

Chun Wo Construction &
Engineering Co Ltd

**Contract No HY/2005/06
Castle Peak Road
Improvement – West of
Tsing Lung Tau**

Monthly Environmental
Monitoring and Audit
Report for Construction
Works other than
Reclamation – December
2006

Second Issue

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January 2007

Maunsell Environmental Management Consultants Ltd

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By Fax (2492 6201) and PostMeinhardt Halcrow JV
4/F., Wah Ming Centre,
421 Queen's Road West,
Hong KongAttn : Mr. Michael S Harfoot

15 January 2007

Dear Sir,

Contract No. HY/2005/06**Castle Peak Road Improvement – West of Tsing Lung Tau****Monthly EM&A Report for Construction Works other than Reclamation – December 2006**

We refer to the Monthly EM&A Report for Construction Works other than Reclamation – December 2006 received via emails on 12 January 2007 from Ove Arup & Partners Hong Kong Ltd., the Environmental Team (ET) of Castle Peak Road Improvement – West of Tsing Lung Tau (Remaining Contract).

Having addressed the IEC's comment on 12 January 2007, the Monthly EM&A Report for Construction Works other than Reclamation – December 2006 is verified to be acceptable for onward submission to the Engineer, HyD, and EPD.

Should you have any inquiry or comment, please do not hesitate to contact the undersigned or our Miss Connie Wong at 3105 8530.

Yours faithfully
for and on behalf of
**Maunsell Environmental
Management Consultants Ltd**



Y T Tang
Independent Environmental Checker

cc MHJV - Mr. Simon Illingworth (Fax: 2559 1613)
Arup - Mr. Sam Tsui / Mr. Samuel Chan (Fax: 2268 3950)

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Executive Summary

This is the tenth monthly environmental monitoring and audit (EM&A) report presenting the progress of environmental monitoring and audit works for the period between 01 December 2006 and 31 December 2006, including air quality monitoring and noise monitoring. Air quality was measured in terms of 1-hour Total Suspended Particulates (TSP) and 24-hour TSP. Noise was measured in terms of $L_{eq(30min)}$ with L_{10} and L_{90} measurements for reference. Environmental works included the weekly environmental audit and the bi-weekly landscape & visual monitoring and audit.

Air quality and noise monitoring at Bayside Villas and air quality monitoring at Grand Bay Villa were temporarily suspended as these premises were vacant with no resident.

Air Quality

A total of 5 sets of 3 consecutive 1-hour TSP measurements were conducted on 01, 07, 13, 19 and 27 December 2006 at Savoy Height, Hong Kong Garden (WA3). The highest 1-hour TSP level of $209.5 \mu\text{g}/\text{m}^3$ was recorded on 07 December 2006 while lowest 1-hour TSP level of $170.0 \mu\text{g}/\text{m}^3$ was recorded on 19 December 2006.

A total of 5 sets of 24-hour TSP measurement were conducted on 06, 12, 18, 23 and 29 December 2006 at Savoy Height, Hong Kong Garden (WA3). The highest 24-hour TSP level of $127.8 \mu\text{g}/\text{m}^3$ was recorded on 12 December 2006 while the lowest 24-hour TSP level of $58.4 \mu\text{g}/\text{m}^3$ was recorded on 06 December 2006.

There was no exceedance of 1-hour and 24-hour TSP Action and Limit (A/L) Levels recorded during the reporting period.

Noise

A total of 4 sets of noise measurement were conducted between 0700-1900 hours on 07, 13, 19 and 27 December 2006 at Savoy Height, Hong Kong Garden (WN6). The highest noise level of 67.0 dB(A) was recorded on 19 December 2006 while the lowest noise level of 66.3 dB(A) was recorded on 07 and 13 December 2006.

There was no exceedance of noise A/L Levels recorded during the reporting period.

Landscape and Visual

A total of 2 landscape and visual monitoring and audits were carried out on a biweekly basis on 08 and 21 December 2006. The Registered Landscape Architect (RLA) has recommended the contractor on the following:

- To clear away all construction waste, scattered litter, garbage, etc as found on site, and to keep the site in a tidy condition at all times;
- To provide better tree protection to existing trees to be transplanted or retained on site and to carry out proper tree root preparation works for the transplant trees; and
- To carry out watering of the site to prevent dust nuisance during dry periods.

Environmental Auditing

A total of 4 environmental site audits were conducted on a weekly basis in December 2006. No non-conformance to the environmental requirements was identified during the reporting period. The improvement actions against observations during the site audits for the CT included:

Air quality: Cover excavated materials and exposed slopes;

Water quality: Frequent clearing of mud trail and provision of cut-off drain to collect wheel-wash water;

Waste Management: Frequent clearing of construction waste and general refuse; and

Chemical Waste Handling: Provision of drip tray to oil drum.

