

**Civil Engineering & Development Department**  
**NT EAST Development Office**

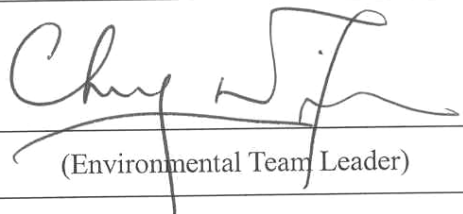
**Contract No. ST 89/02**

**Sha Tin Heights Tunnel and Approaches**

**Monthly EM&A Report**  
**(Version 1.0)**

July 2007

Certified By



(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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## **ABBREVIATION AND ACRONYM**

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



## EXECUTIVE SUMMARY

### Introduction

1. This is the 57<sup>th</sup> monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the project “Sha Tin Heights Tunnel & Approaches” (the Project). This report documents the findings of EM&A Works conducted in July 2007.
2. The construction activities undertaken in the reporting month included:
  - Drainage works;
  - Construction of Inspection Opening for Box Culvert;
  - Waterworks;
  - Erection of Sign Gantry and Directional Sign;
  - Rising Existing Manhole Level;
  - Lining Installation for 1050mm dia. Sewer under Retaining Wall no.5;
  - Sealing up existing Manholes and Pipes;
  - Erection of Steel Frame / Noise Barrier;
  - Installation of Noise Barrier Post and Panel over KCRC Railway;
  - Installation of Lighting under Bridge N2/S2;
  - Removal of Epoxy above KCRC Rails;
  - Tunnel/ RCFE - VE cladding installation;
  - Construction of RE Wall AR/E/01 & 02;
  - Application of Colour Treatment to RCFE and RE Wall;
  - Cleaning inside Box Culverts No.4, 5 & 6 at NP;
  - Installation of Standpipe and Piezometer at Slope F437;
  - Removal of Temporary Access Road TAR 1;
  - Upgrading of Slope F438 (Area C); and
  - Construction of Flexible Road Pavement

### Environmental Monitoring Works

3. Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manuals and the results were checked and reviewed. Site audits were conducted once per week. The implementations of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
4. Summary of the non-compliance of the reporting month is tabulated Table I.

**Table I Summary Table for Non-compliance Records in the Reporting Month**

Media / Nature	No. of Exceedance		No. of Exceedance due to the Project	
	Action Level	Limit Level	Action Level	Limit Level
1-hr TSP	0	0	0	0
24-hr TSP	0	0	0	0
Noise	0	0	0	0

*Air Quality*1-hour TSP Monitoring

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

24-hour TSP Monitoring

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

*Construction Noise*

7. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded in the reporting month.

*Environmental Licenses and Permits*

8. License/Permits granted to the Project include the Environmental Permit (EP), Construction Noise Permits (CNP), Waste Disposal (Chemical Waste) License, and Wastewater Discharge License.

**Complaints and Prosecutions**

9. No environmental complaint was received during the reporting month.
10. No environmental prosecution was received during the reporting month.

**Future Key Issues**

11. Key issues to be considered in the coming months include:
  - Drainage works at all area;
  - Construction of Inspection Opening for Box Culvert;
  - Waterworks;
  - Erection of Sign Gantry and Directional Sign;
  - Sealing up existing Manholes and Pipes;
  - Erection of Steel Frame/Noise Barrier;
  - Installation of Noise Barrier Post and Panel over KCRC Railway;
  - Installation of Lighting under Bridge N2/S2;
  - Removal of Epoxy above KCRC Rails;
  - Tunnel/RCFE – VE Wall AR/E/01;
  - Application of Colour Treatment to RCFE and RE Wall;
  - Cleaning inside Box Culverts No.4,5 & 6 at NP;

- Installation of Standpipe and Piezometer at Slope F437;
  - Removal of Temporary Access Road TAR 1;
  - Upgrading of Slope F438 (Area C); and
  - Construction of Flexible Road Pavement.
12. The anticipated environmental issues will be mainly dust impact and construction noise nuisance during the slope works and parapet construction.

## 1. INTRODUCTION

### Background

- 1.1 Sha Tin Heights Tunnel and Approaches (SHT) (hereinafter the Project) forms part of the Route 8 (Formerly Route 9) between Cheung Sha Wan and Sha Tin 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. The Project, the entrusted portion of the Route 8 (Formerly Route 9) project, is being managed and implemented by Civil Engineering & Development Department (CEDD).
- 1.2 The Project works mainly comprise the site formation for a toll plaza at the valley of Sha Tin Heights, the construction of 1 km long dual three-lane tunnels under Sha Tin Heights, a 0.6 km long dual two-lane tunnel approach road in Tai Wai, two slip road viaducts with approximately total length of 1 km connecting to Che Kung Miu Road, associated noise barriers and noise enclosures, drainage, slope works and landscape works. The remainder of the Route 8 (Formerly Route 9) (Main Portion, R9K) project forms the Kowloon Section and is being managed and implemented separately by Highways Department.
- 1.3 The Route 8 (Formerly Route 9) (between Cheung Sha Wan and Sha Tin) project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 449, EIAO). An environmental impact assessment (EIA) report had been prepared in 1998 for the Route 8 (Formerly Route 9) project to consider the key issues of noise, air quality, water quality, ecological, construction waste, landscape and visual, land use and culture impacts, and identify possible mitigation measures. An updated Final EIA report was subsequently completed in August 1999 to cater for some changes in the main portion. The 1998 and 1999 Route 8 (Formerly Route 9) EIA (R9 EIA Reports) reports were included in the EIA register under the EIAO as report number EIA-135/BC and AEIAR-022/1999 respectively. EM&A Manuals for each of the R9 EIA reports were also included as part of the EIA reports in the register.
- 1.4 Subsequent to the endorsement of the R9 EIA reports by EPD in November 1999, the R9 project was deferred to start in 2002/2003 for completion by 2006/07. The implementation of the Route 8 (Formerly Route 9) project was then separated into the SHT and R9K portions. Meanwhile further design amendments had also been proposed for the R9S during the detailed design stage to resolve various engineering constraints. In view of these changes, an Environmental Review on the SHT was undertaken to update the findings of the R9 EIA reports. The Environmental Review report for SHT was completed in September 2001 and an Environmental Permit No. EP-104/2001 was issued on 4<sup>th</sup> October 2001 for the Project.
- 1.5 The works of the SHT is constructed under CEDD's construction Contract No. ST 89/02 "Sha Tin Heights Tunnel and Approaches". The site layout of the Project is shown in Figure 1. The Project works were commenced on 18<sup>th</sup> November 2002.

- 1.6 Cinotech Consultants Limited (Cinotech) was commissioned by CEDD to undertake the Environmental Team (ET) Services for the Project. This is the 57<sup>th</sup> monthly EM&A report summarizing the EM&A works for the Project in July 2007.

### Project Organizations

- 1.7 Different parties with different levels of involvement in the project organization include:
- Project Proponent – CEDD, NT East Development Office
  - Engineer or Engineer's Representative (E/ER) – Maunsell Consultants Asia Limited (MCAL)
  - Environmental Team (ET) – Cinotech Consultants Limited
  - Independent Environmental Checker (IEC) – CH2M HILL Hong Kong Limited
  - Contractor – China State-China Railway Joint Venture
- 1.8 The responsibilities of respective parties are detailed in Section 2 of the EM&A Manual (1998) and Section 1.8 of the EM&A Manual (1999). The project organization chart is presented in Figure 3.
- 1.9 The key contacts of the Project are shown in Table 1.1.

**Table 1.1 Key Project Contacts**

Party	Name	Role	Phone No.	Fax No.
CEDD	Ms. Joanna Kwok	Permit Holder	2301 1383	2739 0076
	Mr. Robert Choy	Project Coordinator	2301 1373	2721 8630
MCAL	Mr. Francis Leong	The Engineer	2685 6517	2691 2649
	Mr. K.Y. Chan	Engineer's Representative	9750 0557	2697 4106
	Mr. S. K. Lo	Chief Engineer's Representative	9751 9638	2697 4106
ET	Dr. Priscilla Choy	ET Leader	2151 2089	3107 1388
	Miss. Grace Wong	Audit Team Leader	2151 2095	
	Mr. Henry Leung	Monitoring Team Leader	2151 2087	
IEC	Mr. Billy Yu	Independent Environmental Checker	2507 2203	2507 2293
Contractor	Mr. David Lau	Senior Project Manager	2601 7917	2697 1592
24-hour Hotline			9759 9852	-

### **Construction Programme**

- 1.10 The construction activities undertaken in the reporting month included:
- Drainage works at SP & NP;
  - Construction of Inspection Opening for Box Culvert at SP & NP;
  - Waterworks at CKM;
  - Erection of Sign Gantry and Directional Sign at CKM;
  - Rising Existing Manhole Level at SP;
  - Lining Installation for 1050mm dia. Sewer under Retaining Wall no. 5 at CKM;
  - Sealing up existing Manholes and Pipes at CKM;
  - Erection of Steel Frame / Noise Barrier at Bridge;
  - Installation of Noise Barrier Post and Panel over KCRC Railway at Bridge;
  - Installation of Lighting under Bridge N2/S2 at Bridge;
  - Removal of Epoxy above KCRC Rails at Bridge;
  - Tunnel/RCFE – VE cladding installation at Tunnel;
  - Construction of RE Wall AR/E/01 & 02 at NP;
  - Drainage Work at NP;
  - Erection of Sign Gantry and Directional Sign at NP;
  - Application of Colour Treatment of RCFE and RE Wall at NP;
  - Cleaning inside Box Culverts No. 4, 5 & 6 at NP;
  - Installation of Standpipe and Piezometer at Slope F437 at NP;
  - Removal of Temporary Access Road TAR 1 at SP;
  - Upgrading of Slope F438 (Area C) at SP; and
  - Construction of Flexible Road Pavement at GE.

### **Summary of EM&A Requirements**

- 1.11 The EM&A programme requires construction phase monitoring for air quality and noise and environmental site audit. The EM&A requirements for each parameter are described in 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 the contract documents.
- 1.12 The advices on the implementation status of environmental protection and pollution control/mitigation measures are summarized in Section 4 of this report.
- 1.13 This report presents the monitoring results, observations, locations, equipments, periods, methodologies and QA/QC procedures of the required monitoring parameters, namely dust and noise levels and audit works for the Project in July 2007.

## 2. AIR QUALITY

### Monitoring Requirements

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

### Monitoring Locations

- 2.2 Three designated monitoring stations, A2, A3 and A4 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figures 2a and 2b.

**Table 2.1 Locations for Air Quality Monitoring**

Monitoring Stations	Description
A2	Lau Pak Lok Secondary School
A3	Shatin Heights
A4	Slope no. 07SW-D/FR4 beside Garden Villa

### Monitoring Equipments

- 2.3 Table 2.2 summarizes the equipments used in the impact air monitoring programme. Copies of calibration certificates are attached in Appendix B.

**Table 2.2 Air Quality Monitoring Equipment**

Equipments	Models and Makes	Quantity
Calibrator	G25A; S/N: 1536	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	3
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	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 month is shown in Appendix C.

**Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration**

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

**Monitoring Methodology and QA/QC Procedure***1-hour TSP Monitoring*Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follow:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at 3-month intervals and calibrate the meter at 1-year intervals throughout all stages of the air quality monitoring.

*24-hour TSP Monitoring*Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 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 section 2.3 of the EM&A Manuals.



Operating/Analytical Procedures

2.8 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.

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

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

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

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

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

2.14 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.

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

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

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

- 2.18 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

- 2.19 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**

- 2.20 All 1-hour TSP monitoring was conducted as scheduled in the reporting month.
- 2.21 All 24-hour TSP monitoring was conducted as scheduled in the reporting month.
- 2.22 No Action/Limit Level exceedance for both 1-hour TSP and 24-hour TSP monitoring was recorded in the reporting month.
- 2.23 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices D and E, respectively.
- 2.24 Wind data monitoring equipment has been installed in monitoring Station A3 for logging wind speed and wind direction. Wind data for the reporting month is summarized in Appendix F.

### 3. NOISE

#### Monitoring Requirements

- 3.1 Noise monitoring was conducted in accordance with the EM&A Manuals. Appendix A shows the established Action/Limit Levels for the environmental monitoring works.

#### Monitoring Locations

- 3.2 Noise monitoring was conducted at four designated monitoring stations, namely N5, N6, N7 and N8, as summarized in Table 3.1. Figures 2a and 2b show the locations of these stations.

**Table 3.1 Noise Monitoring Stations**

Monitoring Stations	Description
N5	At the podium level of Garden Villa
N6	On the roofing of Shatin Heights
N7	On the roofing of Lau Pak Lok Secondary School
N8	At the ground level of 187 Tin Sam Tsuen

#### Monitoring Equipment

- 3.3 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	3
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

#### Monitoring Parameters, Frequency and Duration

- 3.4 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**

Monitoring Stations	Parameters	Period	Frequency	Measurement
N5	L <sub>10</sub> (30 min.)dB(A) L <sub>90</sub> (30 min.)dB(A) L <sub>eq</sub> (30 min.)dB(A)	0700-1900 hrs. on weekdays	Once per week	Façade
N6				Façade
N7				Façade
N8				Façade

**Monitoring Methodology and QA/QC Procedures**

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- 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 :  $L_{eq}$  (30 min) for daytime noise monitoring /  
3 consecutive  $L_{eq}$  (5 min) for restricted hour noise monitoring
- 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 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**

- 3.5 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.
- 3.6 The meters were sent to the supplier to check and calibrate on yearly intervals.

**Results and Observations**

- 3.7 Noise monitoring was performed as scheduled in the reporting month. Results and graphical presentations are shown in Appendix G.
- 3.8 No Action/Limit Level exceedance was recorded in the reporting month.
- 3.9 The major noise source at Stations N5 and N6 during night time was identified as road traffic noise from Tai Po Road. From the Baseline Monitoring Report, the maximum and minimum of noise monitoring results during 2300-0700 were 67.1 dB and 50.6 dB for N5 and 68.9 dB and 52.4 dB for N6 respectively, which were higher than the limits stipulated in the EM&A Manual. Therefore, the maximum measured noise level during the Baseline Monitoring period was set as the limit levels at Stations N5 and N6 during 2300-0700 on normal weekdays.

#### 4. ENVIRONMENTAL AUDIT

##### Site Audits

- 4.1 Site audits were carried out on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 4.2 Site audits were conducted on 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> & 26<sup>th</sup> July 2007. The observation summary of site audit sessions is attached in Appendix I.

##### 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 of the construction site.
- The monitoring team recorded the temperature and weather conditions on each 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 Licenses and Permits

- 4.4 All permits/licenses obtained are summarized in Table 4.1.

**Table 4.1 Summary of Environmental Licensing and Permit Status**

Table A1 Summary of Environmental Licensing and Permit Status				
Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-104/2001/B	16/02/05	N/A	Site formation, drainage, geotechnical and landscape works for the toll plaza. Construction of the Sha Tin Heights Tunnels, the Sha Tin Approach Roads and the Slip Road Connecting to Che Kung Miu Road including all formation, structure, road, geotechnical, drainage and landscape work. Construction of the structure of the portal buildings of the Sha Tin Heights Tunnel and noise mitigation measures.	Valid

Permit No.	Valid Period		Section	Status
	From	To		
Construction Noise Permit				
GW-RN0123-07	29/3/07	28/9/07	Erection of Noise Barrier during general holiday including Sundays between 0700 hrs and 2400 hrs and any day not being a holiday including Sundays between 1900 hrs and 2400 hrs.	Valid
GW-RN0229-07	30/5/07	30/7/07	Road resurfacing at Che Kung Mui Road during general holiday including Sundays between 0700 hrs and 2400 hrs and any day not being a holiday including Sundays between 1900 hrs and 2400 hrs.	Valid
Wastewater Discharge License				
3024	16/6/03	15/6/08	Wastewater discharge at the site office in Sha Tin Heights.	Valid
2984	21/8/03	20/8/08	Trade effluent and all other wastewater arising from the work areas, Sedimentation Barrier, Sedimentation tanks, Aqua Sep and Wet Sep.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-754-C3250-01	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid

### Status of Waste Management

- 4.5 The amount of wastes generated by the activities of the Project in July 2007 is provided in Appendix J.

### Implementation Status of Environmental Mitigation Measures

- 4.6 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 presented in Appendix K.
- 4.7 During site inspections in the month, the following observations and recommendations were made. All the observations were improved and rectified on the next audit day.

#### *Water Quality*

- 4.8 Some silty water was observed running out from cleaning the box culvert at Sha Tin Height South Portal. The Contractor was reminded to provide mitigation measure to stop the silty water running into the channel.

#### *Air Quality*

- 4.9 No environmental deficiencies were identified during the site environmental inspections.

#### *Noise*

- 4.10 No environmental deficiencies were identified during the site environmental inspections.

*Waste / Chemical Management*

- 4.11 Accumulated general rubbish was observed near Garden Villa. The contractor was reminded to clear them.
- 4.12 Accumulated construction waste was observed next to Garden Villa. The contractor was reminded to clear them.

*Permits / Licenses*

- 4.13 No environmental deficiencies were identified during the site environmental inspections.

**Implementation Status of Event Action Plans**

- 4.14 The Event Action Plans for air quality and noise are presented in Appendix L.
- 4.15 The Exceedance Summary in the reporting month is presented in the Appendix H.

Air Quality

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

Noise

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

**Summary of Complaints and Prosecutions**

- 4.18 No environmental complaint was received in the reporting month.
- 4.19 No environmental prosecution was received in the reporting month.

## **5. FUTURE KEY ISSUES**

### **Key Issues for the Coming Month**

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

- Dust and noise nuisances from slope works and parapet construction.

### **Monitoring Schedule for the Next Month**

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

### **Construction Program for the Next Month**

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



## 6. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

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

#### Environmental Monitoring

- 6.2 No Action/Limit Level exceedance was recorded for both 1-hour TSP and 24-hour TSP of dust monitoring in the reporting month.
- 6.3 No Action/Limit Level exceedance was recorded for noise monitoring in the reporting month.

#### Complaint and Prosecution

- 6.4 No environmental complaint was received in the reporting month.
- 6.5 No environmental prosecution was received in the reporting month.

### Recommendations

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

#### *Dust Impact*

- To ensure the dust mitigation measures, such as water spray, are fully implemented during the rock breaking and soil nail works.
- To cover or water stockpiles of dusty materials on site.

#### *Noise Impact*

- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers.

#### *Water Quality Impact*

- To regularly maintain the condition of u-channel, catch pits and wheel washing facilities within construction site.
- To regularly maintain the wastewater treatment facilities and ensure the proper.
- To regularly clean the AquaSed as maintain in good working condition.

*Waste/Chemical Management*

- To check for any accumulation of waste materials or rubbish on construction site.
- To avoid any directly discharge of chemical waste or oil from the site.

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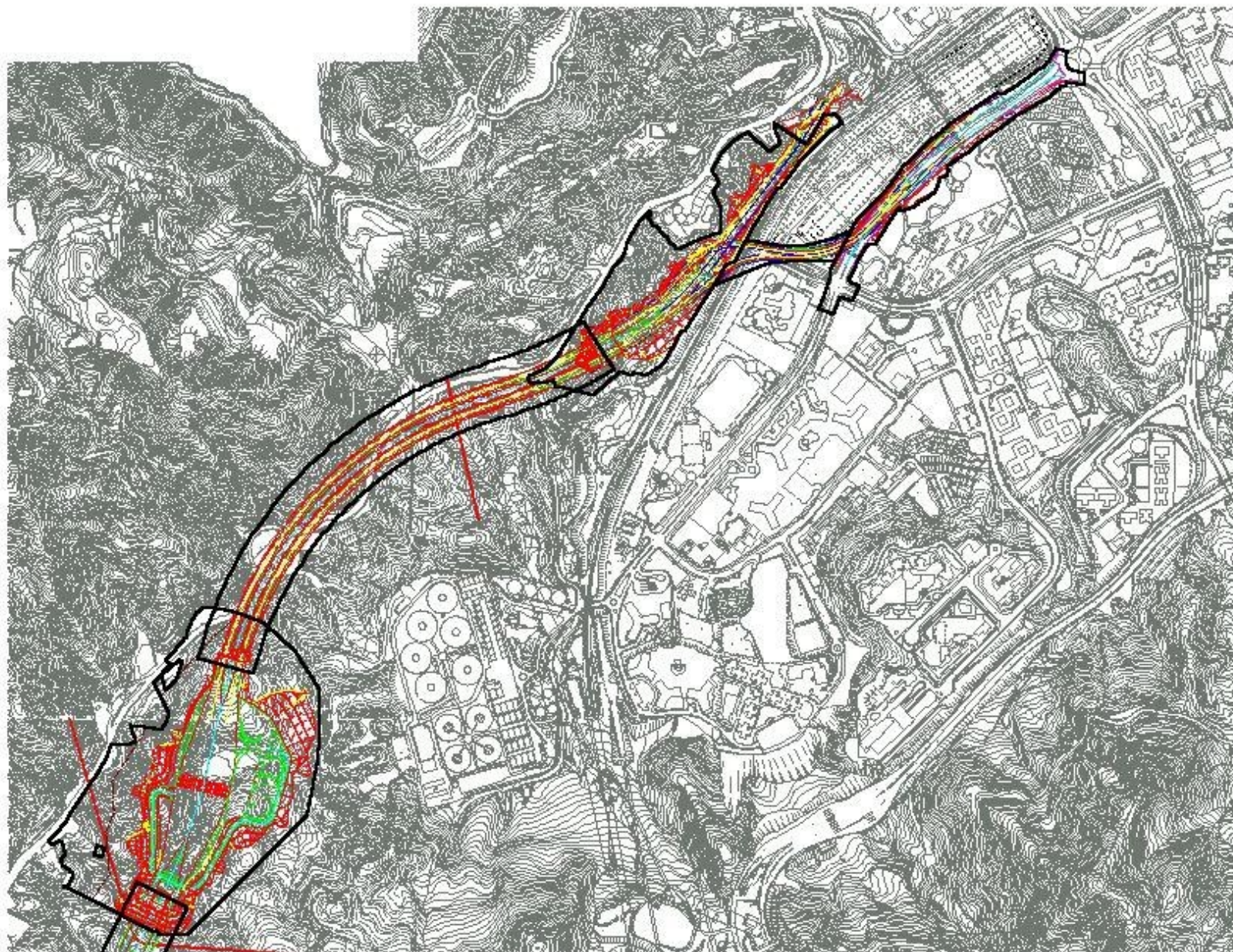
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## FIGURES

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Title

Contract No. 92/02  
Environmental Team For Sha Tin Heights Tunnel & Approaches  
Site Layout Plan

Scale

1 : 10 500

Project  
No.

