’s Toll Plaza and Administration Building. • Dust and noise nuisance was noted by the complainant when he passed Garden Villa. • Noise from wood saw and crane or alike was noted. 	<p>A. Construction Noise Impact</p> <p>According to the Contractor’s information, construction activities were carried out on 1 and 2 Jan 06, including:</p> <ul style="list-style-type: none"> • Erection and dismantling of formwork • Fixing water pipe <p>All the equipment operated by the Contractor on 1-2 Jan 06 complied with the permissible equipment stated in the CNP.</p> <p>On 1 Jan 06, noise monitoring was carried out. All the results complied with the noise criterion.</p> <p>B. Construction Dust Impact</p> <p>Erection and dismantling of formwork and fixing water pipe were considered not dust emissive in nature.</p> <p>For stockpiles of materials in Toll Plaza area, dust mitigation measures had been implementing by the Contractor. The condition in term of dust control was found satisfactory during the audit sessions on 4 and 11 Jan 06.</p> <p>Since December 2005, all TSP monitoring results complied with the Action / Limit Level.</p> <p>Conclusion</p> <p>Based on the information given, site observations and environmental monitoring results, this complaint was considered not justifiable.</p> <p>Nevertheless, the Contractor was reminded to adopt good site practice to minimize the environmental impacts at the nearby sensitive receivers</p>	Closed