Waste Disposal

A total of 27.63 tonnes of Construction & Demolition (C&D) waste and a total of 260.48 tonnes of C&D materials (transported by trucks) were disposed of at SENT/WENT Landfill and Public Filling Reception Facility at Tuen Mun Area 38 respectively in December 2006. No chemical waste was disposed of during the reporting period.

Complaint Records

No environmental complaint was received during the reporting period.

Exceedance

No exceedance for air quality and noise monitoring was recorded during the reporting period.

Notification of Summons and Successful Prosecution

No notification of summons and prosecution was received during the reporting period.

Environmental Licences

No new environmental licence was granted during the reporting period.

1 Introduction

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by the Contractor (CT) – Chun Wo Construction & Engineering Co. Ltd (Chun Wo) as the Environmental Team (ET) for *Contract No. HY/2005/06 Castle Peak Road Improvements – West of Tsing Lung Tau*. In accordance with the EM&A Manual of the Project, environmental monitoring for air quality, noise, marine water quality and landscape & visual issues will be required during the construction and operational phases. The construction phase of the Project commenced on 28 February 2006 and will last for approximately 16 months.

1.1 Project Background

The Castle Peak Road (CPR) Improvement works consist of upgrading the existing CPR to provide a dual two-lane carriageway of "Rural Road A" classification between Area 2 (Tusen Wan) and Ka Loon Tsuen. The CPR Improvement project is divided into three contracts, namely HY/99/18 (West Contract), HY/99/19 (Middle Contract) and HY/2000/02 (East Contract).

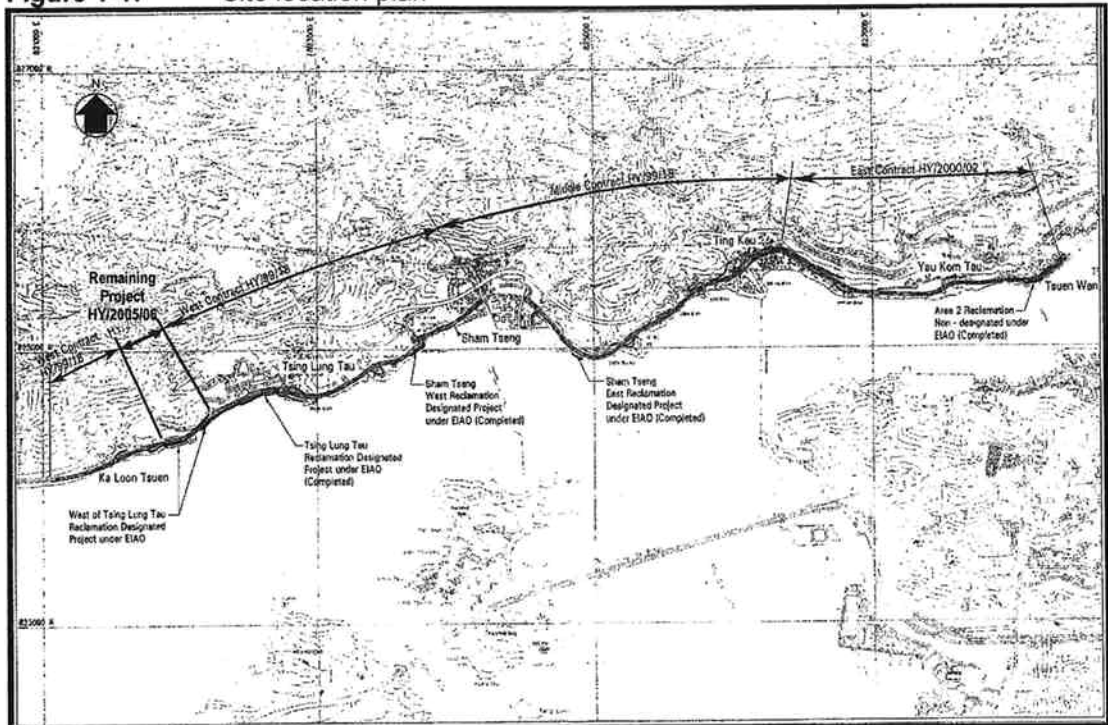
Prior to inviting tenders for Contract No. HY/99/18, a section of the proposed works, between Ch.1+800 and Ch.2+240, west of Tsing Lung Tau, was excised from the Project and entrusted to the Route 10 – North Lantau to Yuen Long Highway project. This 440m long section of CPR was located under the proposed Route 10 suspension bridge, and was to form part of the works area for the Route 10 project. The Route 10 project team revised the alignment of this section of CPR accordingly to suit the arrangement of the Route 10 suspension bridge.

Following subsequent developments, the Route 10 project was placed under review, and Government therefore decided to implement the excised section of CPR (the Remaining Project) under the original CPR Improvement project. **Figure 1-1** shows the site location plan.

The scope of the construction work covered by this contract is as follows:

- upgrading the alignment and widening to dual two-lane carriageway standards of the existing single carriageway Castle Peak Road;
- construction road drainage;
- construction of watermain over the length of the works; and
- landscape and establishment works along the length of the highway verges, embankment and reclamation area.