MA2027

Date

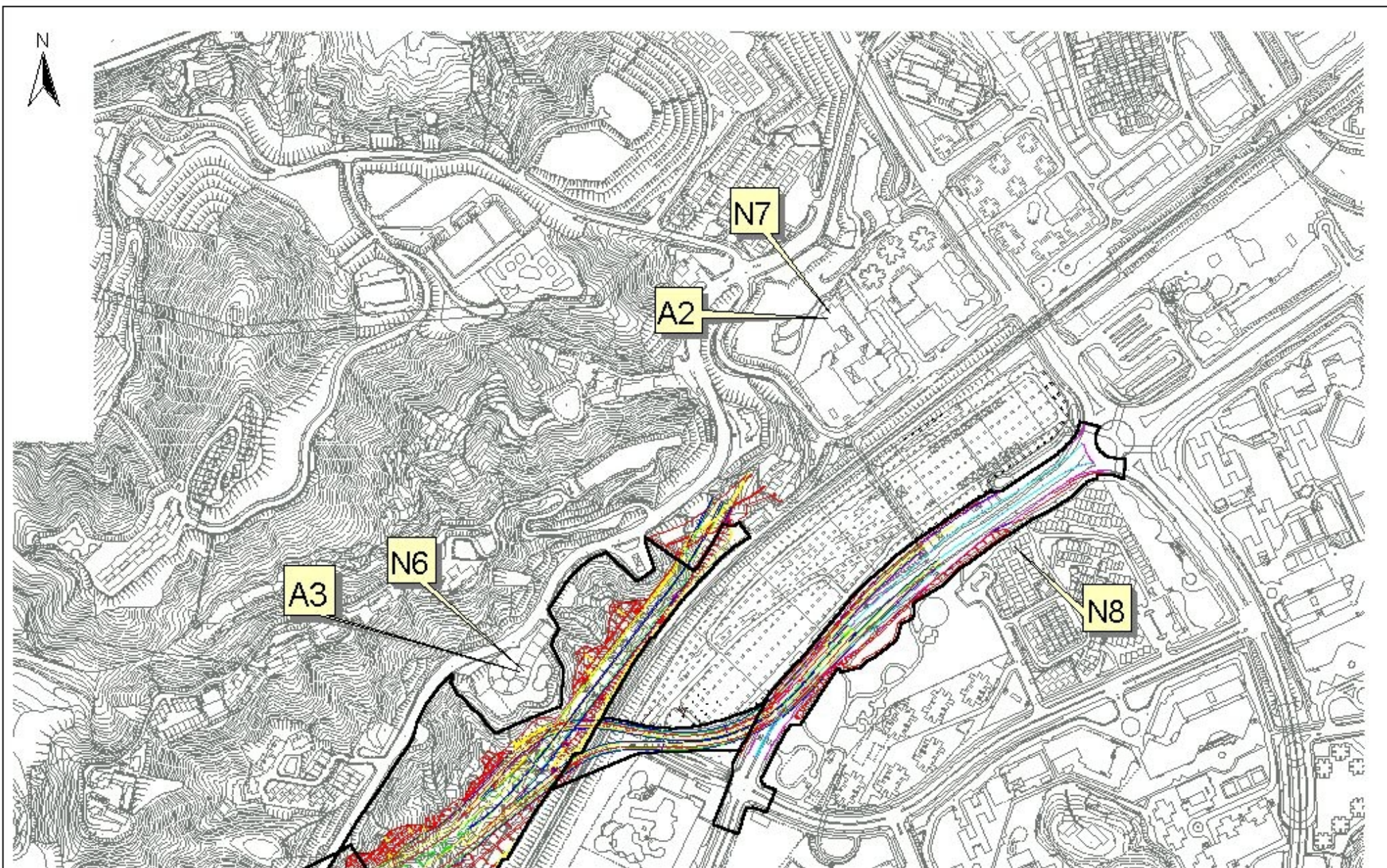
2006

Figure  
No.

1

CINOTECH





Title

Contract No. 92/02  
Environmental Team For Sha Tin Heights Tunnel & Approaches  
Locations of Monitoring Stations

Scale

1 : 6 000

Project  
No.

MA2027

Date

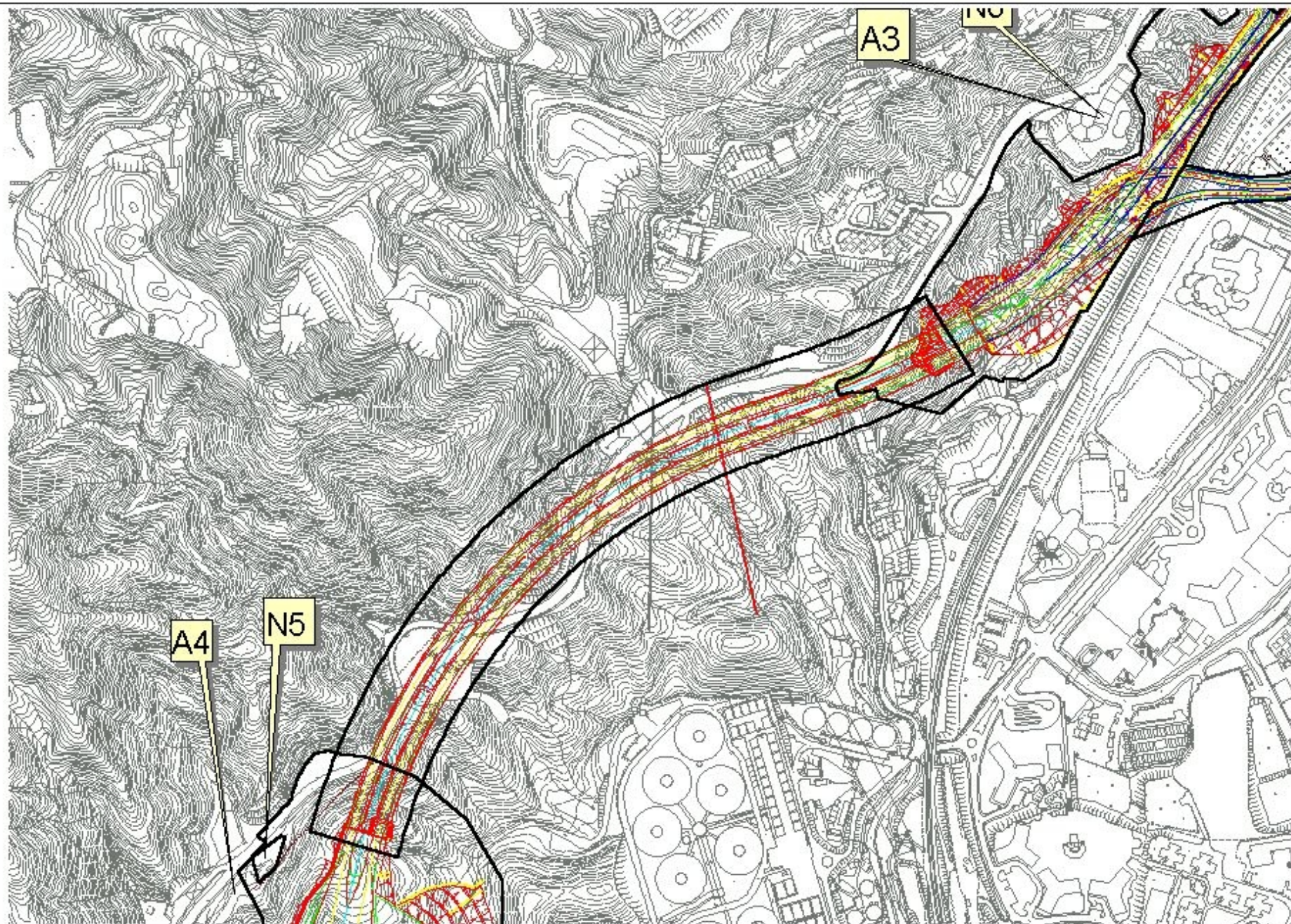
2006

Figure  
No.

2a

CINOTECH





Date

Contract No. 92/02  
Environmental Team For Sha Tin Heights Tunnel & Approaches

Locations of Monitoring Stations

Date  
1 : 6 000

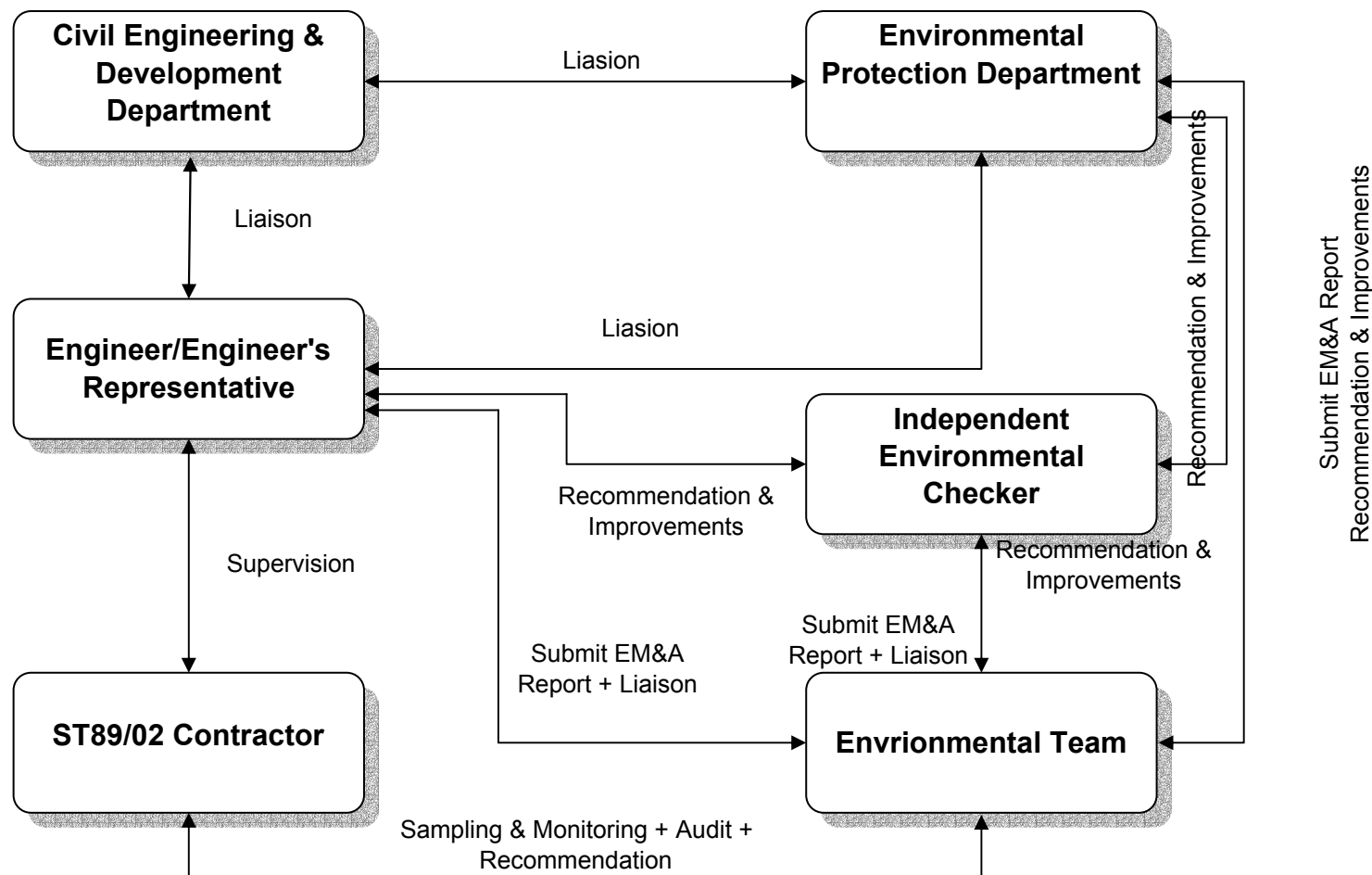
Project  
No. MA2027

Scale  
2006

Figure  
No. 2b

CINOTECH





Title

ST89/02 - Sha Tin Heights Tunnel & Approaches  
Environmental Monitoring and Audit Report  
Project Organization Chart

Scale

N.T.S

Date

2007

Propos

No.

MA2027

Figure

3

CINOTECH

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**APPENDIX A  
ACTION AND LIMIT LEVELS  
FOR AIR QUALITY AND NOISE**

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## Appendix A - Action and Limit Levels

**Table A-1 Action and Limit Levels for 1-Hour TSP**

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
A2	350	500
A3		
A4		

**Table A-2 Action and Limit Levels for 24-Hour TSP**

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
A2	186	260
A3	200	
A4	200	

**Table A-3 Action and Limit Level for Construction Noise**

Action Level		Limit Level
0700-1900 hrs on normal weekdays	One or more complaint(s) received in one week	75* dB(A)
0700-2300 hrs on holidays & 1900-2300 hrs on all other days		60/65/70** dB(A)
2300-0700 hrs of next day		45/50/55** dB(A)

(\*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

(\*\*) to be selected based on Area Sensitivity Rating. If Specified Powered Mechanical Equipment (SPME) is employed, the noise limits should be 15 dB(A) less than that shown above for the restricted hours.

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**APPENDIX B  
COPIES OF CALIBRATION  
CERTIFICATES**

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# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/05/0030

Station Lau Pak Lok Secondary School (A2) Operator: WK  
 Date: 22-May-07 Next Due Date: 21-Jul-07  
 Equipment No.: A-01-05 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	298	Pressure, Pa (mmHg)	756.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Q_{std} + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Q_{std} = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.5	3.53	60.67	8.8	2.96
2	10.4	3.22	55.28	6.6	2.56
3	8.1	2.84	48.71	5.1	2.25
4	5.4	2.32	39.64	3.2	1.79
5	3.6	1.89	32.24	2.0	1.41

By Linear Regression of Y on X

Slope, mw = 0.0532 Intercept, bw = -0.3229  
 Correlation coefficient\* = 0.9978

\*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	
$mw \times Q_{std} + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Q_{std} + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.88</u>	

Remarks: \_\_\_\_\_

Conducted by: W. K. Tang Signature: [Signature]  
 Checked by: [Signature] Signature: [Signature]

Date: 22/5/07  
 Date: 22 May 2007

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/05/0031

Station Lau Pak Lok Secondary School (A2)

Operator: WK

Date: 26-Jul-07

Next Due Date: 25-Sep-07

Equipment No.: A-01-05

Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	303.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Q_{std} + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Q_{std} = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.3	3.33	57.28	7.0	2.62
2	9.4	3.04	52.18	5.6	2.35
3	7.6	2.73	46.85	4.8	2.17
4	5.3	2.28	39.01	3.1	1.75
5	3.1	1.75	29.67	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0444

Intercept, bw : 0.0613

Correlation coefficient\* = 0.9973

\*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

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

Therefore, Set Point; W =  $(mw \times Q_{std} + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.94

Remarks:

Conducted by: W.K. Tang

Signature: [Signature]

Date: 26 Jul 07

Checked by: [Signature]

Signature: [Signature]

Date: 26 July 2007

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/13/0029

Station Shatin Heights  
 Date: 22-May-07  
 Equipment No.: A-01-13

Operator: WK  
 Next Due Date: 21-Jul-07  
 Serial No. 1352

Ambient Condition			
Temperature, Ta (K)	298	Pressure, Pa (mmHg)	756.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.41	58.68	8.9	2.98
2	9.9	3.14	53.92	7.0	2.64
3	7.6	2.75	47.16	5.3	2.30
4	5.1	2.25	38.51	3.3	1.81
5	3.0	1.73	29.37	1.9	1.38

By Linear Regression of Y on X

Slope, mw = 0.0541 Intercept, bw = -0.2436  
 Correlation coefficient\* = 0.9985

\*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>4.36</u>	

Remarks: \_\_\_\_\_

Conducted by: W.K. Tang Signature: [Signature]  
 Checked by: [Signature] Signature: [Signature]

Date: 22/5/07  
 Date: 22 May 2007

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/13/0030

Station: Shatin Heights  
 Date: 26-Jul-07  
 Equipment No.: A-01-13

Operator: WK  
 Next Due Date: 25-Sep-07  
 Serial No. 1352

Ambient Condition			
Temperature, Ta (K)	303.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Q_{std} + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Q_{std} = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	10.8	3.26	55.98	6.9	2.60
2	8.0	2.80	48.09	5.1	2.24
3	7.1	2.64	45.26	4.3	2.06
4	4.9	2.19	37.49	2.8	1.66
5	3.3	1.80	30.64	1.8	1.33

By Linear Regression of Y on X

Slope, mw = 0.0509

Intercept, bw = -0.2340

Correlation coefficient\* = 0.9994

\*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	
$mw \times Q_{std} + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Q_{std} + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.88</u>	

Remarks:

Conducted by: W.K. Tung Signature: [Signature]  
 Checked by: [Signature] Signature: [Signature]

Date: 26 Jul 07  
 Date: 26 July 2007

# High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/A14/0023

Station Garden Vilia  
Date: 29-May-07  
Equipment No.: A-01-14

Operator: WK  
Next Due Date: 28-Jul-07  
Serial No. 1354

Ambient Condition			
Temperature, Ta (K)	303.4	Pressure, Pa (mmHg)	759.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.4	3.49	60.00	9.5	3.05
2	10.3	3.18	54.62	8.3	2.85
3	6.9	2.60	44.58	5.1	2.24
4	4.3	2.05	35.05	3.2	1.77
5	3.2	1.77	30.14	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0553 Intercept, bw : -0.2180  
Correlation coefficient\* = 0.9975

\*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 =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.75

Remarks: \_\_\_\_\_

Conducted by: W. K. Tang  
Checked by: HW

Signature: \_\_\_\_\_  
Signature: \_\_\_\_\_

Date: 29 May 07  
Date: 29 May 07

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/A14/0024

Station Garden Vilia  
 Date: 30-Jul-07  
 Equipment No.: A-01-14

Operator: WK  
 Next Due Date: 29-Sep-07  
 Serial No. 1354

Ambient Condition			
Temperature, Ta (K)	304.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.5	3.36	57.70	7.1	2.64
2	9.4	3.04	52.10	6.0	2.42
3	6.9	2.60	44.54	4.6	2.12
4	4.1	2.00	34.17	2.8	1.66
5	3.0	1.71	29.13	1.9	1.36

By Linear Regression of Y on X

Slope, mw = 0.0442

Intercept, bw = 0.1196

Correlation coefficient\* = 0.9979

\*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>4.16</u>	

Remarks:

Conducted by: W.K. King Signature: W.K. King  
 Checked by: W.K. King Signature: W.K. King

Date: 30 Jul 07  
 Date: 30 July 2007



# 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/070620/1A
Date of Issue:	2007-06-20
Date Received:	2007-06-19
Date Tested:	2007-06-19
Date Completed:	2007-06-20
Next Due Date:	2007-08-19

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 251634
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 550 CPM
Equipment No.	: A-02-01

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 65%

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.


**Results:**

Correlation Factor (CF)	0.0047
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
Senior Chemist

# 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/070620/1B
Date of Issue:	2007-06-20
Date Received:	2007-06-19
Date Tested:	2007-06-19
Date Completed:	2007-06-20
Next Due Date:	2007-08-19

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 281835
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 666 CPM
Equipment No.	: A-02-02

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 65%

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0043
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**

Senior Chemist

# 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/070620/1C
Date of Issue:	2007-06-20
Date Received:	2007-06-19
Date Tested:	2007-06-19
Date Completed:	2007-06-20
Next Due Date:	2007-08-19

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 470582
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 855 CPM
Equipment No.	: A-02-03

**Test Conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 65%

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

Correlation Factor (CF)	0.0039
-------------------------	--------

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**  
Senior Chemist

# 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/07/70502
Date of Issue:	2007-05-02
Date Received:	2007-05-01
Date Tested:	2007-05-01
Date Completed:	2007-05-02

**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	: 65%
Pressure	: 101.3 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**  
Senior Chemist



TISCH ENVIRONMENTAL, INC.  
145 SOUTH MIAMI AVE.  
VILLAGE OF CLEVELAND, OH 44102  
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 12, 2007 Rootmeter S/N 9833640 Ta (K) - 294  
Operator Tisch Orifice I.D. - 0999 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:

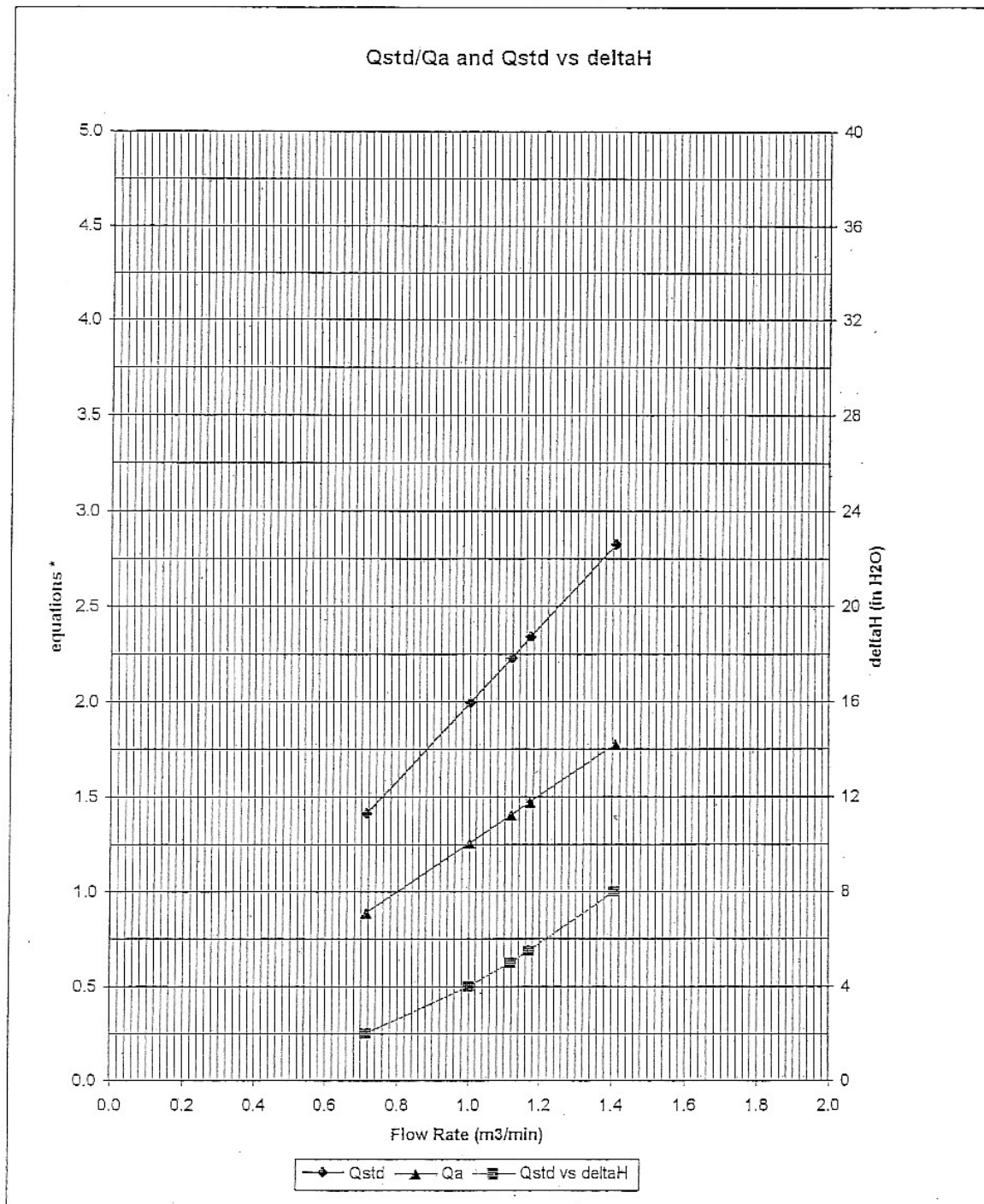
Qstd = 1/m{ [SQRT(H2O(Pa/760)(298/Ta))] - b}  
Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



TISCH ENVIROMENTAL, INC.  
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# AIR POLLUTION MONITORING EQUIPMENT

Qstd/Qa and Qstd vs deltaH



\* y-axis equations:

Qstd series:

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

Qa series:

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

# WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center  
13-15 Yuen Shun Circuit,  
Shatin, Hong Kong.  
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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/61215/1
Date of Issue:	2006-12-15
Date Received:	2006-12-14
Date Tested:	2006-12-15
Date Completed:	2006-12-15
Next Due Date:	2007-12-14

**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	: 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

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Unit C, 1/F, Goldlion Holdings Center  
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## 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

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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



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## 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

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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

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



**PATRICK TSE**  
*Laborary Manager*

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## 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

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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

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

*Patrick*

**PATRICK TSE**

Operation Manager

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## 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

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**PATRICK TSE**  
Operation Manager

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## 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

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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 $\pm$ 0.1 dB

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\_\_\_\_\_  
**PATRICK TSE**  
Operation Manager

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## TEST REPORT

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

Test Report No.:	C/06/70305
Date of Issue:	2007-03-05
Date Received:	2007-03-03
Date Tested:	2007-03-03
Date Completed:	2007-03-05
Next Due Date:	2008-03-04

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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	: 65%
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.