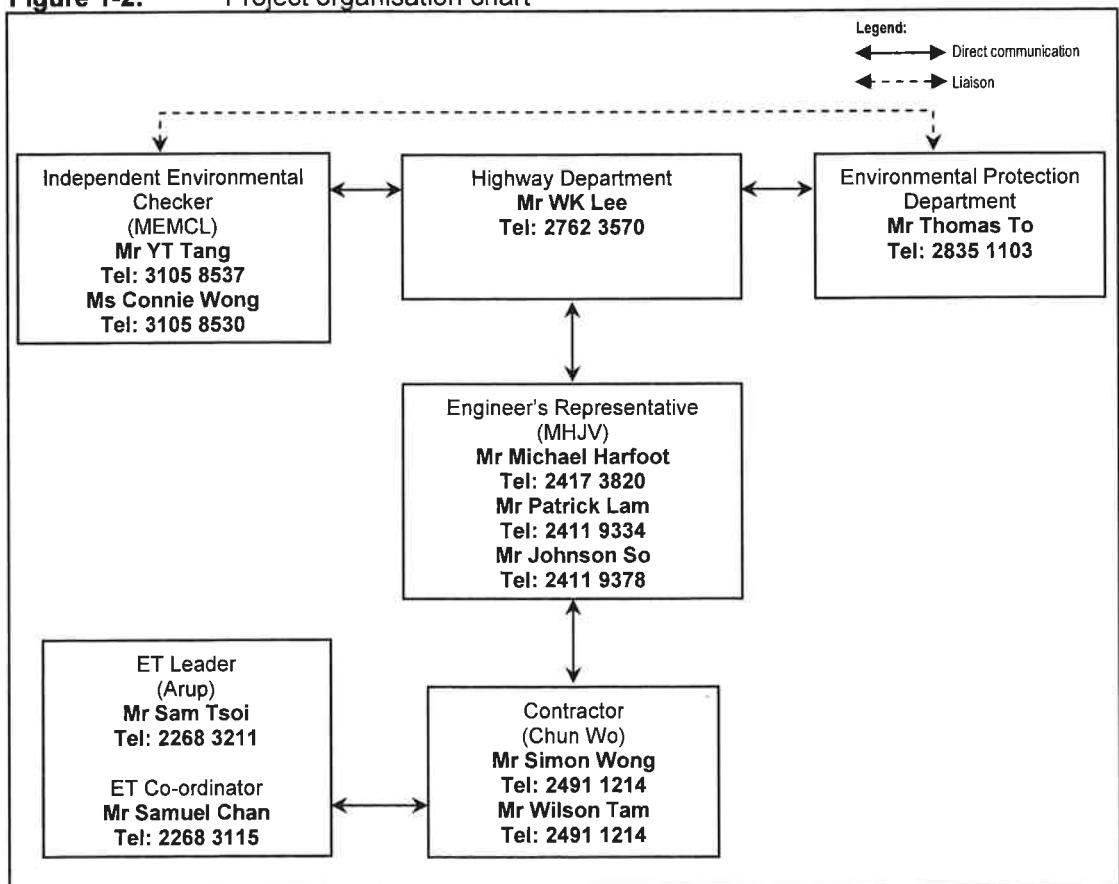
Figure 1-1: Site location plan



1.2 Project Organisation

The project organisation chart for environmental management is shown in **Figure 1-2**.

Figure 1-2: Project organisation chart



The Project Proponent is Highway Department (HyD); the Engineer's Representative (ER) is Meinhardt Halcrow Joint Venture (MHJV); the CT is Chun Wo; the Independent Environmental Checker (IEC) is Maunsell Environmental Management Consultants Ltd (MEMCL); the ET is Ove Arup & Partners Hong Kong Ltd (Arup).

The overall duties of ET Leader and the team are as follows:

- sampling, analysis and statistical evaluation of monitoring parameters with reference to the EIA study and subsequent reviews recommendations and requirements in respect of noise, dust and water quality;
- environmental site surveillance;
- audit of compliance with environmental protection and pollution prevention and control regulations;
- monitor the implementation of environmental mitigation measures;
- monitor compliance with the environmental protection clauses/specifications in the Contract;
- review construction programme and comment as necessary;
- review construction methodology and comment as necessary;
- complaint investigation, evaluation and identification of corrective measures;
- audit of the effectiveness of mitigation measures and EMS (if applicable) and recommend and implement any changes as appropriate.
- liaison with IEC on all environmental performance matters;
- advice to the CT on environmental improvement, awareness, enhancement matter, etc., on site; and
- Timely submission of the EM&A reports to the ER, IEC and DEP.

The duties of IEC include the following:

- review and audit all aspects of the EM&A programme;
- validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and locations of sensitive receivers;
- carry out random sample check and audit on monitoring data and sampling procedures, etc;
- conduct random site inspection;
- audit the EIA, subsequent reviews and Environmental Permit recommendations and requirements against the status of implementation of environmental protection measures on site.
- review the effectiveness of environmental mitigation measures and project environmental performance;
- audit the CT's construction methodology and agree the least impact alternative in consultation with ET Leader and the CT;
- check compliant cases and the effectiveness of corrective measures;
- review EM&A report submitted by the ET Leader; and
- feedback audit results to ET Leader by signing off relevant EM&A proformas.

1.3 Scope of Impact EM&A

The impact environmental monitoring and audit for the Project included air quality, noise, marine water quality, landscape and visual monitoring and environmental site audit. As the marine water quality and noise monitoring at Grand Bay Villa are covered in the scope under the Environmental Permit (EP No EP-219/2005) requirements, the findings will be reported in Castle Peak Road Improvement – West of Tsing Lung Tau Monthly EM&A Report for Reclamation Works.

1.4 Purpose of the Report

The purpose of the monthly EM&A report is to provide the information on monitoring methodology, monitoring results, environmental permit status, site audit findings, recommendations and conclusions for the scope of impact EM&A other than those specified under the EP. This is the tenth monthly EM&A report summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the air quality, noise, landscape and visual monitoring and environmental site audit from 01 December 2006 to 31 December 2006.

2 Scope of Construction Works

2.1 Construction Programme

The construction work was commenced on 28 February 2006. An up-to-date construction programme is attached in **Appendix A**.

2.2 Construction Activities of the Month

The major construction activities carried out by the CT in December 2006 included:

- Drilling Pre-bored H-pile;
- Construction of bored pile lagging wall; and
- Construction of drainage and watermain.

3 Summary of EM&A Requirements

Air quality and noise monitoring will be conducted by the ET at specified monitoring locations during the construction stage. Landscape & visual monitoring and audit and environmental site audit will also be carried out. The monitoring schedule for December 2006 and the tentative schedule for January 2007 are attached in **Appendix B**.

3.1 Air Quality

3.1.1 Monitoring Parameters

Air quality monitoring will be measured in terms of the TSP levels for both 24-hour and 1-hour periods.

3.1.2 Monitoring Frequency

24-hour TSP and 1-hour TSP levels will be monitored during the construction stage. The monitoring parameters and frequency are summarised in **Table 3-1**.

Table 3-1: TSP monitoring parameters and frequency

Parameters	Monitoring Frequency	Time Period	No. of Measurement for Each Monitoring
24-hour TSP	Once every six days	0000 – 2400	1
1-hour TSP	Three times every six days	0700 – 1900	1

3.1.3 Monitoring Locations

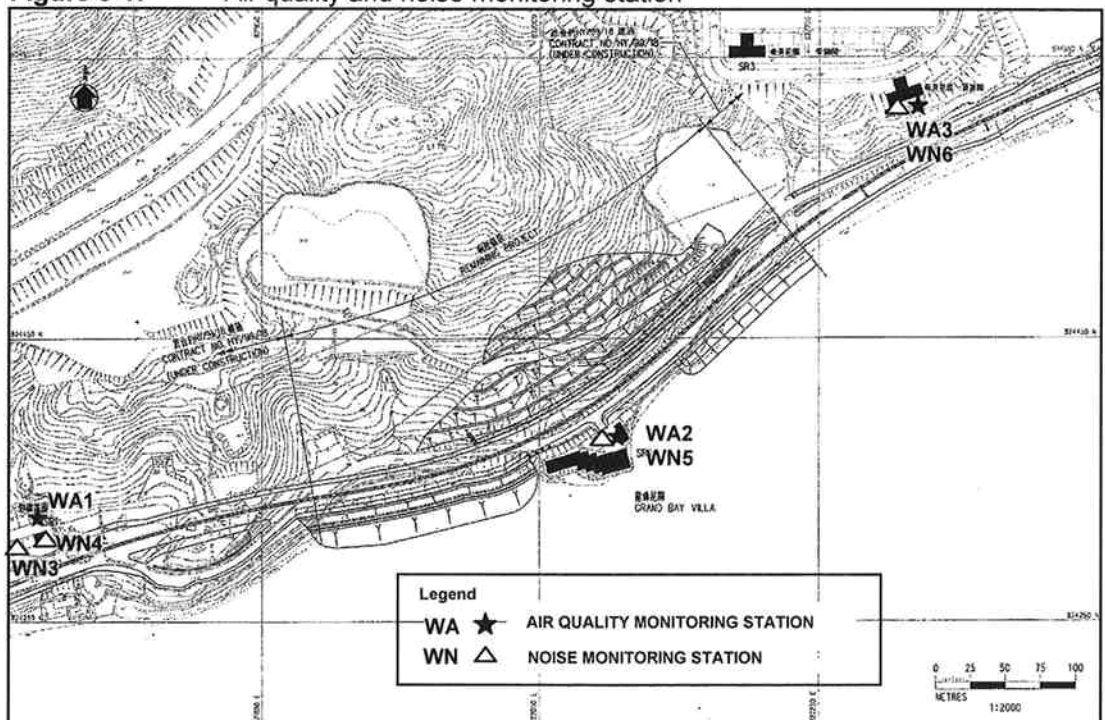
Two locations were specified for the air quality monitoring as summarised in **Table 3-2** and illustrated in **Figures 3-1**.