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50 Wing Tai Road,  
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## 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

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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

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**APPENDIX C  
ENVIRONMENTAL MONITORING  
SCHEDULES**

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**Environmental Team for Sha Tin Heights Tunnel and Approaches**  
**Tentative Air Quality and Noise Monitoring Schedule for July 2007**

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

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

A2	Lau Pak Lok Secondary School	N6	Shatin Heights
A3	Shatin Heights	N7	Lau Pak Lok Secondary School
N5	Garden Villa	N8	187 Tin Sam Tsuen



**Environmental Team for Sha Tin Heights Tunnel and Approaches**  
**Tentative Air Quality and Noise Monitoring Schedule for August 2007**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>29-Jul</b>	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug
	1 hr TSP	1 hr TSP		24 hr TSP	1 hr TSP Noise	
<b>5-Aug</b>	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug
		1 hr TSP	1 hr TSP 24 hr TSP	1 hr TSP Noise		
<b>12-Aug</b>	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug
		1 hr TSP 24 hr TSP	1 hr TSP	1 hr TSP Noise		
<b>19-Aug</b>	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug
	24 hr TSP	1 hr TSP		1 hr TSP	1 hr TSP Noise	24 hr TSP
<b>26-Aug</b>	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	1-Sep
	1 hr TSP	1 hr TSP		1 hr TSP Noise	24 hr TSP	

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

A2	Lau Pak Lok Secondary School	N6	Shatin Heights
A3	Shatin Heights	N7	Lau Pak Lok Secondary School
N5	Garden Villa	N8	187 Tin Sam Tsuen

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**APPENDIX D**  
**1-HOUR TSP MONITORING RESULTS**  
**AND GRAPHICAL PRESENTATIONS**

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## Appendix D - 1-hour TSP Monitoring Results

### 1-HOUR TSP MONITORING RESULTS

Location A2 - Lau Pak Lok Secondary School			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
3-Jul-07	13:00	Sunny	59.9
5-Jul-07	13:00	Sunny	64.0
6-Jul-07	13:00	Sunny	123.8
10-Jul-07	13:00	Sunny	70.8
11-Jul-07	09:00	Sunny	83.9
12-Jul-07	13:00	Sunny	73.0
17-Jul-07	13:00	Sunny	53.7
18-Jul-07	15:58	Sunny	70.5
19-Jul-07	13:00	Sunny	62.4
23-Jul-07	13:00	Sunny	59.6
24-Jul-07	13:00	Sunny	62.8
26-Jul-07	13:00	Sunny	62.9
30-Jul-07	13:00	Sunny	83.9
31-Jul-07	13:00	Sunny	69.7
Average			71.5
Maximum			123.8
Minimum			53.7

Location A3 - Shatin Heights			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
3-Jul-07	09:00	Sunny	50.8
5-Jul-07	09:18	Sunny	66.2
6-Jul-07	09:45	Sunny	109.7
10-Jul-07	09:00	Sunny	65.7
11-Jul-07	13:00	Sunny	70.5
12-Jul-07	09:43	Sunny	81.6
17-Jul-07	09:00	Sunny	80.0
18-Jul-07	13:38	Sunny	69.8
19-Jul-07	09:43	Sunny	71.2
23-Jul-07	09:00	Sunny	94.3
24-Jul-07	09:00	Sunny	101.5
26-Jul-07	09:40	Sunny	82.2
30-Jul-07	09:00	Sunny	71.4
31-Jul-07	09:00	Sunny	59.3
Average			76.7
Maximum			109.7
Minimum			50.8

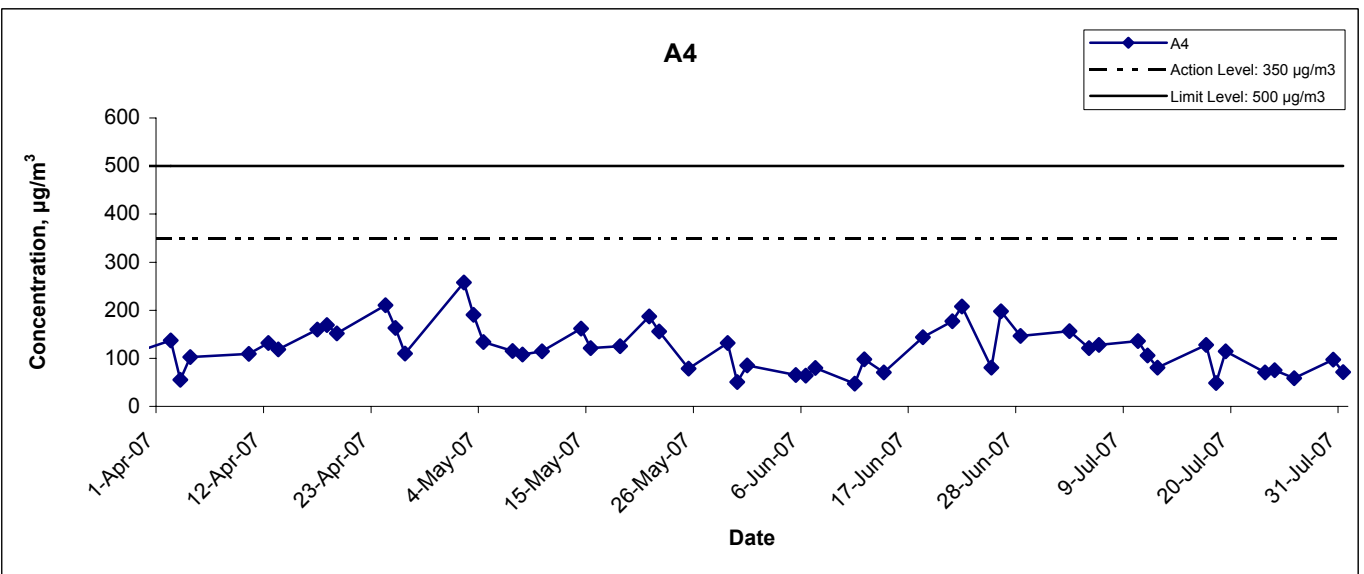
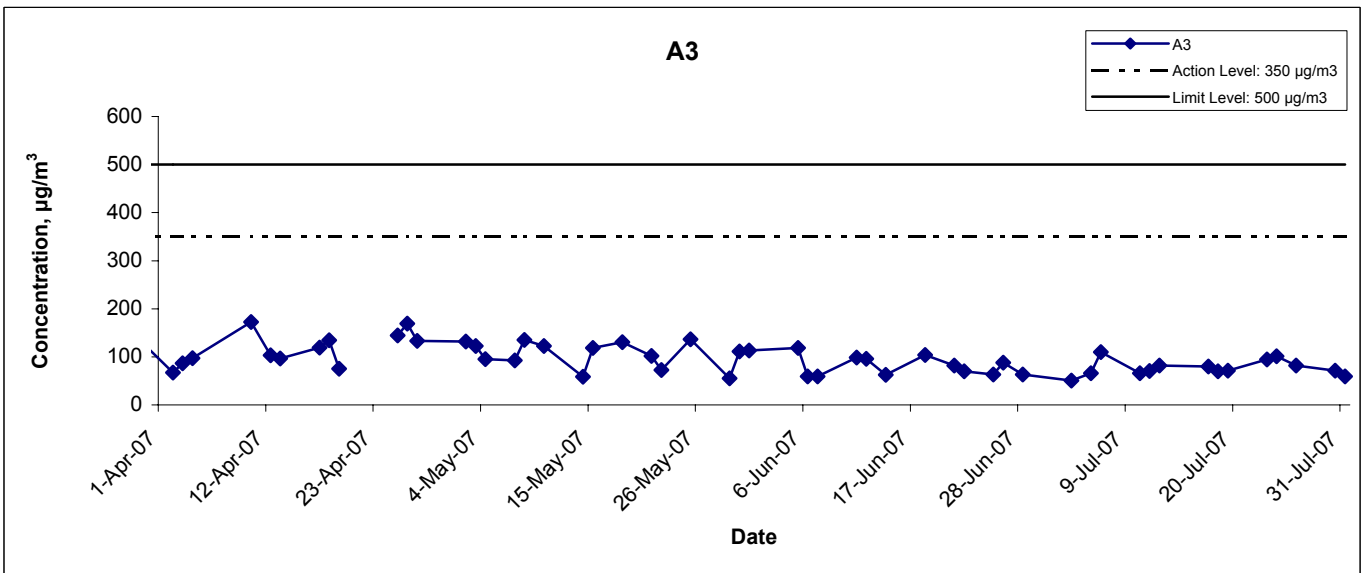
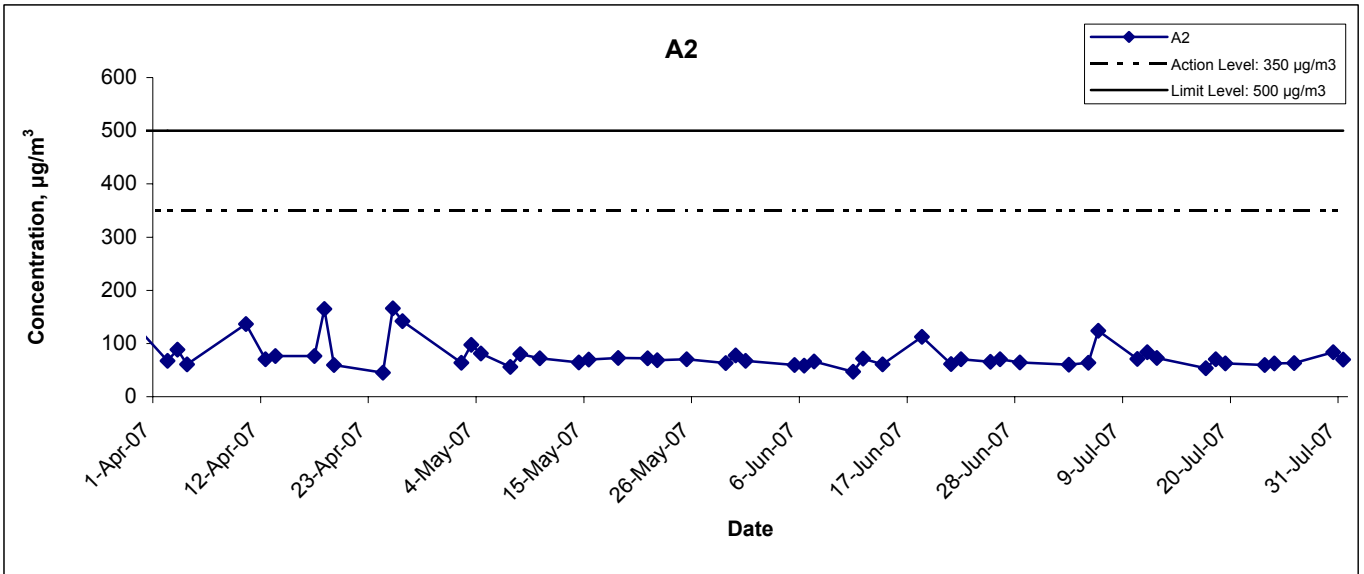
## Appendix D - 1-hour TSP Monitoring Results

### 1-HOUR TSP MONITORING RESULTS

#### Location A4 - Garden Villa

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Weather Condition	Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )
	Initial	Final	Initial	Final	Initial	Final								
3-Jul-07	2.7386	2.7501	1.23	1.23	6027.0	6028.0	1.0	156.4	Sunshine	301.1	758.1	0.0115	1.23	73.5
5-Jul-07	2.7625	2.7714	1.22	1.22	6052.0	6053.0	1.0	121.2	Sunshine	302.2	758.2	0.0089	1.22	73.4
6-Jul-07	2.7674	2.7768	1.22	1.22	6053.0	6054.0	1.0	128.0	Sunshine	302.2	758.3	0.0094	1.22	73.4
10-Jul-07	2.7740	2.7840	1.23	1.23	6054.0	6055.0	1.0	135.5	Sunshine	297.9	755.7	0.0100	1.23	73.8
11-Jul-07	2.7187	2.7264	1.21	1.21	6079.0	6080.0	1.0	105.8	Sunshine	305.9	753.4	0.0077	1.21	72.8
12-Jul-07	2.7516	2.7575	1.22	1.22	6080.0	6081.0	1.0	80.7	Sunshine	303.0	753.5	0.0059	1.22	73.1
17-Jul-07	2.8230	2.8324	1.23	1.23	6105.0	6106.0	1.0	127.8	Sunshine	300.9	758.0	0.0094	1.23	73.6
18-Jul-07	2.7419	2.7455	1.23	1.23	6106.0	6107.0	1.0	48.7	Sunshine	297.5	758.5	0.0036	1.23	74.0
19-Jul-07	2.7870	2.7954	1.22	1.22	6107.0	6108.0	1.0	114.4	Sunshine	302.5	759.2	0.0084	1.22	73.4
23-Jul-07	2.8453	2.8505	1.22	1.22	6132.0	6133.0	1.0	70.9	Sunshine	303.0	759.4	0.0052	1.22	73.4
24-Jul-07	2.8530	2.8585	1.22	1.22	6133.0	6134.0	1.0	75.1	Sunshine	304.2	760.1	0.0055	1.22	73.3
26-Jul-07	2.7969	2.8012	1.22	1.22	6134.0	6135.0	1.0	58.6	Sunshine	303.2	759.9	0.0043	1.22	73.4
30-Jul-07	2.8085	2.8156	1.22	1.22	6158.0	6159.0	1.0	96.9	Sunshine	304.2	759.9	0.0071	1.22	73.3
31-Jul-07	2.8246	2.8298	1.22	1.22	6159.0	6160.0	1.0	70.9	Sunshine	304.1	759.1	0.0052	1.22	73.3
								Min	48.7					
								Max	156.4					
								Average	99.3					

## 1-hr TSP Levels



<b>Title</b> Environmental Team for Sha Tin Heights Tunnel & Approaches Graphical Presentation of 1-hour TSP Monitoring Results	<b>Scale</b> N.T.S	<b>Project No.</b> MA2027	
	<b>Date</b> Jul 07	<b>Appendix</b> D	

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**APPENDIX E**  
**24-HOUR TSP MONITORING RESULTS**  
**AND GRAPHICAL PRESENTATIONS**

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## Appendix E - 24-hour TSP Monitoring Results

### Location A2 - Lau Pak Lok Secondary School

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Weather Condition	Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )
	Initial	Final	Initial	Final	Initial	Final								
4-Jul-07	2.7299	2.8283	1.22	1.22	11384.7	11408.7	24.0	56.1	Sunshine	301.4	757.0	0.0984	1.22	1753.9
10-Jul-07	2.7804	2.8721	1.22	1.22	11408.7	11432.7	24.0	52.2	Sunshine	297.9	755.7	0.0917	1.22	1756.1
16-Jul-07	2.8374	2.9147	1.22	1.22	11432.7	11456.7	24.0	44.1	Sunshine	300.1	757.5	0.0773	1.22	1752.3
21-Jul-07	2.7558	2.8650	1.21	1.21	11456.7	11480.7	24.0	62.5	Sunshine	303.2	758.8	0.1092	1.21	1745.9
27-Jul-07	2.8423	2.8986	1.21	1.21	11480.7	11504.7	24.0	32.3	Sunshine	302.6	760.3	0.0563	1.21	1743.6
								Min	32.3					
								Max	62.5					
								Average	49.5					

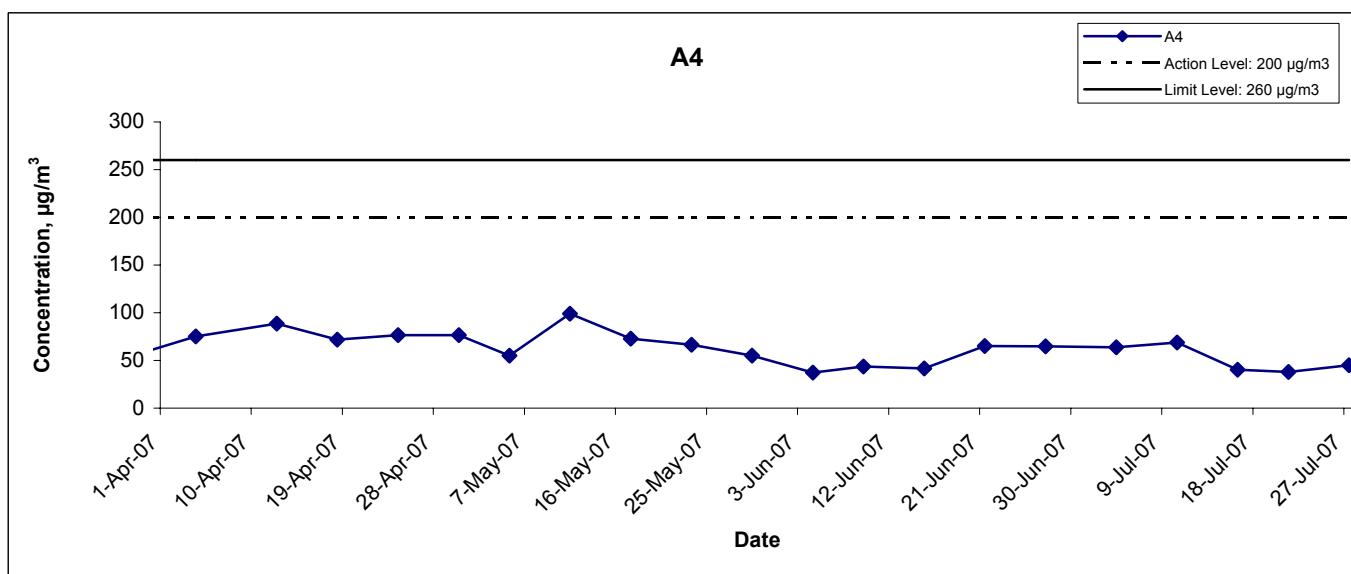
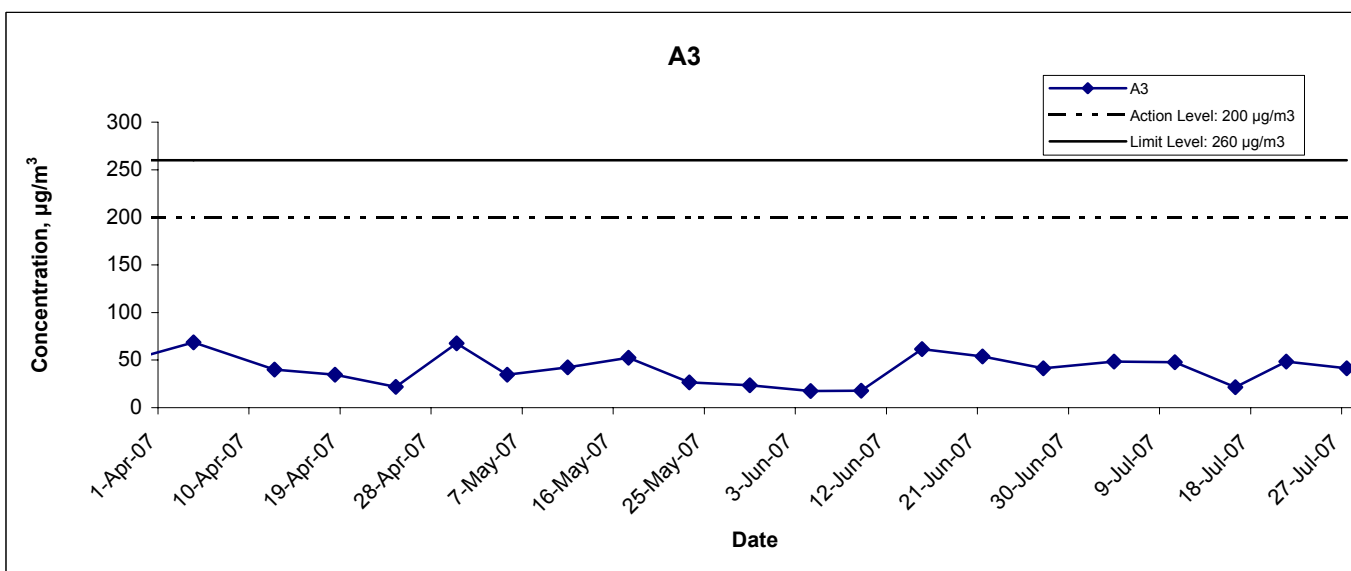
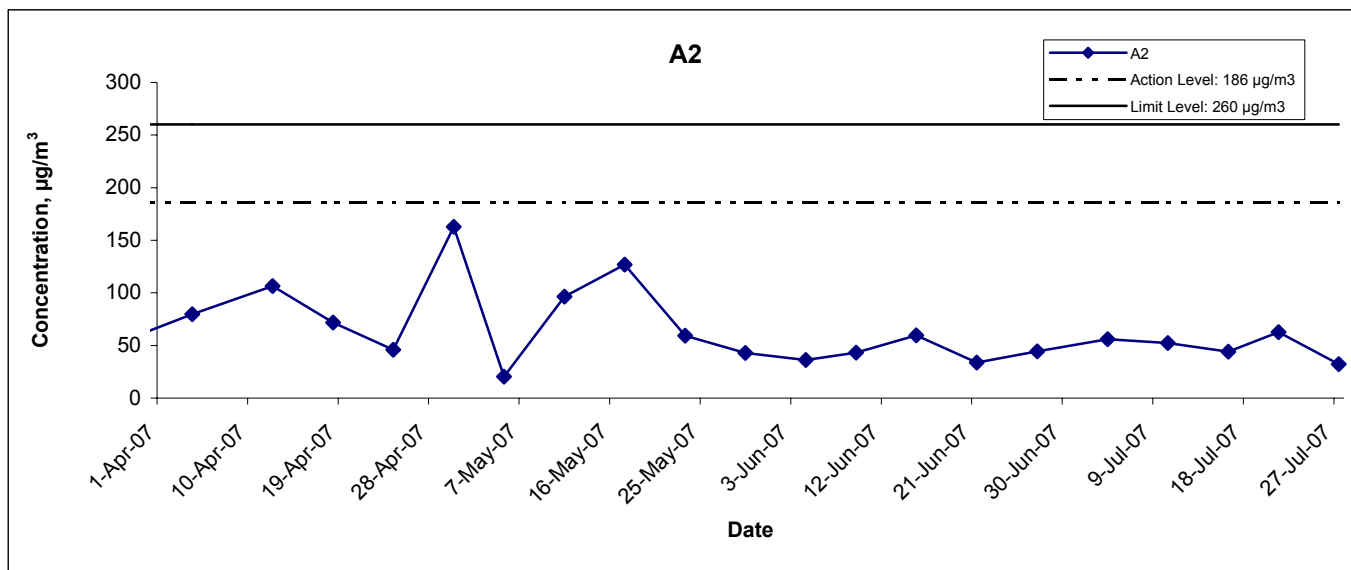
### Location A3 - Shatin Heights


Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Weather Condition	Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )
	Initial	Final	Initial	Final	Initial	Final								
4-Jul-07	2.7690	2.8539	1.22	1.22	6922.8	6946.8	24.0	48.5	Sunshine	301.4	757.0	0.0849	1.22	1751.5
10-Jul-07	2.7739	2.8581	1.22	1.22	6946.8	6970.8	24.0	47.9	SUnshine	297.9	755.7	0.0842	1.22	1759.4
16-Jul-07	2.7457	2.7834	1.22	1.22	6970.8	6994.8	24.0	21.5	Sunshine	300.1	757.5	0.0377	1.22	1755.4
21-Jul-07	2.7082	2.7931	1.21	1.21	6994.8	7018.8	24.0	48.5	Sunshine	303.2	758.8	0.0849	1.21	1748.7
27-Jul-07	2.8146	2.8875	1.22	1.22	7018.8	7042.8	24.0	41.5	Sunshine	302.6	760.3	0.0729	1.22	1756.7
								Min	21.5					
								Max	48.5					
								Average	41.6					

### Location A4 - Garden Villa

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Weather Condition	Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )
	Initial	Final	Initial	Final	Initial	Final								
4-Jul-07	2.7740	2.8864	1.22	1.22	6028.0	6052.0	24.0	63.9	Sunshine	301.4	757.0	0.1124	1.22	1760.2
10-Jul-07	2.7119	2.8336	1.23	1.23	6055.0	6079.0	24.0	68.8	Sunshine	297.8	755.3	0.1217	1.23	1769.4
16-Jul-07	2.8252	2.8963	1.23	1.23	6081.0	6105.0	24.0	40.2	Sunshine	300.1	757.5	0.0711	1.23	1766.8
21-Jul-07	2.8609	2.9279	1.22	1.22	6108.0	6132.0	24.0	38.1	Sunshine	303.2	758.8	0.0670	1.22	1760.0
27-Jul-07	2.8361	2.9155	1.22	1.22	6134.0	6158.0	24.0	45.0	Sunshine	302.6	760.3	0.0794	1.22	1763.2
								Min	38.1					
								Max	68.8					
								Average	51.2					

## 24-hr TSP Levels



<b>Title</b> Environmental Team for Sha Tin Heights Tunnel & Approaches  Graphical Presentation of 24-hour TSP Monitoring Results	<b>Scale</b> N.T.S	<b>Project No.</b> MA2027	
	<b>Date</b> Jul 07	<b>Appendix</b> E	

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**APPENDIX F**  
**WIND DATA**

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## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Jul-2007	00:00	2.7	N
1-Jul-2007	01:00	0.9	E
1-Jul-2007	02:00	0.4	ENE
1-Jul-2007	03:00	1.3	E
1-Jul-2007	04:00	0.9	N
1-Jul-2007	05:00	0.9	NE
1-Jul-2007	06:00	1.3	SSW
1-Jul-2007	07:00	0.9	SSW
1-Jul-2007	08:00	1.3	W
1-Jul-2007	09:00	1.8	WNW
1-Jul-2007	10:00	1.8	W
1-Jul-2007	11:00	1.3	NW
1-Jul-2007	12:00	2.2	NNE
1-Jul-2007	13:00	2.2	NNE
1-Jul-2007	14:00	1.8	WNW
1-Jul-2007	15:00	1.3	WNW
1-Jul-2007	16:00	1.3	N
1-Jul-2007	17:00	1.3	W
1-Jul-2007	18:00	1.8	NW
1-Jul-2007	19:00	1.3	W
1-Jul-2007	20:00	0.4	NE
1-Jul-2007	21:00	0.4	WNW
1-Jul-2007	22:00	0.9	WNW
1-Jul-2007	23:00	1.3	WNW
2-Jul-2007	00:00	0.9	NW
2-Jul-2007	01:00	0.9	WNW
2-Jul-2007	02:00	0.9	WNW
2-Jul-2007	03:00	0.9	N
2-Jul-2007	04:00	0.9	N
2-Jul-2007	05:00	0.9	W
2-Jul-2007	06:00	1.3	WNW
2-Jul-2007	07:00	0.4	ESE
2-Jul-2007	08:00	0.4	ESE
2-Jul-2007	09:00	1.3	NE
2-Jul-2007	10:00	1.8	W
2-Jul-2007	11:00	2.2	NW
2-Jul-2007	12:00	2.7	WNW
2-Jul-2007	13:00	3.1	WNW
2-Jul-2007	14:00	2.2	WNW
2-Jul-2007	15:00	2.7	WNW
2-Jul-2007	16:00	2.2	WNW
2-Jul-2007	17:00	2.2	N
2-Jul-2007	18:00	3.6	N
2-Jul-2007	19:00	0.4	SE
2-Jul-2007	20:00	0	SSE
2-Jul-2007	21:00	1.8	WSW
2-Jul-2007	22:00	1.3	SW
2-Jul-2007	23:00	0	---
3-Jul-2007	00:00	0	---
3-Jul-2007	01:00	0	---
3-Jul-2007	02:00	0	SSE
3-Jul-2007	03:00	0	S
3-Jul-2007	04:00	0	SSW
3-Jul-2007	05:00	1.8	W
3-Jul-2007	06:00	1.8	WNW
3-Jul-2007	07:00	0.9	WSW
3-Jul-2007	08:00	0.9	W

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Jul-2007	09:00	1.8	WNW
3-Jul-2007	10:00	1.3	WNW
3-Jul-2007	11:00	2.7	N
3-Jul-2007	12:00	3.1	WNW
3-Jul-2007	13:00	3.1	W
3-Jul-2007	14:00	2.2	WNW
3-Jul-2007	15:00	3.1	WNW
3-Jul-2007	16:00	3.1	WNW
3-Jul-2007	17:00	3.1	W
3-Jul-2007	18:00	3.1	W
3-Jul-2007	19:00	3.1	WNW
3-Jul-2007	20:00	2.7	WNW
3-Jul-2007	21:00	2.2	NW
3-Jul-2007	22:00	3.1	WNW
3-Jul-2007	23:00	3.6	WNW
4-Jul-2007	00:00	3.1	WNW
4-Jul-2007	01:00	2.7	WNW
4-Jul-2007	02:00	1.3	N
4-Jul-2007	03:00	1.3	W
4-Jul-2007	04:00	1.8	W
4-Jul-2007	05:00	1.8	WNW
4-Jul-2007	06:00	1.8	N
4-Jul-2007	07:00	1.3	WNW
4-Jul-2007	08:00	2.2	WNW
4-Jul-2007	09:00	0.9	NNE
4-Jul-2007	10:00	1.8	N
4-Jul-2007	11:00	1.3	N
4-Jul-2007	12:00	1.8	N
4-Jul-2007	13:00	1.3	WNW
4-Jul-2007	14:00	1.8	NW
4-Jul-2007	15:00	1.8	NNE
4-Jul-2007	16:00	1.3	E
4-Jul-2007	17:00	1.8	NNW
4-Jul-2007	18:00	1.3	W
4-Jul-2007	19:00	1.3	W
4-Jul-2007	20:00	2.2	W
4-Jul-2007	21:00	1.3	WNW
4-Jul-2007	22:00	2.2	WNW
4-Jul-2007	23:00	1.8	WNW
5-Jul-2007	00:00	1.3	NW
5-Jul-2007	01:00	1.3	WNW
5-Jul-2007	02:00	1.8	N
5-Jul-2007	03:00	1.3	W
5-Jul-2007	04:00	2.2	WNW
5-Jul-2007	05:00	1.8	W
5-Jul-2007	06:00	1.3	N
5-Jul-2007	07:00	1.3	N
5-Jul-2007	08:00	0.4	E
5-Jul-2007	09:00	1.3	N
5-Jul-2007	10:00	1.3	NW
5-Jul-2007	11:00	2.7	NNW
5-Jul-2007	12:00	1.3	NNW
5-Jul-2007	13:00	2.7	NE
5-Jul-2007	14:00	2.2	N
5-Jul-2007	15:00	1.8	ENE
5-Jul-2007	16:00	1.8	NNE
5-Jul-2007	17:00	2.2	N

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Jul-2007	18:00	0.9	E
5-Jul-2007	19:00	0	N
5-Jul-2007	20:00	0.9	N
5-Jul-2007	21:00	1.8	N
5-Jul-2007	22:00	0.9	N
5-Jul-2007	23:00	1.3	N
6-Jul-2007	00:00	0.4	NNE
6-Jul-2007	01:00	1.3	NNE
6-Jul-2007	02:00	0.9	ENE
6-Jul-2007	03:00	0.9	N
6-Jul-2007	04:00	0.9	NNE
6-Jul-2007	05:00	1.3	N
6-Jul-2007	06:00	1.8	E
6-Jul-2007	07:00	1.3	NNE
6-Jul-2007	08:00	0.9	NE
6-Jul-2007	09:00	1.8	NE
6-Jul-2007	10:00	2.7	NE
6-Jul-2007	11:00	2.7	NE
6-Jul-2007	12:00	3.1	NE
6-Jul-2007	13:00	2.2	NE
6-Jul-2007	14:00	2.7	NE
6-Jul-2007	15:00	2.7	NE
6-Jul-2007	16:00	2.2	NE
6-Jul-2007	17:00	2.7	N
6-Jul-2007	18:00	1.8	N
6-Jul-2007	19:00	0.9	N
6-Jul-2007	20:00	0.4	NNE
6-Jul-2007	21:00	1.3	NNE
6-Jul-2007	22:00	1.3	NNE
6-Jul-2007	23:00	1.3	N
7-Jul-2007	00:00	1.3	N
7-Jul-2007	01:00	0.4	N
7-Jul-2007	02:00	0.9	NNE
7-Jul-2007	03:00	0	---
7-Jul-2007	04:00	0.4	N
7-Jul-2007	05:00	0	NE
7-Jul-2007	06:00	0	---
7-Jul-2007	07:00	0	---
7-Jul-2007	08:00	0	N
7-Jul-2007	09:00	0.9	N
7-Jul-2007	10:00	1.3	N
7-Jul-2007	11:00	1.8	N
7-Jul-2007	12:00	1.3	NNE
7-Jul-2007	13:00	1.3	N
7-Jul-2007	14:00	1.3	NE
7-Jul-2007	15:00	1.8	N
7-Jul-2007	16:00	1.8	NE
7-Jul-2007	17:00	1.3	NNE
7-Jul-2007	18:00	1.3	ENE
7-Jul-2007	19:00	1.3	N
7-Jul-2007	20:00	0.9	NNE
7-Jul-2007	21:00	1.3	N
7-Jul-2007	22:00	0.4	NNE
7-Jul-2007	23:00	0.4	ENE
8-Jul-2007	00:00	0.4	NE
8-Jul-2007	01:00	0	ESE
8-Jul-2007	02:00	0	SE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
8-Jul-2007	03:00	0	E
8-Jul-2007	04:00	0	E
8-Jul-2007	05:00	0	E
8-Jul-2007	06:00	0	---
8-Jul-2007	07:00	0	E
8-Jul-2007	08:00	0.4	N
8-Jul-2007	09:00	0.9	NNE
8-Jul-2007	10:00	1.8	NE
8-Jul-2007	11:00	1.3	ENE
8-Jul-2007	12:00	2.7	NE
8-Jul-2007	13:00	3.1	NE
8-Jul-2007	14:00	3.1	ENE
8-Jul-2007	15:00	2.7	NE
8-Jul-2007	16:00	3.1	NE
8-Jul-2007	17:00	2.2	ENE
8-Jul-2007	18:00	1.8	ENE
8-Jul-2007	19:00	1.3	ENE
8-Jul-2007	20:00	0.9	NE
8-Jul-2007	21:00	1.3	NNE
8-Jul-2007	22:00	1.3	ENE
8-Jul-2007	23:00	0.9	ENE
9-Jul-2007	00:00	0.9	E
9-Jul-2007	01:00	0.9	E
9-Jul-2007	02:00	0.4	E
9-Jul-2007	03:00	0	---
9-Jul-2007	04:00	0	E
9-Jul-2007	05:00	0	ENE
9-Jul-2007	06:00	0.9	ENE
9-Jul-2007	07:00	0.4	E
9-Jul-2007	08:00	1.3	ENE
9-Jul-2007	09:00	1.8	NNE
9-Jul-2007	10:00	2.2	NE
9-Jul-2007	11:00	2.7	N
9-Jul-2007	12:00	2.7	NNE
9-Jul-2007	13:00	3.1	NE
9-Jul-2007	14:00	2.2	NE
9-Jul-2007	15:00	3.1	NE
9-Jul-2007	16:00	2.7	NE
9-Jul-2007	17:00	2.2	NNE
9-Jul-2007	18:00	1.8	ENE
9-Jul-2007	19:00	2.2	NE
9-Jul-2007	20:00	1.8	E
9-Jul-2007	21:00	1.3	E
9-Jul-2007	22:00	2.2	ENE
9-Jul-2007	23:00	1.3	E
10-Jul-2007	00:00	0.9	E
10-Jul-2007	01:00	0.4	E
10-Jul-2007	02:00	0.9	ENE
10-Jul-2007	03:00	0.9	ENE
10-Jul-2007	04:00	0.4	E
10-Jul-2007	05:00	1.3	ENE
10-Jul-2007	06:00	0.9	ENE
10-Jul-2007	07:00	0.4	ENE
10-Jul-2007	08:00	1.3	N
10-Jul-2007	09:00	2.2	NNE
10-Jul-2007	10:00	4	N
10-Jul-2007	11:00	3.1	NNE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
10-Jul-2007	12:00	3.1	NE
10-Jul-2007	13:00	3.6	NNE
10-Jul-2007	14:00	3.6	N
10-Jul-2007	15:00	3.1	N
10-Jul-2007	16:00	3.1	NNE
10-Jul-2007	17:00	2.2	ENE
10-Jul-2007	18:00	2.2	ENE
10-Jul-2007	19:00	1.8	NE
10-Jul-2007	20:00	1.3	ENE
10-Jul-2007	21:00	1.3	NE
10-Jul-2007	22:00	1.8	ENE
10-Jul-2007	23:00	1.3	E
11-Jul-2007	00:00	1.3	ENE
11-Jul-2007	01:00	1.8	E
11-Jul-2007	02:00	0.9	ENE
11-Jul-2007	03:00	0.9	ENE
11-Jul-2007	04:00	0.4	ENE
11-Jul-2007	05:00	0.4	E
11-Jul-2007	06:00	0.4	ENE
11-Jul-2007	07:00	0.4	ENE
11-Jul-2007	08:00	1.3	N
11-Jul-2007	09:00	1.3	N
11-Jul-2007	10:00	1.8	N
11-Jul-2007	11:00	1.8	N
11-Jul-2007	12:00	3.1	NE
11-Jul-2007	13:00	3.1	NNE
11-Jul-2007	14:00	3.6	NE
11-Jul-2007	15:00	3.1	NE
11-Jul-2007	16:00	2.7	NE
11-Jul-2007	17:00	2.7	NE
11-Jul-2007	18:00	2.2	NE
11-Jul-2007	19:00	1.3	ENE
11-Jul-2007	20:00	0.9	ENE
11-Jul-2007	21:00	1.8	ENE
11-Jul-2007	22:00	2.2	E
11-Jul-2007	23:00	2.7	ENE
12-Jul-2007	00:00	1.8	ENE
12-Jul-2007	01:00	2.2	ENE
12-Jul-2007	02:00	1.8	ENE
12-Jul-2007	03:00	0.9	ENE
12-Jul-2007	04:00	0	ENE
12-Jul-2007	05:00	0	ENE
12-Jul-2007	06:00	0	ENE
12-Jul-2007	07:00	0	ENE
12-Jul-2007	08:00	0	N
12-Jul-2007	09:00	1.3	N
12-Jul-2007	10:00	2.2	N
12-Jul-2007	11:00	2.2	N
12-Jul-2007	12:00	2.7	N
12-Jul-2007	13:00	2.2	NNE
12-Jul-2007	14:00	3.1	NNE
12-Jul-2007	15:00	3.6	NNE
12-Jul-2007	16:00	3.1	NNE
12-Jul-2007	17:00	2.7	NE
12-Jul-2007	18:00	1.8	ENE
12-Jul-2007	19:00	1.3	ENE
12-Jul-2007	20:00	0.9	ENE



## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Jul-2007	21:00	0.9	ENE
12-Jul-2007	22:00	0.9	ENE
12-Jul-2007	23:00	0.9	ENE
13-Jul-2007	00:00	0.4	ENE
13-Jul-2007	01:00	0.4	ENE
13-Jul-2007	02:00	0.4	ENE
13-Jul-2007	03:00	0.4	ENE
13-Jul-2007	04:00	0.4	ENE
13-Jul-2007	05:00	0.4	E
13-Jul-2007	06:00	0.4	E
13-Jul-2007	07:00	0.4	ENE
13-Jul-2007	08:00	0	NNE
13-Jul-2007	09:00	1.3	NNE
13-Jul-2007	10:00	1.8	N
13-Jul-2007	11:00	2.2	N
13-Jul-2007	12:00	2.7	NNE
13-Jul-2007	13:00	3.1	NNE
13-Jul-2007	14:00	3.1	NE
13-Jul-2007	15:00	3.1	NE
13-Jul-2007	16:00	2.7	NE
13-Jul-2007	17:00	2.7	NNE
13-Jul-2007	18:00	2.2	ENE
13-Jul-2007	19:00	1.8	ENE
13-Jul-2007	20:00	1.8	ENE
13-Jul-2007	21:00	1.3	ENE
13-Jul-2007	22:00	1.3	E
13-Jul-2007	23:00	1.3	E
14-Jul-2007	00:00	1.3	E
14-Jul-2007	01:00	1.3	ENE
14-Jul-2007	02:00	1.8	E
14-Jul-2007	03:00	1.8	ENE
14-Jul-2007	04:00	1.3	ENE
14-Jul-2007	05:00	0.9	E
14-Jul-2007	06:00	0.9	ENE
14-Jul-2007	07:00	0.4	NNE
14-Jul-2007	08:00	2.2	N
14-Jul-2007	09:00	2.7	NE
14-Jul-2007	10:00	3.1	NNE
14-Jul-2007	11:00	3.1	NNE
14-Jul-2007	12:00	3.1	NE
14-Jul-2007	13:00	2.7	NE
14-Jul-2007	14:00	2.7	NE
14-Jul-2007	15:00	2.7	NE
14-Jul-2007	16:00	3.1	NE
14-Jul-2007	17:00	3.1	E
14-Jul-2007	18:00	2.7	ENE
14-Jul-2007	19:00	2.2	NE
14-Jul-2007	20:00	2.2	ENE
14-Jul-2007	21:00	2.2	ENE
14-Jul-2007	22:00	1.8	NE
14-Jul-2007	23:00	1.8	ENE
15-Jul-2007	00:00	2.7	ENE
15-Jul-2007	01:00	1.8	E
15-Jul-2007	02:00	1.3	ENE
15-Jul-2007	03:00	1.8	NE
15-Jul-2007	04:00	2.2	ENE
15-Jul-2007	05:00	1.3	NE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
15-Jul-2007	06:00	0.9	ENE
15-Jul-2007	07:00	0.4	NE
15-Jul-2007	08:00	1.8	NNE
15-Jul-2007	09:00	2.7	N
15-Jul-2007	10:00	2.2	NNE
15-Jul-2007	11:00	3.6	NNE
15-Jul-2007	12:00	3.6	N
15-Jul-2007	13:00	2.7	N
15-Jul-2007	14:00	2.7	NE
15-Jul-2007	15:00	3.6	NE
15-Jul-2007	16:00	3.6	NE
15-Jul-2007	17:00	3.1	NE
15-Jul-2007	18:00	2.7	NE
15-Jul-2007	19:00	1.8	NE
15-Jul-2007	20:00	2.2	ENE
15-Jul-2007	21:00	1.8	ENE
15-Jul-2007	22:00	1.3	ENE
15-Jul-2007	23:00	0.9	ENE
16-Jul-2007	00:00	1.8	NE
16-Jul-2007	01:00	2.2	NE
16-Jul-2007	02:00	2.2	NE
16-Jul-2007	03:00	2.7	NE
16-Jul-2007	04:00	2.7	NE
16-Jul-2007	05:00	1.8	ENE
16-Jul-2007	06:00	1.3	ENE
16-Jul-2007	07:00	0.4	ENE
16-Jul-2007	08:00	0.4	ENE
16-Jul-2007	09:00	0.4	ENE
16-Jul-2007	10:00	2.2	NNE
16-Jul-2007	11:00	3.1	NNE
16-Jul-2007	12:00	3.1	NE
16-Jul-2007	13:00	3.1	NE
16-Jul-2007	14:00	3.6	NE
16-Jul-2007	15:00	3.1	NE
16-Jul-2007	16:00	2.7	NE
16-Jul-2007	17:00	3.1	NE
16-Jul-2007	18:00	3.1	NE
16-Jul-2007	19:00	3.6	NE
16-Jul-2007	20:00	2.7	NE
16-Jul-2007	21:00	2.7	NE
16-Jul-2007	22:00	2.7	NE
16-Jul-2007	23:00	3.6	NE
17-Jul-2007	00:00	2.7	NE
17-Jul-2007	01:00	2.7	NE
17-Jul-2007	02:00	3.6	NNE
17-Jul-2007	03:00	3.6	NE
17-Jul-2007	04:00	3.1	NE
17-Jul-2007	05:00	2.7	NE
17-Jul-2007	06:00	2.2	NE
17-Jul-2007	07:00	2.7	NNE
17-Jul-2007	08:00	1.3	NE
17-Jul-2007	09:00	2.7	NNE
17-Jul-2007	10:00	3.6	N
17-Jul-2007	11:00	4.5	N
17-Jul-2007	12:00	4.5	NE
17-Jul-2007	13:00	4	N
17-Jul-2007	14:00	4	NE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
17-Jul-2007	15:00	4	NE
17-Jul-2007	16:00	3.6	NNE
17-Jul-2007	17:00	3.6	NE
17-Jul-2007	18:00	3.1	NE
17-Jul-2007	19:00	2.7	NE
17-Jul-2007	20:00	2.7	NNE
17-Jul-2007	21:00	3.1	N
17-Jul-2007	22:00	3.6	NE
17-Jul-2007	23:00	2.7	NE
18-Jul-2007	00:00	2.7	NE
18-Jul-2007	01:00	2.2	NE
18-Jul-2007	02:00	2.7	NE
18-Jul-2007	03:00	2.7	NE
18-Jul-2007	04:00	2.7	NNE
18-Jul-2007	05:00	3.1	NE
18-Jul-2007	06:00	3.6	NE
18-Jul-2007	07:00	3.6	NNE
18-Jul-2007	08:00	3.6	NE
18-Jul-2007	09:00	4	NNE
18-Jul-2007	10:00	4	NNE
18-Jul-2007	11:00	4.5	NNE
18-Jul-2007	12:00	4.5	NNE
18-Jul-2007	13:00	4.5	NE
18-Jul-2007	14:00	4.5	NE
18-Jul-2007	15:00	4.5	NE
18-Jul-2007	16:00	4	NE
18-Jul-2007	17:00	4	NE
18-Jul-2007	18:00	4	NNE
18-Jul-2007	19:00	3.1	NNE
18-Jul-2007	20:00	3.1	NNE
18-Jul-2007	21:00	2.2	NNE
18-Jul-2007	22:00	2.2	NNE
18-Jul-2007	23:00	2.7	ENE
19-Jul-2007	00:00	2.2	ENE
19-Jul-2007	01:00	2.2	NE
19-Jul-2007	02:00	2.2	NE
19-Jul-2007	03:00	1.8	NNE
19-Jul-2007	04:00	2.7	ENE
19-Jul-2007	05:00	2.7	ENE
19-Jul-2007	06:00	1.3	ENE
19-Jul-2007	07:00	0.9	ENE
19-Jul-2007	08:00	1.3	NE
19-Jul-2007	09:00	2.7	NE
19-Jul-2007	10:00	3.6	NE
19-Jul-2007	11:00	4.5	NE
19-Jul-2007	12:00	4	NNE
19-Jul-2007	13:00	4	NNE
19-Jul-2007	14:00	4.9	NE
19-Jul-2007	15:00	4	NE
19-Jul-2007	16:00	3.6	NE
19-Jul-2007	17:00	4	NNE
19-Jul-2007	18:00	4.5	NNE
19-Jul-2007	19:00	3.6	NNE
19-Jul-2007	20:00	3.6	NNE
19-Jul-2007	21:00	3.1	NE
19-Jul-2007	22:00	3.1	NE
19-Jul-2007	23:00	2.7	NNE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
20-Jul-2007	00:00	2.2	NE
20-Jul-2007	01:00	2.2	NE
20-Jul-2007	02:00	2.2	NE
20-Jul-2007	03:00	1.8	NE
20-Jul-2007	04:00	1.3	E
20-Jul-2007	05:00	0.9	ENE
20-Jul-2007	06:00	0.4	ENE
20-Jul-2007	07:00	1.8	NE
20-Jul-2007	08:00	2.7	NNE
20-Jul-2007	09:00	3.1	NE
20-Jul-2007	10:00	3.6	NNE
20-Jul-2007	11:00	4	NNE
20-Jul-2007	12:00	4.5	NNE
20-Jul-2007	13:00	4.5	NNE
20-Jul-2007	14:00	4	NE
20-Jul-2007	15:00	4	NNE
20-Jul-2007	16:00	4	NNE
20-Jul-2007	17:00	3.6	NNE
20-Jul-2007	18:00	3.1	NNE
20-Jul-2007	19:00	2.7	NNE
20-Jul-2007	20:00	1.8	NNE
20-Jul-2007	21:00	2.2	NE
20-Jul-2007	22:00	1.3	NE
20-Jul-2007	23:00	1.3	NNE
21-Jul-2007	00:00	0.9	NE
21-Jul-2007	01:00	0.4	NNE
21-Jul-2007	02:00	1.8	ENE
21-Jul-2007	03:00	1.8	ENE
21-Jul-2007	04:00	0.9	ENE
21-Jul-2007	05:00	1.3	ENE
21-Jul-2007	06:00	0.9	ENE
21-Jul-2007	07:00	0.9	NE
21-Jul-2007	08:00	2.2	NNE
21-Jul-2007	09:00	3.1	NNE
21-Jul-2007	10:00	2.7	N
21-Jul-2007	11:00	2.7	N
21-Jul-2007	12:00	3.1	NE
21-Jul-2007	13:00	3.1	NE
21-Jul-2007	14:00	4	NNE
21-Jul-2007	15:00	4	NNE
21-Jul-2007	16:00	3.6	NNE
21-Jul-2007	17:00	3.6	NNE
21-Jul-2007	18:00	3.6	NNE
21-Jul-2007	19:00	2.2	NE
21-Jul-2007	20:00	1.3	ENE
21-Jul-2007	21:00	0.9	NE
21-Jul-2007	22:00	0.9	NE
21-Jul-2007	23:00	0.4	ENE
22-Jul-2007	00:00	0.4	ENE
22-Jul-2007	01:00	0.9	E
22-Jul-2007	02:00	0.9	E
22-Jul-2007	03:00	1.3	ENE
22-Jul-2007	04:00	1.3	ENE
22-Jul-2007	05:00	0.4	ENE
22-Jul-2007	06:00	0	ENE
22-Jul-2007	07:00	0	ENE
22-Jul-2007	08:00	0.4	N

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
22-Jul-2007	09:00	0.9	N
22-Jul-2007	10:00	2.7	N
22-Jul-2007	11:00	3.6	N
22-Jul-2007	12:00	3.1	N
22-Jul-2007	13:00	3.1	NE
22-Jul-2007	14:00	4	N
22-Jul-2007	15:00	3.6	NE
22-Jul-2007	16:00	3.1	NE
22-Jul-2007	17:00	2.2	ENE
22-Jul-2007	18:00	2.7	NE
22-Jul-2007	19:00	1.8	ENE
22-Jul-2007	20:00	1.3	E
22-Jul-2007	21:00	0.9	NE
22-Jul-2007	22:00	0.4	E
22-Jul-2007	23:00	0.9	E
23-Jul-2007	00:00	0.4	ENE
23-Jul-2007	01:00	0.4	ENE
23-Jul-2007	02:00	0.4	ENE
23-Jul-2007	03:00	0	ENE
23-Jul-2007	04:00	0	ENE
23-Jul-2007	05:00	0	ENE
23-Jul-2007	06:00	0	ENE
23-Jul-2007	07:00	0	ENE
23-Jul-2007	08:00	1.8	N
23-Jul-2007	09:00	2.7	N
23-Jul-2007	10:00	2.2	N
23-Jul-2007	11:00	2.7	N
23-Jul-2007	12:00	4	N
23-Jul-2007	13:00	4.5	NNE
23-Jul-2007	14:00	4	N
23-Jul-2007	15:00	3.6	NE
23-Jul-2007	16:00	3.6	NNE
23-Jul-2007	17:00	3.1	NNE
23-Jul-2007	18:00	1.8	NNE
23-Jul-2007	19:00	1.8	E
23-Jul-2007	20:00	1.3	E
23-Jul-2007	21:00	1.8	E
23-Jul-2007	22:00	1.8	E
23-Jul-2007	23:00	1.3	E
24-Jul-2007	00:00	1.3	ENE
24-Jul-2007	01:00	0.9	ENE
24-Jul-2007	02:00	1.3	E
24-Jul-2007	03:00	0.9	ENE
24-Jul-2007	04:00	0.4	ENE
24-Jul-2007	05:00	0.9	ENE
24-Jul-2007	06:00	0.9	ENE
24-Jul-2007	07:00	0	ENE
24-Jul-2007	08:00	1.3	NNE
24-Jul-2007	09:00	2.2	N
24-Jul-2007	10:00	2.7	N
24-Jul-2007	11:00	3.1	NE
24-Jul-2007	12:00	3.1	NNE
24-Jul-2007	13:00	3.6	NE
24-Jul-2007	14:00	3.6	ENE
24-Jul-2007	15:00	3.1	NE
24-Jul-2007	16:00	3.1	NE
24-Jul-2007	17:00	3.1	ENE

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
24-Jul-2007	18:00	3.1	ENE
24-Jul-2007	19:00	1.8	ENE
24-Jul-2007	20:00	2.7	NE
24-Jul-2007	21:00	1.3	E
24-Jul-2007	22:00	0.9	E
24-Jul-2007	23:00	0.4	ENE
25-Jul-2007	00:00	1.3	ENE
25-Jul-2007	01:00	0.9	E
25-Jul-2007	02:00	1.3	NE
25-Jul-2007	03:00	0.9	ENE
25-Jul-2007	04:00	0.9	ENE
25-Jul-2007	05:00	0.9	E
25-Jul-2007	06:00	1.3	ENE
25-Jul-2007	07:00	0.9	NNE
25-Jul-2007	08:00	1.8	N
25-Jul-2007	09:00	1.8	N
25-Jul-2007	10:00	1.8	N
25-Jul-2007	11:00	1.8	N
25-Jul-2007	12:00	1.8	NNE
25-Jul-2007	13:00	2.2	NE
25-Jul-2007	14:00	2.2	NE
25-Jul-2007	15:00	2.7	NE
25-Jul-2007	16:00	3.1	ENE
25-Jul-2007	17:00	3.1	ENE
25-Jul-2007	18:00	2.7	ENE
25-Jul-2007	19:00	3.1	ENE
25-Jul-2007	20:00	3.1	ENE
25-Jul-2007	21:00	2.7	E
25-Jul-2007	22:00	1.8	E
25-Jul-2007	23:00	1.3	ENE
26-Jul-2007	00:00	0.0	E
26-Jul-2007	01:00	0.0	E
26-Jul-2007	02:00	0.0	E
26-Jul-2007	03:00	0.0	E
26-Jul-2007	04:00	0.0	ENE
26-Jul-2007	05:00	0.0	---
26-Jul-2007	06:00	0.0	---
26-Jul-2007	07:00	0.0	---
26-Jul-2007	08:00	0.0	NNW
26-Jul-2007	09:00	1.8	N
26-Jul-2007	10:00	0.9	NNE
26-Jul-2007	11:00	1.3	N
26-Jul-2007	12:00	2.2	NE
26-Jul-2007	13:00	2.2	NE
26-Jul-2007	14:00	2.7	NNE
26-Jul-2007	15:00	1.8	N
26-Jul-2007	16:00	2.2	NE
26-Jul-2007	17:00	2.2	ENE
26-Jul-2007	18:00	1.8	ENE
26-Jul-2007	19:00	0.9	E
26-Jul-2007	20:00	0.4	E
26-Jul-2007	21:00	0.0	---
26-Jul-2007	22:00	0.0	---
26-Jul-2007	23:00	0.0	---
27-Jul-2007	00:00	0.0	---
27-Jul-2007	01:00	0.0	---
27-Jul-2007	02:00	0.0	---

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
27-Jul-2007	03:00	0.0	---
27-Jul-2007	04:00	0.0	---
27-Jul-2007	05:00	0.0	---
27-Jul-2007	06:00	0.0	---
27-Jul-2007	07:00	0.0	---
27-Jul-2007	08:00	0.0	---
27-Jul-2007	09:00	0.9	W
27-Jul-2007	10:00	1.3	W
27-Jul-2007	11:00	1.3	WSW
27-Jul-2007	12:00	1.8	N
27-Jul-2007	13:00	1.8	N
27-Jul-2007	14:00	1.8	N
27-Jul-2007	15:00	2.7	N
27-Jul-2007	16:00	2.2	N
27-Jul-2007	17:00	0.9	N
27-Jul-2007	18:00	0.9	W
27-Jul-2007	19:00	1.3	W
27-Jul-2007	20:00	1.3	WSW
27-Jul-2007	21:00	0.4	W
27-Jul-2007	22:00	0.4	WNW
27-Jul-2007	23:00	0.4	W
28-Jul-2007	00:00	0.4	W
28-Jul-2007	01:00	0.0	---
28-Jul-2007	02:00	0.0	W
28-Jul-2007	03:00	0.4	W
28-Jul-2007	04:00	0.0	---
28-Jul-2007	05:00	0.0	SW
28-Jul-2007	06:00	0.0	---
28-Jul-2007	07:00	0.4	S
28-Jul-2007	08:00	0.4	W
28-Jul-2007	09:00	1.3	W
28-Jul-2007	10:00	1.8	W
28-Jul-2007	11:00	1.3	W
28-Jul-2007	12:00	2.2	WNW
28-Jul-2007	13:00	2.7	WNW
28-Jul-2007	14:00	1.8	NNW
28-Jul-2007	15:00	1.8	WNW
28-Jul-2007	16:00	2.2	W
28-Jul-2007	17:00	2.2	W
28-Jul-2007	18:00	1.8	W
28-Jul-2007	19:00	1.8	W
28-Jul-2007	20:00	1.3	W
28-Jul-2007	21:00	0.9	WNW
28-Jul-2007	22:00	0.9	WSW
28-Jul-2007	23:00	0.9	WNW
29-Jul-2007	00:00	0.9	WNW
29-Jul-2007	01:00	0.9	N
29-Jul-2007	02:00	0.4	W
29-Jul-2007	03:00	0.9	W
29-Jul-2007	04:00	0.0	NNE
29-Jul-2007	05:00	0.0	N
29-Jul-2007	06:00	0.0	---
29-Jul-2007	07:00	0.0	---
29-Jul-2007	08:00	0.0	---
29-Jul-2007	09:00	0.4	ENE
29-Jul-2007	10:00	0.4	ESE
29-Jul-2007	11:00	1.3	W

## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
29-Jul-2007	12:00	0.4	W
29-Jul-2007	13:00	0.9	NE
29-Jul-2007	14:00	1.8	ENE
29-Jul-2007	15:00	1.3	N
29-Jul-2007	16:00	2.2	ENE
29-Jul-2007	17:00	0.9	E
29-Jul-2007	18:00	0.9	NNE
29-Jul-2007	19:00	0.4	NW
29-Jul-2007	20:00	0.0	W
29-Jul-2007	21:00	0.4	SE
29-Jul-2007	22:00	0.0	SE
29-Jul-2007	23:00	0.0	SE
30-Jul-2007	00:00	0.0	SE
30-Jul-2007	01:00	0.0	E
30-Jul-2007	02:00	0.0	---
30-Jul-2007	03:00	0.0	SE
30-Jul-2007	04:00	0.0	---
30-Jul-2007	05:00	0.0	---
30-Jul-2007	06:00	0.0	---
30-Jul-2007	07:00	0.0	---
30-Jul-2007	08:00	0.0	W
30-Jul-2007	09:00	2.2	W
30-Jul-2007	10:00	0.4	NNE
30-Jul-2007	11:00	0.4	NNE
30-Jul-2007	12:00	0.4	NE
30-Jul-2007	13:00	0.9	NE
30-Jul-2007	14:00	0.0	NNE
30-Jul-2007	15:00	2.2	ESE
30-Jul-2007	16:00	1.8	E
30-Jul-2007	17:00	0.4	NNE
30-Jul-2007	18:00	0.9	NNE
30-Jul-2007	19:00	1.8	ENE
30-Jul-2007	20:00	1.3	ENE
30-Jul-2007	21:00	0.0	ENE
30-Jul-2007	22:00	0.0	ENE
30-Jul-2007	23:00	0.0	ENE
31-Jul-2007	00:00	0.0	ENE
31-Jul-2007	01:00	0.0	NE
31-Jul-2007	02:00	0.9	ENE
31-Jul-2007	03:00	0.0	---
31-Jul-2007	04:00	0.0	---
31-Jul-2007	05:00	0.0	---
31-Jul-2007	06:00	0.0	---
31-Jul-2007	07:00	0.0	---
31-Jul-2007	08:00	0.0	N
31-Jul-2007	09:00	0.4	N
31-Jul-2007	10:00	1.8	NNE
31-Jul-2007	11:00	1.3	NNE
31-Jul-2007	12:00	1.8	N
31-Jul-2007	13:00	1.3	WNW
31-Jul-2007	14:00	1.3	ENE
31-Jul-2007	15:00	3.1	NE
31-Jul-2007	16:00	3.6	NE
31-Jul-2007	17:00	2.7	ENE
31-Jul-2007	18:00	2.2	ENE
31-Jul-2007	19:00	2.2	E
31-Jul-2007	20:00	1.3	E



## Appendix F - Wind Data

Date	Time	Wind Speed m/s	Direction
31-Jul-2007	21:00	1.3	ENE
31-Jul-2007	22:00	1.3	E
31-Jul-2007	23:00	0.9	E

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

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## Appendix G - Noise Monitoring Results

Location N5 - Garden Villa			(Baseline Level : 66.3 dB(A) )			
Date	Time	Weather	dB (A) (30-min)			Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>
6-Jul-07	09:00	Sunny	69.4	73.5	65.0	66.5
12-Jul-07	09:04	Sunny	66.7	68.5	64.5	56.1
19-Jul-07	09:03	Sunny	66.4	68.5	63.5	50.0
26-Jul-07	09:00	Sunny	66.1	68.0	62.0	66.1
Average			67.4	70.3	63.9	63.5
Minimum			66.1	68.0	62.0	50.0
Maximum			69.4	73.5	65.0	66.5