Table 3-2: Air quality monitoring locations

Air Monitoring Station No.	Location	Location description	Remarks
WA1	Bayside Villas	G/F near House 10	Monitoring temporarily suspended *
WA2	Grand Bay Villa	G/F, House 1	Monitoring temporarily suspended *
WA3	Hong Kong Garden	G/F, Savoy Height	-

* Bayside Villas and Grand Bay Villa are currently vacant with no residents during the reporting period. Air quality monitoring at WA1 and WA2 is temporarily suspended until they are occupied.

Figure 3-1: Air quality and noise monitoring station



3.1.4 Wind Monitoring

Wind monitoring data including wind speed and wind directions will be extracted from Hong Kong Observatory – Tsing Yi Wind Monitoring Station.

3.2 Construction Noise

3.2.1 Monitoring Parameters

Construction noise will be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{10} and L_{90} will also be recorded as supplementary reference information for data auditing.

3.2.2 Monitoring Frequency

Noise measurements will be conducted on a weekly basis. The monitoring time periods, monitoring parameters and frequency are summarised in **Table 3-3**

Table 3-3: Construction noise monitoring parameters and frequency

Time Period (when construction activity is found)	Parameters	Monitoring Frequency	No. of Measurements for Each Monitoring
Between 0700-1900 hours on normal weekdays	$L_{eq(30\text{ min})}$	Once per week	1
Between 1900-2300 hours on normal weekdays	$L_{eq(5\text{ min})}^*$		3 (consecutive)
Between 2300-0700 hours of next day			
Between 0700-1900 hours on holidays			

* The $L_{eq(5\text{ min})}$ will only be measured if construction activities are conducted on holidays and between the period of 1900 and 0700 hours during normal weekdays.

3.2.3 Monitoring Location

Noise monitoring will be conducted at three locations as shown in **Figure 3-1**. The details of the noise monitoring locations are given in **Table 3-4**. The measurements will be taken at a position 1m from the exterior of building façade and at a position of 1.2m above ground.

Table 3-4: Construction noise monitoring locations

Noise Monitoring Station No.	Location	Monitoring Point	Remark
WN3	Bayside Villas	G/F, House 3	Monitoring temporarily suspended *
WN4	Bayside Villas	G/F, House 1	
WN6	Hong Kong Garden	G/F, Savoy Height	-

* Bayside Villas are currently vacant with no resident. Construction noise monitoring at WN3 and WN4 is temporarily suspended until they are occupied.

3.3 Landscape and Visual Monitoring Audit

3.3.1 Audit Parameters

All landscape and visual mitigation measures undertaken by both the CT and the Landscape Contractor during the construction phase and the first year of operational phase will be audited by a Registered Landscape Architect, to ensure compliance with the intended aims of mitigation measures.

3.3.2 Audit Frequency

The landscape and visual monitoring and audit will be undertaken once every two weeks throughout the construction period and once every two months during the operational phase.

3.3.3 Audit Location

The landscape and visual monitoring and audit will be conducted throughout the entire site area.

3.4 Performance Limits and Event Action Plans

The monitoring results will be checked against appropriate standards and requirements. A two-tier system performance limits have been established in the Project specific EM&A Manual. The "Action Level" and the "Limit Level" (A/L) are established according to the EPD requirements. The ET, ER, IEC, and CT will take corresponding action in accordance with the Event-Action Plans if the monitoring results exceed the performance limits.

3.4.1 Air quality

The A/L levels for air quality have been established during the baseline monitoring as summarised in **Table 3-5**.

Table 3-5: Action and Limit Levels for air quality

Air Monitoring Station No.	1-hour TSP Level in $\mu\text{g}/\text{m}^3$		24-hour TSP Level in $\mu\text{g}/\text{m}^3$	
	Action Level	Limit Level	Action Level	Limit Level
WA1	396	500	185	260
WA2	387		177	
WA3	393		185	

The action required to be taken by different parties in case of occurrence of exceedances of A/L Levels are summarised in the Event and Action Plan in **Table 3-6**.

Table 3-6: Event and Action Plan for air quality exceedance

Event	Action			
	ET Leader	IEC	ER	CT
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify the source. Inform IEC and ER. Repeat measurement to confirm finding. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Leader. Check CT's working method. 	<ol style="list-style-type: none"> Notify CT. 	<ol style="list-style-type: none"> Rectify any unacceptable practice. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Identify the source. Inform IEC and ER. Repeat measurements to confirm findings. Increase monitoring frequency to daily. Discuss with IEC and the CT on remedial actions required. If exceedance continues, arrange meeting with IEC and ER. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET. Check the CT's working method. Discuss with the ET Leader and the CT on possible remedial measures. Advise the ER on the effectiveness of the proposed remedial measures. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing. Notify the CT. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify the source. Inform the ER and the DEP. Repeat measurement to confirm finding. Increase monitoring frequency to daily. Assess effectiveness of CT's remedial actions and keep the IEC, the DEP and the ER informed of the results. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Leader. Check the CT's working method. Discuss with the ET Leader and the CT on possible remedial measures. Advise the ER on the effectiveness of the proposed remedial measures. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing. Notify the CT. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Notify the IEC, the ER, the DEP and the CT. Identify the source. Repeat measurements to confirm findings. Increase monitoring frequency to daily. Carry out analysis of the CT's working procedures to determine possible mitigation to be implemented. Arrange meeting with the IEC and ER to discuss the remedial actions to be taken. Assess effectiveness of the CT's remedial actions and keep the IEC, the DEP and the ER informed of the results. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> Discuss amongst the ER, the ET Leader and the CT on the potential remedial actions. Review the CT's remedial actions whenever necessary and advise the ER accordingly. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing. Notify the CT. In consultation with the IEC, agree with the CT on the remedial measures to be implemented. Ensure remedial measures are properly implemented. If exceedance continues, consider what activity of the work is responsible and instruct the CT to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Resubmit proposals if problem still not under control. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

3.4.2 Construction Noise

The A/L Levels for the construction noise have been established during the baseline monitoring as summarised in **Table 3-7**.

Table 3-7: Action and Limit Levels of construction noise

Time Period	Action Level	Limit Level
0700 – 1900 hours on any day not being a Sunday or public holiday	When one documented complaint is received	75dB(A)

The action required to be taken by different parties in the case of occurrence of exceedances of A/L Levels are summarised in the Event and Action Plan in **Table 3-8**.

Table 3-8: Event and Action Plan for construction noise exceedance

Event	Action			
	ET Leader	IEC	ER	CT
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and the CT. 2. Carry out investigation. 3. Report the results of investigation to the IEC and the CT. 4. Discuss with the CT and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review with the analysed results submitted by ET. 2. Review the proposed remedial measures by the CT and advise ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the CT. 3. Require the CT to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Notify the IEC, the ER, the DEP and the CT. 2. Identify the source. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of CT's working procedures to determine possible mitigation to be implemented. 6. Inform the IEC, the ER, and the DEP the causes & actions taken for the exceedances. 7. Assess effectiveness of the CT's remedial actions and keep the IEC, the DEP and the ER informed of the results. 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst the ER, the ET Leader and the CT on the potential remedial actions. 2. Review the CT's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the CT. 3. Require the CT to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the CT to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

3.5 Site Inspection and Environmental Complaint Handling

3.5.1 Site Inspection Frequency and Areas Covered

Regular site inspections will be carried out on a weekly basis. The areas of inspection cover the different environmental impacts, such as air quality, noise, water quality and waste, and their pollution controls and mitigation measures for both within and outside the site area. Site inspection for landscape and visual impact shall be carried out on a bi-weekly basis.

Ad hoc site inspection will be carried out if significant environmental non-compliance is identified. Inspections may also be carried out subsequent to receipt of any environmental complaints, or as part of the investigation work, as specified in the Event and Action Plans.

3.5.2 Site Inspection Procedures

- a) The CT and/or ER will advise the Environmental Auditor (EA) of ET for all information on any environmental related aspects.
- b) The EA will discuss with the CT and/or ER to forecast any potential environmental impact.
- c) The EA will conduct a site walk with the CT and/or ER, particularly the areas with extensive construction works.
- d) The EA will conduct inspection for the main environmental facilities and measures such as wheel washing facilities located at site exits, water spraying truck, temporary noise barrier, and internal noise-reducing measures of heavy equipment etc, to ensure that these environmental facilities operate normally and effectively.
- e) The EA will fill up a site inspection checklist during the site inspection for recording any special observations.
- f) The EA will conduct post-discussion with the CT and/or ER for the establishment of additional/special measures if any non-conformance is found. The completion date for such additional measures will be confirmed during the post-discussion.
- g) The EA will propose a reasonable timeframe together with the CT and/or ER, for preparation of the proposal for remediation of environmental non-compliance.
- h) The completed site inspection checklist will be signed by the EA, the CT and/or ER, for reference and for taking action in accordance with the agreed procedures, reporting systems and time frame.