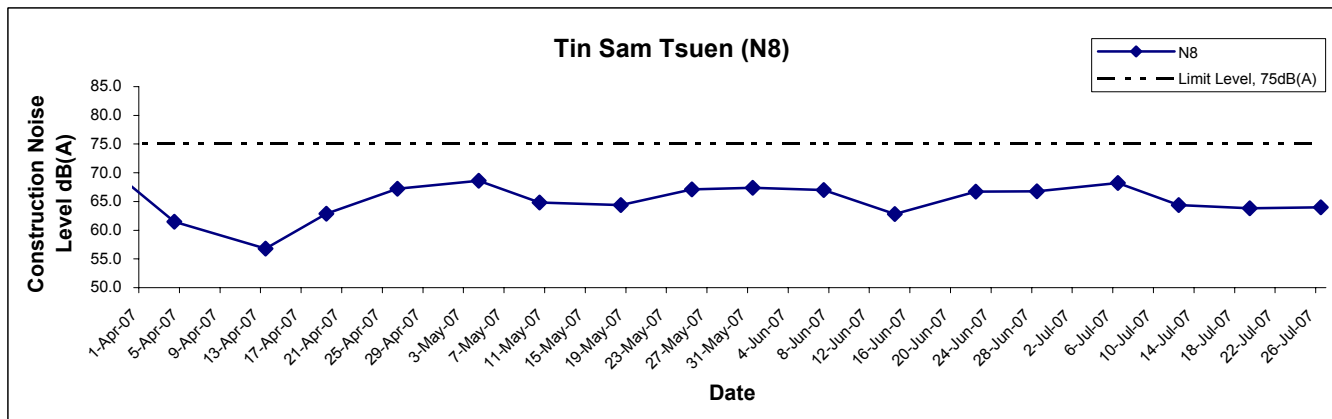
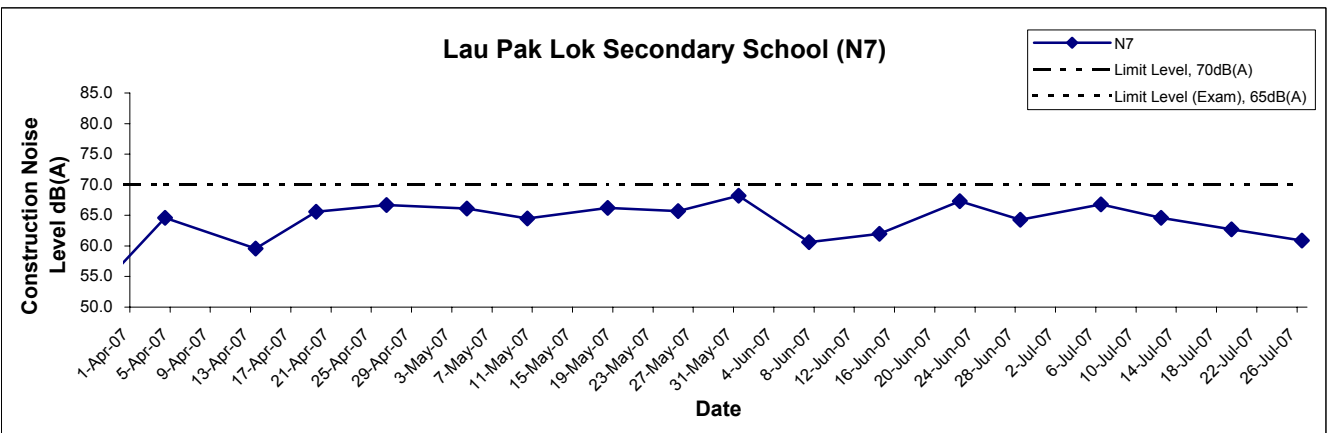
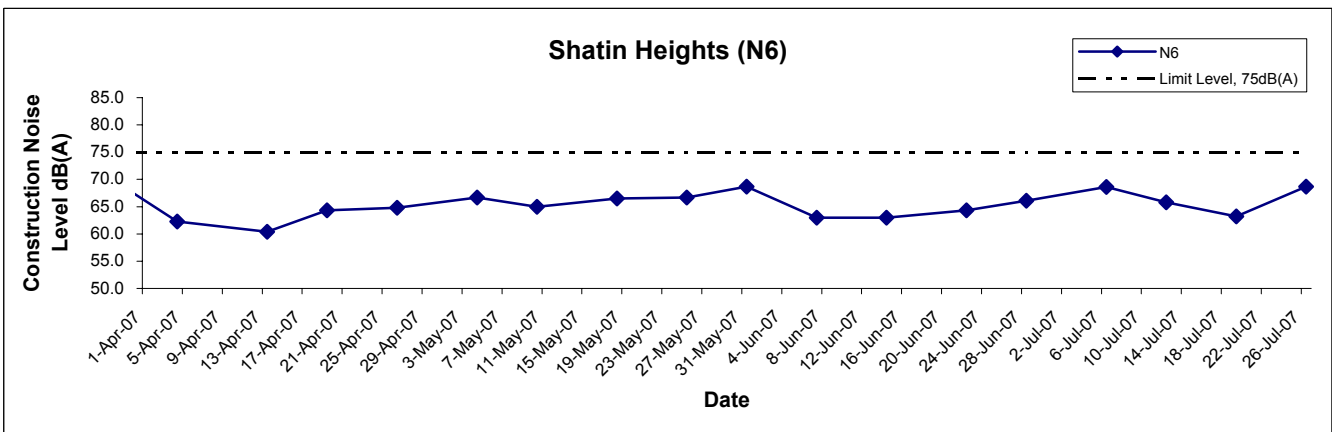
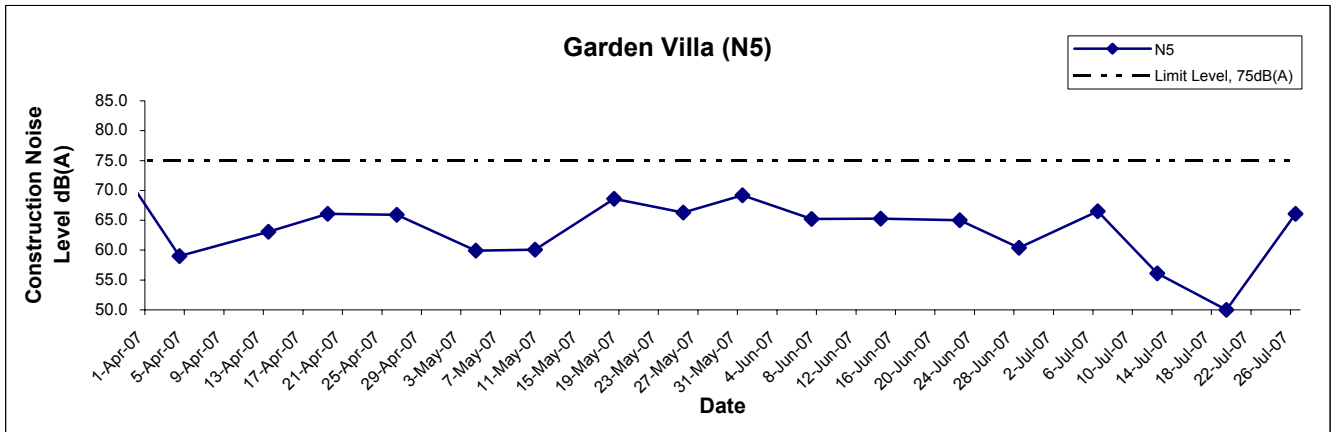
Location N6 - Shatin Heights			(Baseline Level : 70.2 dB(A) )			
Date	Time	Weather	dB (A) (30-min)			Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>
6-Jul-07	09:45	Sunny	68.6	72.0	63.0	68.6
12-Jul-07	09:44	Sunny	65.8	67.0	64.0	65.8
19-Jul-07	09:44	Sunny	63.2	65.5	61.5	63.2
26-Jul-07	09:40	Sunny	68.7	70.5	64.5	68.7
Average			67.1	69.5	63.4	67.1
Minimum			63.2	65.5	61.5	63.2
Maximum			68.7	72.0	64.5	68.7

Location N7 - Lau Pak Lok Secondary School			(Baseline Level : 67.3 dB(A) )			
Date	Time	Weather	dB (A) (30-min)			Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>
6-Jul-07	13:00	Sunny	66.8	69.5	61.5	66.8
12-Jul-07	13:00	Sunny	64.6	66.5	63.0	64.6
19-Jul-07	13:00	Sunny	62.7	64.5	60.5	62.7
26-Jul-07	13:00	Sunny	68.2	70.2	66.0	60.9
Average			66.1	68.2	63.3	64.3
Minimum			62.7	64.5	60.5	60.9
Maximum			68.2	70.2	66.0	66.8

Location N8 - Tin Sam Tsuen			(Baseline Level : 72.0 dB(A) )			
Date	Time	Weather	dB (A) (30-min)			Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>
6-Jul-07	16:25	Sunny	68.2	73.5	62.5	68.2
12-Jul-07	14:06	Sunny	64.4	66.5	62.0	64.4
19-Jul-07	14:09	Sunny	63.8	65.5	61.0	63.8
26-Jul-07	16:30	Sunny	64.0	66.5	58.8	64.0
Average			65.5	69.4	61.3	65.5
Minimum			63.8	65.5	58.8	63.8
Maximum			68.2	73.5	62.5	68.2

# Construction Noise Level = Measured Noise Level - Baseline Noise Level (or equal to measured noise level when less than baseline)

## Noise Levels



Title Environmental Team for Sha Tin Heights Tunnel & Approaches Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA2027	
	Date Jul 07	Appendix G	

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**APPENDIX H**  
**SUMMARY OF EXCEEDANCES**

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### **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.

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**APPENDIX I**  
**SITE AUDIT SUMMARY**

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***Sha Tin New Town, Stage II***

***Contract No. ST 89/02***

***Sha Tin Heights Tunnel and Approaches***

**Weekly Site Inspection Record Summary**

**Inspection Information**

Checklist Reference Number	70705
Date	5 July 2007
Time	09:15 –10:30 (a.m.)

**Non-Compliance**

**Reference No.**

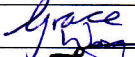
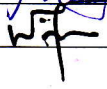
None	-
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**Remarks/Observations**

<p><b>A. Water Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b>B. Air Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b>C. Noise</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b>D. Waste / Chemical Management</b></p> <ul style="list-style-type: none"><li>Accumulated general rubbish was observed near Garden Villa. The contractor was reminded to clear them.</li></ul> <p><b>E. Permit / Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b>F. Others</b></p> <ul style="list-style-type: none"><li>Follow-up for the previous site audit session (Ref. No.:70628), all environmental deficiencies were improved/rectified by contractor.</li></ul>	E1iii
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**Reminders:**

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	Name	Signature	Date
Recorded by	Grace Wong		5 July 2007
Checked by	Dr. Priscilla Choy		5 July 2007



## Weekly Site Inspection Record Summary

## Inspection Information

Checklist Reference Number	70712
Date	12 July 2007
Time	09:00 – 10:30 (a.m.)

Non-Compliance	Reference No.
None	-

## Remarks/Observations

## A. Water Quality

- No environmental deficiency was identified during the environmental site inspection.

## B. Air Quality

- No environmental deficiency was identified during the environmental site inspection.

## C. Noise

- No environmental deficiency was identified during the environmental site inspection.

## D. Waste / Chemical Management

- Accumulated construction waste was observed next to Garden Villa. The contractor was reminded to clear them.

## E. Permit / Licenses

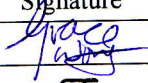

- No environmental deficiency was identified during the environmental site inspection.

## F. Others

- Follow-up for the previous site audit session (Ref. No.:70705), all environmental deficiencies were improved/rectified by contractor.

E1iii

## Reminders:

	Name	Signature	Date
Recorded by	Grace Wong		12 July 2007
Checked by	Dr. Priscilla Choy		12 July 2007

**Weekly Site Inspection Record Summary**

## Inspection Information

Checklist Reference Number	70719
Date	19 July 2007
Time	09:00 – 10:20 (a.m.)

## Non-Compliance



None	Reference No. -
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## Remarks/Observations

<p><i>A. Water Quality</i></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><i>B. Air Quality</i></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><i>C. Noise</i></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><i>D. Waste / Chemical Management</i></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><i>E. Permit / Licenses</i></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><i>F. Others</i></p> <ul style="list-style-type: none"><li>Follow-up for the previous site audit session (Ref. No.:70712), all environmental deficiencies were improved/rectified by contractor.</li></ul>	
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## Reminders:

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	Name	Signature	Date
Recorded by	Grace Wong		19 July 2007
Checked by	Dr. Priscilla Choy		19 July 2007

***Sha Tin New Town, Stage II***  
***Contract No. ST 89/02***  
***Sha Tin Heights Tunnel and Approaches***

**Weekly Site Inspection Record Summary**

**Inspection Information**

Checklist Reference Number	70726
Date	26 July 2007
Time	09:00 –10:30 (a.m.)

**Non-Compliance**

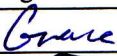

**Reference No.**

None	-
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**Remarks/Observations**

<p><b><i>A. Water Quality</i></b></p> <ul style="list-style-type: none"><li>Some silty water was observed running out from cleaning the box culvert at Sha Tin Height South Portal. The Contractor was reminded to provide mitigation measure to stop the silty water running into the channel.</li></ul> <p><b><i>B. Air Quality</i></b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b><i>C. Noise</i></b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b><i>D. Waste / Chemical Management</i></b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b><i>E. Permit / Licenses</i></b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the environmental site inspection.</li></ul> <p><b><i>F. Others</i></b></p> <ul style="list-style-type: none"><li>Follow-up for the previous site audit session (Ref. No.:70719), all environmental deficiencies were improved/rectified by contractor.</li></ul>	B6
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**Reminders:**

	Name	Signature	Date
Recorded by	Grace Wong		26 July 2007
Checked by	Dr. Priscilla Choy		26 July 2007

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**APPENDIX J  
SUMMARY OF AMOUNT OF WASTE  
GENERATED**

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中國鐵路 - 中國鐵路聯合體  
CHINA STATE - CHINA RAILWAY JOINT VENTURE



# TRANSMITTAL

ST 89/02  
SHA TIN HEIGHTS TUNNEL  
AND APPROACHES

TO: Maunsell Consultant Asia Ltd.

CC:

ATTN: Mr. K. Y. Chan

REF: CSCRJV/ TL/GE /01613

FROM: Michael Tsang

DATE: 6-Aug-07

RE: Monthly Waste Flow Table for July 2007

We are sending ☒ Herewith ☐ As per your request ☐ Under separate cover via \_\_\_\_\_  
the following ☐ Drawings ☐ Specifications ☐ Shop Drawing prints  
☐ Samples ☐ Product literature ☐ Shop drawing reproducibles  
☐ Procedure ☐ Method statement ☐ Inspection and test plan  
☒ Other

for your

☐ Approval ☐ Use ☒ Record/file  
☐ Information ☐ Review & comment ☐ Construction

NO.	REV.	DATE	COPIES	DESCRIPTION

COMMENTS

REMARKS

ISSUED BY: Michael Tsang

Please acknowledge receipt by signing below and returning a copy of this page to us.

RECEIPT ACKNOWLEDGED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

If any enclosures listed are not included with this transmittal, please notify us immediately.

Name of Department: CEDD

Contract No.: ST89/02

## Monthly Summary Waste Flow Table For Jul 2007 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Waste Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract (see Note 5)	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	3.486	0.341	3.145	0.000	0.000	5.633	0.165	0.000	1.623	0.090
Feb	2.324	0.049	2.257	0.018	0.000	0.000	0.120	0.000	0.000	0.040
Mar	2.905	0.143	2.420	0.059	0.283	16.561	0.185	0.000	0.000	0.080
Apr	3.422	0.060	3.107	0.014	0.241	0.000	0.200	0.000	1.000	0.055
May	0.055	0.055	-0.179	0.000	0.179	1.920	0.135	0.000	0.000	0.055
June	0.000	0.010	-1.536	0.000	1.526	24.100	0.000	0.000	0.000	0.045
<b>Sub-total</b>	<b>12.192</b>	<b>0.658</b>	<b>9.214</b>	<b>0.091</b>	<b>2.229</b>	<b>48.214</b>	<b>0.805</b>	<b>0.000</b>	<b>2.623</b>	<b>0.365</b>
July	0.000	0.336	-5.277	3.890	1.051	0.000	0.185	0.000	1.623	0.125
Aug										
Sept										
Oct										
Nov										
Dec										
<b>Total</b>	<b>12.192</b>	<b>0.994</b>	<b>3.937</b>	<b>3.981</b>	<b>3.280</b>	<b>48.214</b>	<b>0.990</b>	<b>0.000</b>	<b>4.246</b>	<b>0.490</b>

- Notes: (1) The performance targets are given in PS Sub-clause 2(5) (c).  
 (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.  
 (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.  
 (4) Broken concrete for recycling into aggregates.  
 (5) Reused in the contract refers to the temporary and permanent reused. A negative value means the removal of temporary reused materials is more than the on site

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**APPENDIX K  
SUMMARY OF ENVIRONMENTAL  
MITIGATION IMPLEMENTATION  
SCHEDULE**

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## Appendix K - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
<b>Construction Dust</b>	<ul style="list-style-type: none"> <li>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.</li> <li>A stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>Vehicle washing facilities should be provided at every exit point.</li> <li>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.</li> <li>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.</li> <li>Every main haul road should be sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site.</li> <li>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.</li> </ul>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
<b>Construction Noise</b>	<ul style="list-style-type: none"> <li>Only well-maintained plant should be operated on –site and plant should be serviced regularly during the construction works.</li> <li>Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> <li>Plant known to emit noise strongly in one direction, should where possible, be orientated to direct noise away from the NSRS.</li> <li>Mobile plant should be sited as far away from NSRs as possible.</li> <li>Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> <li>Use quiet plant and Working Method</li> <li>Reduce the number of plant operating in critical areas close NSRs.</li> <li>Construct temporary and movable noise barriers</li> </ul>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>



Types of Impacts	Mitigation Measures	Status
Water Quality	<i>Construction Runoff and Drainage</i>	
	<ul style="list-style-type: none"> <li>• Use of sediment traps and the adequate maintenance of drainage systems to prevent flooding and overflow.</li> <li>• 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.</li> <li>• 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</li> <li>• 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.</li> <li>• 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.</li> <li>• Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
	<i>Tunnelling Work</i>	
	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Spend 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.</li> </ul>	<p>^</p> <p>^</p> <p>N/A</p>

Types of Impacts	Mitigation Measures	Status
	<i>General Construction Activities</i>	
	<ul style="list-style-type: none"> <li>Debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column and cause water quality impacts.</li> <li>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).</li> </ul>	 ^
	<i>Sewage Effluent</i>	
	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	 ^  N/A
<b>Waste</b>	<i>General</i>	
	<ul style="list-style-type: none"> <li>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.</li> </ul>	^
	<i>Storage, Collection and Transportation of Waste</i>	
	<ul style="list-style-type: none"> <li>Wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage.</li> <li>Authorised or licensed waste hauliers shall be used and they shall only collect wastes prescribed by their permits.</li> <li>Waste shall be removed on a daily basis.</li> <li>Waste storage area shall be maintained and cleaned on a daily basis.</li> <li>Windblown litter and dust during transportation shall be minimised by either covering trucks or transporting wastes in enclosed containers.</li> <li>Obtain necessary waste disposal permits from the appropriate authorities if they are required.</li> <li>Wastes shall be disposed of at licensed waste disposal facilities.</li> <li>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.</li> <li>Maintain records of the quantities of wastes generated, recycled and disposed.</li> </ul>	 ^ ^ ^ ^ ^ ^ ^ ^ ^
	<i>Surplus Excavated Materials</i>	
	<ul style="list-style-type: none"> <li>Due to the high risk of loose material being washed into the existing nullah, stockpile materials should be properly compacted and covered from water erosion and located at least 10 away from the nullah wall.</li> </ul>	N/A
	<i>Construction and Demolition (C&amp;D) Waste</i>	

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> <li>Careful design, planning and good site management shall be adopted to minimise over-ordering and generation of waste materials such as concrete grouts.</li> <li>The handling and disposal of bentonite slurries shall be undertaken in accordance with Practice Note for Professional Persons – Construction Site Drainage (ProPECC PN 1/94) on construction site drainage.</li> <li>Construction and demolition (C&amp;D) material shall be segregated to inert and non-inert parts. The inert portion shall re-used at areas of reclamation or land formation, or to public filling area shall such allocation is deemed necessary. The non-inert portion shall be disposed of to landfill.</li> </ul>	<p>^</p> <p>N/A</p> <p>^</p>
	<i>Chemical Waste</i>	
	<ul style="list-style-type: none"> <li>Chemical waste that is produce during construction shall be handled in accordance with the Cod of Practice on the Packaging, Handling and Storage of Chemical Wastes.</li> <li>Containers used for the storage of chemical wastes should: <ul style="list-style-type: none"> <li>a. Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;</li> <li>b. Have a capacity of less than 450 litres unless the specifications have been approved by the EPD;</li> <li>c. Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Chemical Waste Regulations.</li> </ul> </li> <li>The storage area for chemical wastes should: <ul style="list-style-type: none"> <li>a. Be clearly labelled and used solely for the storage of chemical waste;</li> <li>b. Be enclosed on at least 3 sides;</li> <li>c. Have an impermeable floor and bunding of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is largest;</li> <li>d. Have adequate ventilation;</li> <li>e. Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary);</li> <li>f. Be arranged so that incompatible materials are adequately separated.</li> </ul> </li> <li>Disposal of chemical waste shall be via a licensed waste collector; and to a facility licensed to receive chemical waste; or a reuser of the waste (under approval from EPD).</li> </ul>	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
	<i>General Refuse</i>	
	<ul style="list-style-type: none"> <li>General refuse generated on-site shall be stored in enclosed bins or compaction unit separate from C&amp;D and chemical wastes. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&amp;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.</li> <li>Reusable rather than disposable dishware shall be used if feasible.</li> </ul>	<p>^</p> <p>N/A</p>
<b>Ecology</b>	<ul style="list-style-type: none"> <li>A sediment barrier shall be erected to minimize stream sedimentation at downstream of the project boundary of the Toll Plaza.</li> </ul>	<p>^</p>

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> <li>Conduct a tree survey before commencement of the construction work.</li> <li>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.</li> <li>Loss of the adjacent woodland due to temporary land take shall be returned to the original status immediately.</li> <li>Wild and uncontrolled fire shall be strictly prohibited</li> <li>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.</li> </ul>	^ N/A N/A ^ N/A
<b>Landscape and Visual Impact</b>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Measurement of vibration would also be carried out on a need basis during the piling work</li> </ul>	N/A  N/A  N/A

Remarks:

^  
N/A

Compliance of mitigation measure;  
Not Applicable;

X  
•

Non-compliance of mitigation measure;  
Non-compliance but rectified by the Contractor

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**APPENDIX L**  
**EVENT ACTION PLANS**

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## Appendix L - Event Action Plans

### Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	Contractor
<i>ACTION LEVEL</i>				
1. Exceedance for one sample	1. Identify source 2. Inform ER & IEC 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET 2. Check Contractor's working methods	1. Notify Contractor 2. Check monitoring data and Contractor's working methods	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	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	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	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	1. Submit proposals for remedial actions to ER within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
<i>LIMIT LEVEL</i>				
1. Exceedance for one sample	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 remedial actions and keep EPD and ER &	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	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	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate

EVENT	ACTION			
	ET	IEC	ER	Contractor
	IEC informed of the results	5. Supervise the implementation of the remedial measures	properly implemented	
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
<i>ACTION LEVEL</i>	<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&amp;IEC in writing Discuss remedial actions required with ER&amp;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&amp;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 &amp; 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
<i>LIMIT LEVEL</i>	<p>1. Repeat measurement to confirm findings</p> <p>2. Investigate the cause of the exceedance and identify the main source(s) of impact</p> <p>3. Inform ER&amp;IEC and EPD in writing</p> <p>4. Discuss remedial actions required with ER&amp;IEC</p> <p>5. Increase monitoring frequency to demonstrate efficacy of remedial measures</p>	<p>1. Check monitoring data submitted by ET</p> <p>2. Review Contractor's remedial actions to assure their effectiveness and advise the ER &amp;ET accordingly</p> <p>3. Supervise the implementation of the remedial measures</p>	<p>1. Confirm receipt of notification of exceedance and notify Contractor</p> <p>2. Check monitoring data trends and Contractor's working methods</p> <p>3. Discuss with ET, IEC and Contractor on proposed remedial actions to be implemented</p> <p>4. Assess the efficacy of remedial actions and keep the Contractor informed</p> <p>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</p>	<p>1. Take immediate action to avoid further exceedance</p> <p>2. Submit proposals for remedial actions to ER immediately not more than 3 working days of notification</p> <p>3. Amend proposals if required by the ER</p> <p>4. Implement remedial actions immediately upon instruction</p> <p>5. Liaise with the ER to optimize the effectiveness of the agreed mitigation</p>