3.5.3 Environmental Complaints

In accordance with the EM&A Manual, environmental complaints will be referred to the ET for initiation of the complaint investigation procedures. The ET will undertake the following procedures upon receipt of complaints:

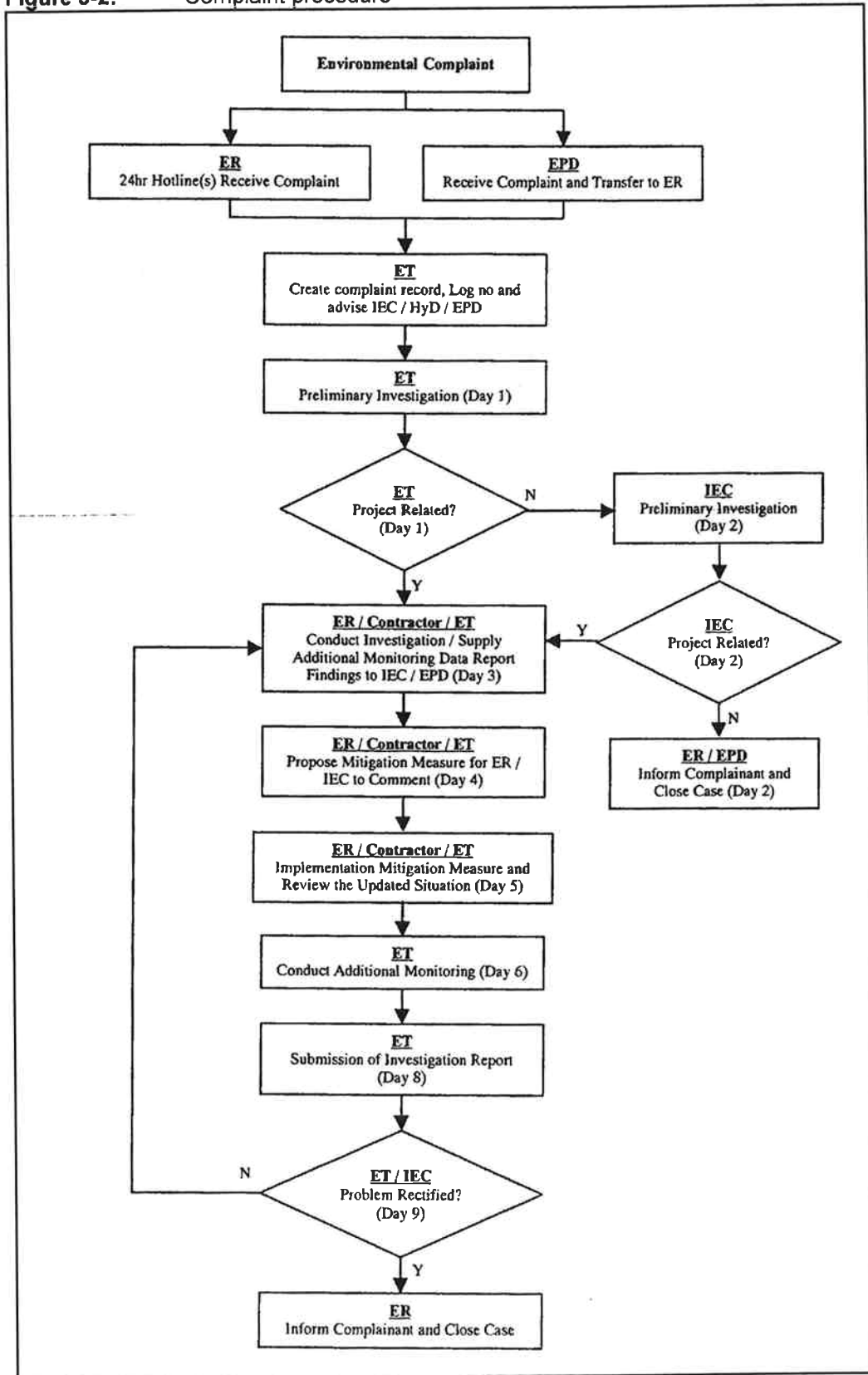
- a) The ET will record the details of the complaint and the date of receipt into the complaint database, and inform ER immediately.
- b) The ET will perform complaint investigation to determine its validity and to assess whether the source of the problem is due to work activities.
- c) The ER will instruct the CT to identify mitigation measures in consultation with the ET, if the complaint is valid and due to works.
- d) The ET will liaise with the CT on their mitigation measure proposals and implementation, if required.

- e) The ET will conduct review of the CT's response on the identified mitigation measures, and of the updated situation.
- f) The ET will submit interim report to EPD if the complaint is received via EPD. The interim report will clearly state the status of the complaint investigation and the follow-up action within the time frame assigned by EPD.
- g) The ET will undertake additional monitoring and audit to verify the situation if necessary, and ensure that any valid reason for complaint does not recur.
- h) The ET will report on the investigation results and the subsequent actions to the source of complaint for responding to the complainant. If the source of complaint is via EPD, the results will be reported within the time frame assigned by EPD.
- i) The ET will record the details of the complaint, investigation, subsequent actions and results in the monthly EM&A report.