Exceedance	ACTION			
	ET	IEC	ER	Contractor
<i>LIMIT LEVEL</i>	6. Assess efficacy of remedial actions and keep ER & IEC informed of the results			6. Resubmit proposals if problem still not under control
	7. If exceedance continues, meet with ER&IEC to identify appropriate mitigation measures 8. If exceedance stops, cease additional monitoring			7. Stop the relevant portion of works as determined by the ER until the exceedance is aborted

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**APPENDIX M**  
**CONSTRUCTION PROGRAMME**

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Activity ID	Activity Description	Rem Dur	Projected Actual Current Start	Projected Actual Current Finish	Total Float 23Apr07	2007				
						MAR	APR	MAY	JUN	JUL
<b>SECTION XVI - REMAINDER OF WORKS (30 JUN 07)</b>										
<b>Remaining Works in South Portal</b>										
<b>Reinstatement of TAR1</b>										
C16L-1000	Slope reinstatement work	58	05/MAR/07A	29/JUN/07	0					Slope reinstatement work
<b>Slope FR5</b>										
C16L-1005	Slope reinstatement work	46	05/MAR/07A	15/JUN/07	0					Slope reinstatement work
C16L-1010	225 u-channel at crest of FR5 along Tai Po Rd	12	16/JUN/07	29/JUN/07	0					225 u-channel at crest of FR5 along Tai Po Rd
<b>Slope TPC8</b>										
C16L-1020	Remaining hydromulching	6	19/APR/07A	28/APR/07	52					Remaining hydromulching
C16L-1025	Handrails at concete berm at stairs	5	03/MAR/07A	27/APR/07	52					Handrails at concete berm at stairs
C16L-1030	Steel staircase at headwall TPS4	5	24/APR/07	28/APR/07	52					Steel staircase at headwall TPS4
C16L-1040	Half round channel for connecting raking drain	25	22/MAR/07A	22/MAY/07	33					Half round channel for connecting raking drain
C16L-1045	G400 rockfill to headwalls TPS3, TPS4, TPS5	31	19/MAR/07A	29/MAY/07	27					G400 rockfill to headwalls TPS3, TPS4, TPS5
<b>Slope TPC6</b>										
C16L-1050	Remedial works to verge at crest of slope	25	02/MAY/07*	30/MAY/07	26					Remedial works to verge at crest of slope
C16L-1055	Buttress works at slope surface	25	02/MAY/07	30/MAY/07	26					Buttress works at slope surface
<b>Portion 6</b>										
C16L-1060	Drainage work near wing wall of SPB	11	16/APR/07A	05/MAY/07	47					Drainage work near wing wall of SPB
<b>Portion 8</b>										
C16L-1070	Access road with chain link fence at HW TPS7	34	07/MAY/07*	14/JUN/07	13					Access road with chain link fence at HW TPS7
<b>Garden Villa (VO186)</b>										
C16L-1080	UPGRADING WORK AT AREA B	24*	23/APR/07	21/MAY/07	34					UPGRADING WORK AT AREA B
C16L-1090	Modify 37 nos temp soil nail heads	6	18/APR/07A	28/APR/07	52					Modify 37 nos temp soil nail heads
C16L-1100	71 nos permanent soil nails at new slope	18	30/APR/07*	21/MAY/07	34					71 nos permanent soil nails at new slope
C16L-1105	UPGRADING WORK AT AREA C	23*	12/MAR/07A	19/MAY/07	35					UPGRADING WORK AT AREA C
C16L-1115	Modify 98 nos temp soil nail heads	11	16/APR/07A	05/MAY/07	47					Modify 98 nos temp soil nail heads
C16L-1120	Backfill with CSF	7	19/MAR/07A	30/APR/07	51					Backfill with CSF
C16L-1125	49 nos permanent soil nails at new slope	12	07/MAY/07*	19/MAY/07	35					49 nos permanent soil nails at new slope
<b>Remainng Works in North Portal</b>										
<b>Approach Road</b>										
C16L-1126	Site clearance for laying bituminous matls	9	02/APR/07A	03/MAY/07	25					Site clearance for laying bituminous matls
C16L-1128	Lay bituminous wearing & friction materials	21	04/MAY/07	28/MAY/07	25					Lay bituminous wearing & friction materials
C16L-1130	Road markings	3	29/MAY/07	31/MAY/07	25					Road markings
C16L-1135	Install bollard at taffic island	1	25/JUN/07*	25/JUN/07	0					Install bollard at taffic island
C16L-1140	Concrete pavement at traffic island H	4	26/JUN/07	29/JUN/07	0					Concrete pavement at traffic island H
C16L-1150	Install crash cushion barrier @ traffic island F	3	25/JUN/07*	27/JUN/07	2					Install crash cushion barrier @ traffic island F
<b>Slope F437</b>										
C16L-1195	Install steel staircase	6	10/APR/07A	28/APR/07	52					Install steel staircase
<b>Slope behind RCFE and AR/B/01</b>										
C16L-1215	Lay waterproofing membrane at ext wall (NB)	7	14/MAY/07*	21/MAY/07	3					Lay waterproofing membrane at ext wall (NB)

Activity ID	Activity Description	Rem Dur	Projected Actual Current Start	Projected Actual Current Finish	Total Float 23Apr07	2007				
						MAR	APR	MAY	JUN	JUL
Slope behind RCFE and AR/B/01										
C16L-1220	Form slope w/ drainage behind RCFE/ARB01	31	22/MAY/07	26/JUN/07	3		Form slope w/ drainage behind RCFE/ARB01			
Staircases N1, N2, S1, S2, S4 & S5										
C16L-1225	Install exit doors( N1, N2, S1, S2)	1	19/APR/07A	23/APR/07	43		Install exit doors( N1, N2, S1, S2)			
C16L-1230	Access ladders at staircases (N1, N2, S1, S2)	14	24/APR/07	10/MAY/07	43		Access ladders at staircases (N1, N2, S1, S2)			
C16L-1235	Extend Rib Finish at external side wall of S2	14	02/MAY/07*	17/MAY/07	37		Extend Rib Finish at external side wall of S2			
Abutment 1 and 2										
C16L-1245	Abutment access door	2	11/MAY/07*	12/MAY/07	41		Abutment access door			
RC Full Enclosure										
C16L-1255	2m & 1m footpath along parapet (NB) on top slab	10	02/MAY/07*	12/MAY/07	10		2m & 1m footpath along parapet (NB) on top slab			
C16L-1260	Drainage system behind parapet of slip rd	13	14/MAY/07	28/MAY/07	10		Drainage system behind parapet of slip rd			
C16L-1265	Irrigation system from top slab RCFE to Por 15	25	21/MAY/07	18/JUN/07	10		Irrigation system from top slab RCFE to Por 15			
C16L-1270	Landscaping at top slab Bay 1 & 2	3	29/MAY/07	31/MAY/07	15		Landscaping at top slab Bay 1 & 2			
C16L-1275	Cut recess at parapets for DSD/HYD gate	10	01/JUN/07	12/JUN/07	15		Cut recess at parapets for DSD/HYD gate			
C16L-1280	Install niche doors	20	28/APR/07*	22/MAY/07	14		Install niche doors			
C16L-1285	Install VE panels	33	02/APR/07A	31/MAY/07	25		Install VE panels			
C16L-1290	Precast covers @ cable trough behind	25	19/APR/07A	22/MAY/07	33		Precast covers @ cable trough behind carriageway			
C16L-1292	Site clearance for laying bituminous materials	5	23/MAY/07	28/MAY/07	14		Site clearance for laying bituminous materials			
C16L-1295	Lay bituminous base & wearing materials	12	29/MAY/07	11/JUN/07	14		Lay bituminous base & wearing materials			
C16L-1297	Road Markings	2	12/JUN/07	13/JUN/07	14		Road Markings			
RE Walls 21										
C16L-1305	Form slope & drainge behind AR/E/02	24	02/APR/07A	21/MAY/07	34		Form slope & drainge behind AR/E/02			
C16L-1315	Form slope & drainge behind AR/E/01	6	08/MAR/07A	28/APR/07	52		Form slope & drainge behind AR/E/01			
C16L-1320	Construct remaining RE Wall AR/E/03	26	18/APR/07A	23/MAY/07	0		Construct remaining RE Wall AR/E/03			
C16L-1325	Form slope & drainge behind AR/E/03	41	14/MAY/07	29/JUN/07	0		Form slope & drainge behind AR/E/03			
Along KCRC Track										
C16L-1335	Footpath & drainage under AR/E/02	7	02/APR/07A	30/APR/07	51		Footpath & drainage under AR/E/02			
C16L-1340	Footpath & drainage under AR/E/03	20	25/MAY/07*	16/JUN/07	11		Footpath & drainage under AR/E/03			
Painting Works										
C16L-1345	External wall surface of RCFE & Staircases	7	21/MAR/07A	30/APR/07	25		External wall surface of RCFE & Staircases			
C16L-1350	External wall surface of RE Walls	26	02/MAY/07	31/MAY/07	25		External wall surface of RE Walls			
Box Culvert No. 6										
C16L-1360	Extend inspection access shaft	10	01/JUN/07*	12/JUN/07	15		Extend inspection access shaft			
Site Boundary										
C16L-1365	Permanent fence at slope	20	01/JUN/07*	23/JUN/07	5		Permanent fence at slope			
C16L-1370	225 u-channel at crest of slope F158	8	01/JUN/07	09/JUN/07	17		225 u-channel at crest of slope F158			
Remaining Works in Tunnel										
Tunnel										
C16L-1375	Install VE panels	52	30/APR/07*	29/JUN/07	0		Install VE panels			
C16L-1380	Install niche doors	33	17/APR/07A	31/MAY/07	5		Install niche doors			

MAR	APR	MAY	JUN	JUL
2007				

	Activity ID	Activity Description	Rem Dur	Projected Actual Current Start	Projected Actual Current Finish	Total Float 23Apr07	2007				
							MAR	APR	MAY	JUN	JUL
Tunnel											
C16L-1385	Precast covers @ cable trough behind	25	19/APR/07A	22/MAY/07	33	Precast covers @ cable trough behind carriageway					
C16L-1390	Sand fill & cable trough covers @ OHVD slab	21	02/MAY/07*	25/MAY/07	30	Sand fill & cable trough covers @ OHVD slab					
C16L-1392	Reloc. existing temp water pipe for fire fightin	7	30/MAY/07*	06/JUN/07	0	Reloc. existing temp water pipe for fire fightin					
C16L-1395	Site clearance prior to bituminous works	4	07/JUN/07*	11/JUN/07	0	Site clearance prior to bituminous works					
C16L-1400	Lay bituminous materials (base & wearing	14	12/JUN/07	27/JUN/07	0	Lay bituminous materials (base & wearing course)					
C16L-1405	Road Markings	2	28/JUN/07	29/JUN/07	0	Road Markings					
Remaining Works in Birdge N and S											
Bridge Bitumen Works											
C16L-1430	S1 bridge friction course	1	16/MAY/07*	16/MAY/07	35	S1 bridge friction course					
C16L-1435	S2 bridge friction course	1	17/MAY/07	17/MAY/07	35	S2 bridge friction course					
C16L-1440	N1 bridge friction course	1	18/MAY/07	18/MAY/07	35	N1 bridge friction course					
C16L-1445	N2 bridge friction course	1	19/MAY/07	19/MAY/07	35	N2 bridge friction course					
Noise Enclosure E&M Works											
C16L-1450	Noise enclosure lighting	20	07/JUN/07*	29/JUN/07	0	Noise enclosure lighting					
Remaining Works in CKMR											
Northound Area											
C16L-1525	Remain Traffic Lane - lay asphalt material	1	20/APR/07A	23/APR/07	57	Remain Traffic Lane - lay asphalt material					
C16L-1535	Planting works - stage 2	1	19/APR/07A	23/APR/07	57	Planting works - stage 2					
Central Divider Area											
C16L-1575	Watermain DN250 - at connection points	1	17/APR/07A	23/APR/07	57	Watermain DN250 - at connection points					
Southbound Area											
C16L-1625	Roadworks: lay asphalt for fast lane area	1	20/APR/07A	23/APR/07	57	Roadworks: lay asphalt for fast lane area					
Roundabout Area											
C16L-1655	Directional Sign ADS5 (VO201): utility diversion	3	12/APR/07A	25/APR/07	38	Directional Sign ADS5 (VO201): utility diversion					
C16L-1660	Directional Sign ADS5 (VO201): construct footing	7	26/APR/07	04/MAY/07	38	Directional Sign ADS5 (VO201): construct footing					
C16L-1665	Directional Sign ADS5 (VO201): erect steel frame	6	05/MAY/07	11/MAY/07	38	Directional Sign ADS5 (VO201): erect steel frame					
C16L-1670	Directional Sign ADS5 (VO201): E&M works	4	12/MAY/07	16/MAY/07	38	Directional Sign ADS5 (VO201): E&M works					
C16L-1680	Directional Sign ADS6 (VO201): utility diversion	8	19/APR/07A	02/MAY/07	32	Directional Sign ADS6 (VO201): utility diversion					
C16L-1685	Directional Sign ADS6 (VO201): construct footing	8	03/MAY/07	11/MAY/07	32	Directional Sign ADS6 (VO201): construct footing					
C16L-1690	Directional Sign ADS6 (VO201): erect steel frame	6	12/MAY/07	18/MAY/07	32	Directional Sign ADS6 (VO201): erect steel frame					
C16L-1695	Directional Sign ADS6 (VO201): E&M works	4	19/MAY/07	23/MAY/07	32	Directional Sign ADS6 (VO201): E&M works					
C16L-1710	Directional Sign DS1(VO175): trial trench	3	19/APR/07A	25/APR/07	29	Directional Sign DS1(VO175): trial trench					
C16L-1715	Directional Sign DS1(VO175): utility diversion	11	26/APR/07	09/MAY/07	29	Directional Sign DS1(VO175): utility diversion					
C16L-1720	Directional Sign DS1(VO175): construct footing	8	10/MAY/07	18/MAY/07	29	Directional Sign DS1(VO175): construct footing					
C16L-1725	Directional Sign DS1(VO175): erect steel frame	7	19/MAY/07	26/MAY/07	29	Directional Sign DS1(VO175): erect steel frame					
Completion of Works											
CONP3170	Section XVI Completion	0		30/JUN/07*	0	Section XVI Completion					

	MAR	APR	MAY	JUN	JUL
	2007				

Current Progress Early Bar

Progress Bar

Critical Activity

W101

CSCRJV

ST89/02 - SHATIN HEIGHTS TUNNEL AND APPROACH ROAD

3 MONTHS ROLLING PROGRAMME

Sheet 3 of 3

Project Name:W101

Layout:LT02: Three Months Rolling Programme

Filter:FL-35 Three Months Rolling Programme

Run Date:16/APR/07 09:04

Progress Update to:23/APR/07

Page:Sheet 3 of 3

Prepared by WC /Works Department

Date	Revision	Checked	Approved
23/APR/07	Progress updated		
	Clause 16 Rev "L" used for progress measurement		
	AS PER SA7		

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**APPENDIX N**  
**COMPLAINT LOG**

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## Appendix N - Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
30422-1	Garden Villa, Tai Po Road	22 <sup>nd</sup> April 2003	The complaint (EPD complaint ref. N01/TN/00004192-03), which was transferred by EPD to ET on 22 <sup>nd</sup> April 2003, was raised by a resident living at Garden Villa on 22 <sup>nd</sup> April 2003 concerning construction activity during general holidays (18 <sup>th</sup> to 21 <sup>st</sup> April 2003) at Portion 2C, the concerned works area near Garden Villa at Tai Po Road.	Based on the monitoring results on 18 <sup>th</sup> April 2003, noise levels at the concerned area were below the limit level. The type and quantity PME's used during the concerned period were complied with the requirement stated in the relevant CNP (CNP no. GW-TN0504-2002).  The ET will continue monitoring under the EM&A programme. In case there is any exceedance or complaint reported, procedures stipulated in the Event Action Plans and the complaint handling procedure of the EM&A Manual will be strictly followed.	Closed
30506-1	Garden Villa, Tai Po Road	6 <sup>th</sup> May 2003	The complaint (EPD complaint ref. N01/TN/00004856-03), which was transferred by EPD to ET on 6 <sup>th</sup> May 2003, was raised by a resident living at Garden Villa on 5 <sup>th</sup> May 2003 concerning construction noise during general holidays (1 <sup>st</sup> May to 4 <sup>th</sup> May 2003) at Portion 2C, the concerned works area near Garden Villa at Tai Po Road and construction waste accumulated on the footpath outside Garden Villa.	No construction work was carried out and A Construction Noise Permit (CNP no. GW-TN0504-2002) was granted by the Contractor on 18 <sup>th</sup> December 2002 for the use of powered mechanical equipments at the concerned area during restricted hours.  The Contractor has cleared the moulds from the footpath and placed all of them inside the site boundary upon receiving the complaint on 3 <sup>rd</sup> May 2003.  The ET will continue monitoring under the EM&A programme. In case there is any exceedance or complaint reported, procedures stipulated in the Event Action Plans and the complaint handling procedure of the EM&A Manual will be strictly followed.	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
30714	Garden Villa, Tai Po Road	14 <sup>th</sup> July 2003	The complaint, which was transferred by ER to ET on 14 <sup>th</sup> July 2003, was raised by a resident living at Garden Villa concerning the dust pollution generated from the soil nail works at Temporary Access Road No. 1.	<p>The mitigation measures did not apply effective to prevent the dust generation at the concerned area during the soil nail.</p> <p>It was recommended that ER should continue monitoring the Contractor to implement the mitigation measures to avoid dust generation; the Contractor should continue implementing the mitigation measures to avoid dust generation, and minimize the disturbance generated by the construction activities at TAR1.</p>	Closed
30808	Sha Tin Heights	8 <sup>th</sup> August 2003	The complaint (EPD Complaint Ref. N01/TN/00011396-03), which was transferred by the EPD to the ET on 8 <sup>th</sup> August 2003, was about the massive tree cutting activities in the site near Sha Tin Heights.	<p>Based on the information stated in the Environmental Review Report, the tree cutting activities were considered necessary and the ecological impact of tree cutting was limited.</p> <p>According to the Contractor's Method Statement for tree felling and transplanting, which had been commented from ET and Engineer Representative (ER), the tree felling and transplanting had been under the supervision of ER and the tree being felled or transplanted were clearly labeled. Photographic records for the tree being affected were kept.</p> <p>Based on the information provided by the ER, the concerned area mainly included abandoned farm land and an existing stream covered with grass and shrubs. No individual tree identified to be retained had been felled.</p> <p>The complaint was considered to be invalid.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
30826	Garden Villa	26 <sup>th</sup> August 2003	An environmental complaint was received by the ER on 26 <sup>th</sup> August 2003. The complaint (ER's complaint ref. EC-05) was forwarded to the ET on same day. It was about the noise disturbance from the rock-breaking activities in South Portal. ET undertook the investigation and submitted the complaint investigation report to ER on 29 <sup>th</sup> August 2003.	<p>According to the ET's investigation, the complaint was considered to be valid. However, there was no noise Limit Level exceedance in August 2003 at the concerned area. Additional noise measurement conducted on 26<sup>th</sup> August 2003 confirmed that the construction noise level at Garden Villa was below the noise limit.</p> <p>To minimize the noise disturbance from the rock breaking activities, mitigation measures were then provided by the Contractor.</p>	Closed
30901	Garden Villa	1 <sup>st</sup> September 2003	A public complaint was received by the EPD on 1 <sup>st</sup> September 2003. The complaint was forwarded by EPD to the ET on the same day. It was about the construction dust and Sunday noise generated from construction activities at Toll Plaza near Garden Villa. The complainant also expressed his/her concerns on the noise from breaking activities during weekdays' early morning around 7am. ET undertook the investigation and submitted the complaint investigation report to EPD on 9 <sup>th</sup> September 2003.	<p>According to the ET's investigation report, the complaint was considered to be valid. However, the information provided by the Contractor stated that no Powered Mechanical Equipment was used on Sunday except that wire mesh installation works were carried out at the concerned area. In addition, the measured noise levels and dust levels were below the respective environmental limit in August 2003 at the concerned area. Further dust measurement was conducted on 9<sup>th</sup> September 2003 to confirm that the dust level at Garden Villa was below the limit.</p> <p>Mitigation measures were recommended to the Contractor. An additional regular continuous construction dust monitoring was also recommended and has been working since 9<sup>th</sup> September 2003.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
30905	Garden Villa	5 <sup>th</sup> September 2003	An environmental complaint via the Honourable Cheng Kar Foo and Leung Wing Hung and was received by TDD on 5 <sup>th</sup> September 2003. The complaint was forwarded by TDD to the ET on the same day. It was about the construction dust and noise generated from construction activities at the site near Garden Villa. The complainant also requested to implement barrier to mitigate the noise and dust problem. ET undertook the investigation and submitted the complaint investigation report (Appendix P) to TDD on 9 <sup>th</sup> September 2003.	According to the ET's investigation report, the complaint was considered to be valid. However, the measured noise levels and dust levels were below the respective environmental limits in August and September 2003.  Mitigation measures were recommended to the Contractor. An additional regular continuous construction dust monitoring was also recommended and has been working since 9 <sup>th</sup> September 2003.	Closed
31003	Golden Time Villa	3 <sup>rd</sup> October 2003	An environmental complaint was raised by a resident of Golden Time Villa and was received by TDD on 3 <sup>rd</sup> October 2003. The complaint was forwarded by TDD to the ET on the same day. The complainant concerned about wildlife threat due to road works. He also expressed his concerns on whether the concerned department had any planning on how to settle the wildlife. ET undertook investigation and submitted the complaint investigation report to TDD on 14 <sup>th</sup> October 2003	According to the ET's investigation, the animal wildlife recorded for the Project was limited and no species of conservation interest was found. Avifauna, reptile, amphibian and butterfly species in the area were all common in Hong Kong. The potential impacts on animal wildlife were expected to be low. Therefore, no specific mitigation measure to the animal wildlife was recommended.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
31229	Hin Keng Estate	29 <sup>th</sup> December 2003	An environmental complaint was raised by residents of Hin Keng Estate and was received by EPD (EPD complaint ref.: N01/TN/00022004-03) on 29 <sup>th</sup> December 2003. The complaint was forwarded to the ET on the same day. The complaint was about the construction noise at the entrance of Sha Tin Heights Tunnel in North Portion. ET has undertaken investigation and submitted the complaint investigation report to TDD on 6 <sup>th</sup> January 2004.	According to ET's investigation report, a noise measurement at Hin Keng Estate was conducted on 3 <sup>rd</sup> January 2004 and the measured construction noise levels were well below the respective environmental criteria. The Contractor was recommended to <ul style="list-style-type: none"> <li>space out noisy equipment and position it as far away as possible from the sensitive receivers;</li> <li>avoid concurrent uses of noisy equipment near the sensitive area;</li> <li>ensure the equipment are maintaining in good operation condition;</li> <li>turn off any idle equipment on site;</li> <li>provide mitigation measures to the rock-breaking activities; and</li> <li>continuously keep ET informed for the construction works to be carried out.</li> </ul>	Closed
31231a	Sha Tin Heights	31 <sup>st</sup> December 2003	An environmental complaint was received by EPD (EPD complaint ref. N01/TN/00019795-03) on 29 <sup>th</sup> November 2003, which was transferred to ET on 31 <sup>st</sup> December 2003. The complaint was about the construction dust from at Sha Tin Heights. ET has undertaken investigation and submitted the complaint investigation report to TDD on 6 <sup>th</sup> January 2004.	According to Contractor's information, the Contractor has implemented mitigation measures to suppress the dust generation. These include <ul style="list-style-type: none"> <li>Exhaust of dump trucks for internal use were slightly verified in order to avoid it directing to the ground, but horizontally;</li> <li>All bared slope was hydroseeded; and</li> <li>Frequency of watering for haul road was increased.</li> </ul>	Closed
31231b	Sha Tin Heights	31 <sup>st</sup> December 2003	An environmental complaint was received by EPD (EPD complaint ref. N01/TN/00019858-03) on 1 <sup>st</sup> December 2003, which was transferred to ET on 31 <sup>st</sup> December 2003. The complaint was about the construction dust at Sha Tin Heights. ET has undertaken investigation and submitted the complaint investigation report to TDD on 6 <sup>th</sup> January 2004.	According to Contractor's information, the Contractor has implemented mitigation measures to suppress the dust generation. These include <ul style="list-style-type: none"> <li>Exhaust of dump trucks for internal use were slightly verified in order to avoid it directing to the ground, but horizontally;</li> <li>All bared slope was hydroseeded; and</li> <li>Frequency of watering for haul road was increased.</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40323	Sha Tin Heights	23 <sup>rd</sup> March 2004	An environmental complaint was received by EPD on 20 <sup>th</sup> March 2004 (EPD Ref.: N01/TN/00005617-04) about the dust nuisance generated from the Project at Shatin Heights. The EPD referred the complaint to the ET Leader on 23 <sup>rd</sup> March 2004 for investigation and the ET has submitted the investigation report on 29 <sup>th</sup> March 2004.	<p>According to ET's investigation report, the Contractor has enhanced mitigation measures as follows:-</p> <ul style="list-style-type: none"> <li>• Arrange water spraying during the loading and unloading of dusty materials;</li> <li>• Increase the frequency for haul road watering;</li> <li>• Provide a brush machine to remove the dusty materials on the steep road;</li> <li>• Arrange workers to spray water at rock breaking area; and</li> <li>• Arrange workers at site entrance for wheel washing.</li> </ul> <p>No non-compliance of dust level recorded and observed after implementation of mitigations.</p>	Closed
40506	Hin Keng Estate	6 <sup>th</sup> May 2004	On 3 <sup>rd</sup> May 2004, the TDD received a complaint (TDD Ref.: NTE-ST2/694TH/100) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The TDD referred the complaint to the ET Leader of the Project on the following day for investigation and the ET has submitted the investigation report on 10 <sup>th</sup> May 2004.	<p>According to ET's investigation report, the Contractor has enhanced mitigation measures as follows:-</p> <ul style="list-style-type: none"> <li>• To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;</li> <li>• To inform Hin Keng Estate of the time of blasting in advance;</li> <li>• To provide water spraying in the blasting door during blasting time; and</li> <li>• To provide acoustic absorption material at the inner surface of the blasting door.</li> </ul> <p>No non-compliance of noise level recorded and observed after implementation of mitigations.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40517	Sha Tin Heights	17 <sup>th</sup> May 2004	On 14 May 2004, the EPD received a complaint (EPD Ref.: N01/TN/00009723-04) about the dust nuisance due to uncovered lorries near Shatin Heights. The EPD referred the complaint to the ET Leader of the Project on 17 May 2004 for investigation and the ET has submitted the investigation report on 20 May 2004.	The complaint was a public complaint at Sha Tin Heights. The complainant mentioned that some construction lorries with loaded with earth were not covered and caused dust nuisance. According to ET's investigation, the Contractor has already provided all possible measures to prevent uncovered dump trucks leaving the site. It is believed that the captioned complaint is an exceptional incidence and the Contractor was recommended to strictly enforce their policy on dump trucks leaving the site.	Closed
40630	Hin Keng Estate	30 <sup>th</sup> June 2004	On 28 June 2004, the EPD received a complaint (EPD Ref.: N01/TN/00012734-04) about the noise and dust nuisance due to blasting near Shatin Heights. The EPD referred the complaint to the ET Leader of the Project on 30 June 2004 for investigation and the complaint handling procedure is initiated.	<p>According to the information provided by the Contractor, blasting activities were taken place on 23, 26 and 29 June 2004.</p> <p>The Contractor has erected a blasting door for both the tunnel before the commencement of blasting works in order to enclose the dust and reduce the noise level. The blasting door is made of steel plate with fiberglass filled in between. In addition, a water pipe has been installed inside the tunnel, which can produce aerosol to form a water screen for dust suppression. During blasting, water screen will be operated throughout the period until dust is settled. Water will be sprayed outside the open ground of the tunnel. The blasting door is only allowed to re-open at least 15 minutes after blasting. Additional water spraying will be provided after opening the blasting door.</p> <p>After received the complaint, the Contractor has installed an additional water screen on 29 June 2004.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40713	Hin Keng Estate	13 <sup>th</sup> July 2004	On 6 July 2004, the CEDD received a complaint (CEDD Ref.: NTE-ST2/654TH/108) about the noise and dust nuisance due to tunnel blasting near Shatin Heights. The CEDD referred the complaint to the ET Leader of the Project on 13 July 2004 for investigation.	<p>The Contractor has provided the following mitigations:-</p> <ul style="list-style-type: none"> <li>• To cover the gap between the steel sheet panels of the blasting door to reduce dust nuisance;</li> <li>• To inform Hin Keng Estate of the time of blasting in advance;</li> <li>• To provide water spraying in the blasting door during blasting time; and</li> <li>• To provide acoustic absorption material at the inner surface of the blasting door.</li> </ul> <p>Based on the information provided by the ER on 13 July 2004 and the site investigation conducted by ET on 15 July 2004, the Contractor has been strictly implementing the mitigations. The Management Office of Hin Keng Estate was always noticed 24 hours before every blasting.</p>	Closed
40723	Garden Villa	23 <sup>rd</sup> July 2004	On 21 July 2004, the ER received a complaint (ER Ref.: EC-017) about the noise nuisance due to trucks queuing up along Temporary Access Road 1 (TAR1). The ER referred the complaint to the ET Leader of the Project on 23 July 2004 for investigation.	On 26 July 2004, the Contractor has relocated the truck queue from top of TAR1 to downhill in front of wheel washing bay, where is much far away from Garden Villa. The increased notional distance is about 200m. A noise measurement was conducted on the same day at 9:30am and the measured construction noise level was 69.6dB(A) which does not exceed the Limit Level. Early measurement at Garden Villa will be conducted in order to monitor the effectiveness of mitigations.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
41201	Construction site which near K. K. Terrace	1 <sup>st</sup> December 2004	Complaint regarding the noise nuisance was received on 1 December 2004 at 23:12 (EPD Letter ref: EP580/E6/3/15 with 'Notice of Complaint'). The complainant complained the construction noise emitted after 19:00 from the construction site which near K. K. Terrace.	<p>According to the RSS and the Contractor, one unit Rock Drill (hydraulic) was operated inside T1N tunnel and one unit Pneumatic Breaker was operated inside T2N tunnel during the time period of 19:00-23:00 on 1 December 2004. These two plants were operated in different tunnel and at staggered time. All the tunneling works should be conducted within a fully enclosure situation by closing the blasting door entirely. The Contractor did comply with the CNP conditions on the time of concern. In addition, no shotcreting works were conducted during the time period of 19:00-23:00 on 1 December 2004. As such, no concrete lorry mixer had traveled through Temporary Access Road No. 3 which is near K. K. Terrace during such period.</p> <p>There is insufficient evidence to establish the complaint based on the available information from the "Notice of Complaint", the RSS, the Contractor and monitoring records. However, it is recommended the Contractor should notify the nearby residents in advance with the working schedule of construction work during restricted hours and strictly comply with all noise mitigation measures.</p>	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50308	Garden Villa	8 <sup>th</sup> March 2005	Complaint regarding the noise and dust nuisance was received on 8 <sup>th</sup> March 2005 at 23:12 (EPD Letter ref: EP580/E6/3/15 with 'Notice of Complaint'). The complaint was about the night time and Sunday Construction noise and dust from construction activities carrying out at the site near Garden Villa.	<p><b>Dust:</b> According to the site inspection on 18 March 2005, fugitive dust emission was observed generated by traffic movement on the haul road before vehicles entering into the wheel washing facility. The Contractor was recommended to provide sufficient dust control on the TAR1 such as installing additional water sprinklers or increasing the water spraying frequency by water truck to reduce the dust emission.</p> <p>The Contractor should also cover the trucks with canvas sheet once the C&amp;D waste was laden before passing adjacent to Garden Villa.</p> <p>The Contractor should strictly implement the penalty system and further review and tighten up the system if no obvious improvement is made.</p> <p><b>Noise:</b> Based on the available information, no sufficient evidence could establish the noise complaint from the "Notice of Complaint", the Contractor and monitoring records.</p> <p>The Contractor was recommended to notify the nearby residents in advance of the working schedule of construction work during the restricted hours and strictly comply with all necessary noise mitigation measures.</p>	Closed
50330	Garden Villa	30 <sup>th</sup> March 2005	Complaint regarding the noise nuisance was received on 30 <sup>th</sup> March 2005 at 16:00 (EPD Letter ref: EP580/E6/3/15 with 'Notice of Complaint'). The complaint 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.	According to the information provided by the Resident Site Staff, trucks from R8-SHT contract are not allowed to exit via TAR1 before 9am. The noise identified by the complainant is not related to R8-SHT contract. The complaint lodged against R8-SHT is therefore considered not justifiable.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50425	Shatin Heights	25 <sup>th</sup> April 2005	Complaint regarding the dust nuisance was received on 18 <sup>th</sup> April 2005 (EPD Letter ref: EP580/E6/3/15 with 'Notice of Complaint'). The complaint was subsequently referred to the ET Leader on 25 <sup>th</sup> April 2005. It was related to the construction dust and sulphur-like odour generated from the tunnel blasting works near Shatin Heights.	<p>The records of the RSS and the Contractor showed that blasting works have been conducted on the date of complaint (18 April 2005).</p> <p>According to the Contractor's investigation, a reversion of tunnel air flow was observed due to seasonal change, such that air kept flowing from the direction of Garden Villa towards Shatin Heights. Since there was no water curtains installed Shatin Heights' direction, white fume and dust particle were observed after blasting works.</p> <p>Upon receipt of the complaint, all blasting works were stopped until water curtain for tunnel tubes in the Shatin Heights' direction. The water curtain installation work was completed on 23<sup>rd</sup> April 2005. The Contractor also agreed to implemented the following mitigation measures for future tunnel blasting works:</p> <ol style="list-style-type: none"> <li>1. the area within 30m from the blasting area will be wetted with water prior to blasting;</li> <li>2. sufficient time will be allowed for dust to settle before opening the blasting protection doors; and</li> <li>3. water curtain will be operated.</li> </ol> <p>Based on the site observed, the RSS considered that the implemented measures by the Contractor were effective.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50509	The Police	9 <sup>th</sup> May 2005	Complaint regarding the noise nuisance was received on 9 <sup>th</sup> May 2005. The complaint was subsequently referred to the Environmental Team and the Contractor on that day. It was related to the excessive noise generated by the night work.	<p>The records of the ER and the Contractor showed that bridge launching operation was being carried out over the East and Ma On Shan (MOS) Rail near Tai Wai Depot during the time of concern.</p> <p>CNP no. GW-RN0140-05 was issued to the Contractor in accordance with the Noise Control Ordinance. According to the Contractor's information, the PME groups D to K of the CNP were operated intermittently during that night. In addition, it was complied with Condition 3di of CNP. Also, there is no action or limit level exceedance was recorded based on the record from ET.</p> <p>Nevertheless, the Contractor was reminded to ensure the compliance of CNP conditions for carrying out construction work during restricted hours. The following measures are proposed:</p> <ul style="list-style-type: none"> <li>• Trainings shall be provided to the site supervisors, frontline staff and relevant subcontractors as regards the conditions stipulated in the CNPs obtained as well as the relevant requirements stipulated in the Noise Control Ordinance.</li> <li>• The Contractor shall establish and implement a checking system for carrying out construction works during restricted hours. The conditions stipulated in the CNP shall be checked by a designated staff on site. The effectiveness of the system shall be reviewed regularly.</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50509	The Police	9 <sup>th</sup> May 2005		<p>The Contractor was also reminded to continuously implement their practice as regards the advance notification to the nearby residents of the night time works. In addition, the Contractor should adopt good site practice to minimize the construction noise impact, such as:</p> <ul style="list-style-type: none"> <li>• To space out noisy equipment and position it as far away as possible from the sensitive receivers;</li> <li>• To avoid concurrent uses of noisy equipment near the sensitive area;</li> <li>• To ensure the equipment are maintaining in good operation condition; and</li> <li>• To turn off any idle equipment on site.</li> </ul>	Closed
50513	Golden Villa	13 <sup>th</sup> May 2005	Complaint regarding the noise nuisance at the representative of residents of Golden Villa was received on 13 <sup>th</sup> May 2005 from EPD. The complaint was subsequently referred to the Environmental Team Leader. It was about the noise generated from the engineering works from the night time to day time.	<p>The site of concern was likely to be the Sha Tin Height Tunnel. According to the Contractor's information, tunnel excavation works including the rock drill and charging of explosive were undertaken after 2300 hours in the tunnels. It was believed that the nuisance was caused by the vibration due to drilling works. The nuisance was more significant as the excavation face at south bound tunnel came closer towards Keng Hau Road.</p> <p>Upon receipt of the complaint, the Contractor had already stopped all drilling works after 23:00 hours inside the sound bound tunnel. In addition, the Contractor also noticed to the residents of Golden Villa for explaining the cause of nuisance and the actions they had taken to rectify the problems.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
51026	Exit of TAR1 next to Tai Po Road	26 <sup>th</sup> October 2005 (by CEDD)	Complaint was received by CEDD on 26 <sup>th</sup> October 2005 and it was subsequently referred to the Environmental Team Leader. It was about water in the wheel washing bay was brought onto the ensuing concrete pavement by lorries passing through it and the water fall onto Tai Po Road.	<p>After the site investigation by the RSS, it was confirmed that the source of the muddy water was this newly constructed wheel washing bay. Water in the wheel washing bay was brought onto the ensuing concrete pavement by lorries passing through it and the water fall onto Tai Po Road.</p> <p>The complaint was considered valid and corrective and preventive actions were taken by the Contractor:</p> <ol style="list-style-type: none"> <li>1. all vehicles exiting from TAR1 were stopped using the wheel washing bay to prevent any further overflowing of muddy water from the bay.</li> <li>2. a water browser was immediately deployed by the Contractor to clear the muddy water and the debris deposited on the concerned section of Tai Po Road.</li> <li>3. A concrete bund was constructed along the lower side of the wheel washing bay to reduce the amount of water overflowing.</li> <li>4. a small ditch was formed across the lower side of the vehicular exit in order to collect the overflowed water and prevent it from falling onto public road.</li> </ol> <p>The Contractor was reminded to closely monitor the situation and review the effectiveness of the mitigation measures.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
51118	Near Carado Garden and KCRC depot	18 <sup>th</sup> November 2005 (by CEDD)  A complaint of same nature was forwarded by EPD on 29 <sup>th</sup> Nov 05.	Complaint regards the nighttime construction noise due to construction works near Carado Garden and KCRC depot on 17 <sup>th</sup> November 2005. It was received on 18 <sup>th</sup> November 2005 by CEDD and EPD. On 21 <sup>st</sup> and 29 <sup>th</sup> November 2005, the complaint was referred to the ET Leader by CEDD and EPD.	<p>As advised by RSS, at the concern (17<sup>th</sup> November 2005), stressing work was carried out by the Contractor on the bridge N1, Span 1. Noise was generated during the lorry passed the movement joints of the bridge deck where steel plates were installed temporarily to provide access.</p> <p>According to the RSS, a valid CNP no. GW-RN0436-05 has been checked. All the PME and the type of lorry involved in the works complied with the CNP requirements.</p> <p>The complaint was considered valid and preventive actions were taken by the Contractor:</p> <ol style="list-style-type: none"> <li>1. re-spected the steel plates installed at the movement joints of the bridge deck and ensured that they are securely fixed. Such as , install steel bars to fix the steel plates.</li> <li>2. rubber pads will be provided at the movement joints to minimize noise generation due to vibration of the steel plates.</li> <li>3. close supervision to ensure care handling of construction materials will be provided on site.</li> </ol> <p>As advised by the RSS, the bridge launching work has been completed and no similar type of work will be carried out during the nighttime in future.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60207	Che Kung Miu Road near Tin Sam Village	7 <sup>th</sup> February 2006	The complaint was concerned the construction dust and noise generated from a construction site near Tin San Village during daytime between 0700 hours and 1900 hours. It was received on 7 <sup>th</sup> February 2006 by EPD.	<p>According to the RSS, the site of concern was the Proposed Retaining Wall No.5 (located at Che Kung Miu Road near Tin Sam Village). During the period of concern, construction of pre-bored H-piles was undertaken and it's mainly activity involved a drilling machine, a crane lorry and air compressors.</p> <p>The ET had arranged ad-hoc noise measurements on 8<sup>th</sup>, 9<sup>th</sup>, 14<sup>th</sup> and 16<sup>th</sup> Feb 06 at Tin Sam Village. The results of measurements showed no exceedance of the daytime noise criterion, i.e. 75dB(A) recorded.</p> <p>The complaint was considered valid and rectification actions were taken by the Contractor, including:</p> <ul style="list-style-type: none"> <li>a) All flaps of the air compressors would be closed all the time;</li> <li>b) Idled machines would be switched to minimize generation of unnecessary noise;</li> <li>c) Two air compressors were relocated to farther area on 8 Feb 06;</li> <li>d) Temporary noise barriers were erected on 11 Feb 06;</li> <li>e) Self monitoring of noise levels during the pilling operation;</li> <li>f) Additional dust screens were installed along the public road on 8 Feb 06;</li> <li>g) Public notices were distributed to the residents and the business establishment at Tin Sam Village on 8 Feb 06.</li> </ul> <p>During ET's ad-hoc inspections, the abovementioned mitigation measures were found in place and the public footpath beside the site areas was found clean and free dusty materials.</p> <p>As advised by the Contractor, a total of 10 piles are required to be constructed for the Proposed Retaining Wall No.5, thus this pilling activity would be completed by April 2006. The situation would be continuously reviewed by the Contractor, RSS and the ET.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60501	North and south bound carriageway of Che Kung Miu Road	3 <sup>rd</sup> May 2006	The complaint was referred by ER on 3 <sup>rd</sup> May 2006, which was about the noise nuisance arising from the temporary steel plates installed at both north and south bound carriageway of Che Kung Miu Road. The noise at night was heard when heavy vehicles ran over the temporary steel plates.	<p>According to ER's record, the major construction activity at the concerned area was the underground drainage work at CKM Road where trenches were excavated at the carriageways. The steel plates were acted as temporarily deck over trenches for vehicles passage after works.</p> <p>When heavy vehicles passed over the decks, the noise was generated due to clashing of the steel plates. It was the source of noise nuisance.</p> <p>The complaint was considered valid and corrective and preventive actions were taken by the Contractor:</p> <ol style="list-style-type: none"> <li>1. Conducted inspection to the temporary steel plates; and</li> <li>2. Steel plates were welded together and fixed in position.</li> </ol> <p>In addition, the Contractor had informed the complaint that mitigation measures were taken. No further complaint on the same issue had been received again.</p> <p>During ET's ad-hoc inspections, the abovementioned mitigation measures were found in place.</p> <p>As advised by the RSS, the drainage works would be completed at the concerned area by the end of August 2006.</p> <p>Thus, the Contractor was reminded to continuously implement their practice to prevent noise nuisance generation due to the construction works.</p>	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60626	near Tin Sum Village, Che Kung Miu Road	26 <sup>th</sup> June 2006	The Complaint was received by EPD on 19 <sup>th</sup> June 2006 and referred to ET Team on 26 <sup>th</sup> June 2006, which was about general construction noise and flytipping/dumping of construction wastes caused by construction work near Tin Sum Village, at Che Kung Miu Road.	<p>According to the ER's record, the major construction activities included lying of drain pipe, removal and erection of framework. However, only hand held tools were used when formwork were erected to wall of RW5 Bay 12&amp; 14.</p> <p>As advised by the RSS, the waste skip was provided to stock some timbers at the concerned area. i.e. beside the KCRC boundary wall.</p> <p>Besides, on load of construction waste was disposed on 19<sup>th</sup> June 2006.</p> <p>Site inspection on the Contractor's mitigation measure was carried out by ET on 28<sup>th</sup> and 29<sup>th</sup> June 2006.</p> <p>Base on the information collected, the complaint was considered not justifiable.</p> <p>However, the Contractor was reminded to continuously provide good site practice to minimize construction noise/waste impact.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60828	Sha Tin Heights Southern Tunnel near Tai Po Road	28 <sup>th</sup> August 2006	The public complaint was received on 28 August 2006 by EPD which was about construction dust generated from the construction site at Sha Tin Heights Southern Tunnel near Tai Po Road - Sha Tin Heights, Sha Tin.	<p>According to the RSS information, the Southbound Tunnel was not for traffic and water spray onto road surface was implemented at least once a day.</p> <p>According to the Contractor's information, the Northbound Tunnel was currently used as a vehicle access to the Toll Plaza near Garden Villa. This tunnel was maintained wet all the time during the working hours.</p> <p>A site inspection was conducted on 28 August 2006 and 7 September 2006 by ET. During the site inspection, the adequate water spraying onto road surface was found in the concerned area of the Southbound Tunnel.</p> <p>Based on the above information, the complaint was considered to be invalid.</p> <p>However, the Contractor was reminded to continuously provide good site practice to minimize construction air impact.</p>	Closed