During the complaint investigation work undertaken by the ET, CT and ER should cooperate with the ET on providing all the necessary information and assistance for completion of the investigation. If mitigation measures are identified as necessary after the investigation, the CT should promptly carry out the required mitigation to the satisfaction of ET. The ER should ensure that the CT has carried out such identified measures.

A flow chart of the complaint response procedures is shown in **Figure 3-2** for reference.

Figure 3-2: Complaint procedure



4 Air Quality Monitoring

4.1 Monitoring Parameters and Equipment

Impact air quality monitoring was conducted in terms of both 1-hour and 24-hour TSP using a direct reading meter, MIE Data-RAM Portable Real Time Aerosol Monitor (MIE) and High Volume Sampler (HVS) respectively. **Table 4-1** shows the equipment list for air quality monitoring.

Table 4-1: Equipment list for air quality monitoring

Equipment	Manufacturer & Model No.	Measurement Parameter	Qty.
High Volume Sampler	TE-5170	24-hour TSP	1
Fibreglass Filter	G810		--
HVS Calibration Kit	GMW-2535		1
Photometric Aerosol Monitor	MIE <i>personal</i> DataRAM	1-hour TSP	1
Hand Held Barometer	Cole-Parmer EB833	Pa, Temperature	1

4.2 Methodology

4.2.1 Occupancy Status of Bayside Villas and Grand Bay Villa

The property management company of Bayside Villas (WA1) and Grand Bay Villa (WA2) will be coordinated a monthly basis within 10 working days of each month to confirm the occupancy status of these premises. Once these locations are confirmed occupied, air quality monitoring will be resumed within 1 week.

4.2.2 1-hour TSP Monitoring

The procedure for 1-hour TSP monitoring is described as follows:

The MIE monitor was switched on by pressing the ON/OFF button. The NEXT button was pressed to select Run or Ready mode.

The NEXT button was pressed subsequently to check the following settings:

- i. data logging function: on
- ii. log period: 5 minutes
- iii. tag number: storage
- iv. analogue output: 0-4.000mg/m³
- v. calibration factor: 1.0
- vi. averaging time: 10s
- vii. battery charge: ≥50%
- viii. remaining memory: ≥10%

The monitoring was started by pressing ENTER. The real-time concentration would display "CONC" and the time-averaged concentration would display "TWA".

The monitoring was stopped by pressing EXIT and ENTER buttons.

The date and start time, weather, site condition and the downloaded monitoring results were recorded on specified field record sheet.

4.2.3 24-hour TSP Monitoring

The 24-hour TSP has measured by using a High Volume Sampler (HVS). All HVS comply with the following specifications:

- 0.6 – 1.7 m³/min (20 – 60SCFM);
- equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- installed with elapsed time meter with +/- 2 minutes accuracy for 24 hours operation;
- capable of providing a minimum exposed area of 406 cm²(63in²);
- flow control accuracy: +/-2.5% deviation over 24-hr sampling period;
- equipped with a shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;
- equipped with a flow recorder for continuous monitoring;
- provided with a peaked roof inlet;
- incorporated with a manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easy to change the filter; and
- capable of operating continuously for a 24-hour period.

4.2.4 Maintenance and Calibration

The HVS and their accessories were frequently checked and maintained in accordance with the manufacturer's operation & maintenance manual. Maintenance include the checking of the supporting screen and the gasket, and routine replacement of motor carbon brushes for the blower motor. The power cords and power supply were checked each time before sampling to ensure proper operation.

The HVS are calibrated at 2-month intervals using GMW-2535 Calibration Kit.

The calibration kit will be re-calibrated by the manufacturer after one year of use. The calibration certificates of the HVS and the calibration kit are attached in **Appendix C**.

The MIE monitor and its accessories were frequently checked and maintained in accordance with the manufacturer's operation & maintenance manual to ensure proper operation. Maintenance included the checking of batteries, zero and sensitive adjustment and filter replacement.

The MIE monitor is returned to the manufacturer for calibration bi-annually. The calibration certificates are attached in **Appendix D**. The next calibration dates for the MIE monitors are given in **Table 4-2**.

Table 4-2: Calibration dates of 1-hour TSP monitoring equipment

1-hour TPS monitoring equipment	Serial number	Last calibration date	Next calibration date (on or before)
MIE Data-RAM Portable Real Time Aerosol Monitor	4492	10-April-06	10-April-08

4.3 Results and Observations

4.3.1 Occupancy Status of Bayside Villas and Grand Bay Villa

In the reporting period, Bayside Villas (WA1) and Grand Bay Villa (WA2) were vacant with no resident and air quality monitoring was temporarily suspended.

4.3.2 Weather conditions and other factors

No adverse weather conditions, in particular adverse wind speed and wind direction that may significantly affect or invalidate the collected air quality monitoring data, were registered during the reporting period.

Neither unusual operation of the construction site nor abnormal TSP source was observed during the reporting period.

4.3.3 Summary of Results

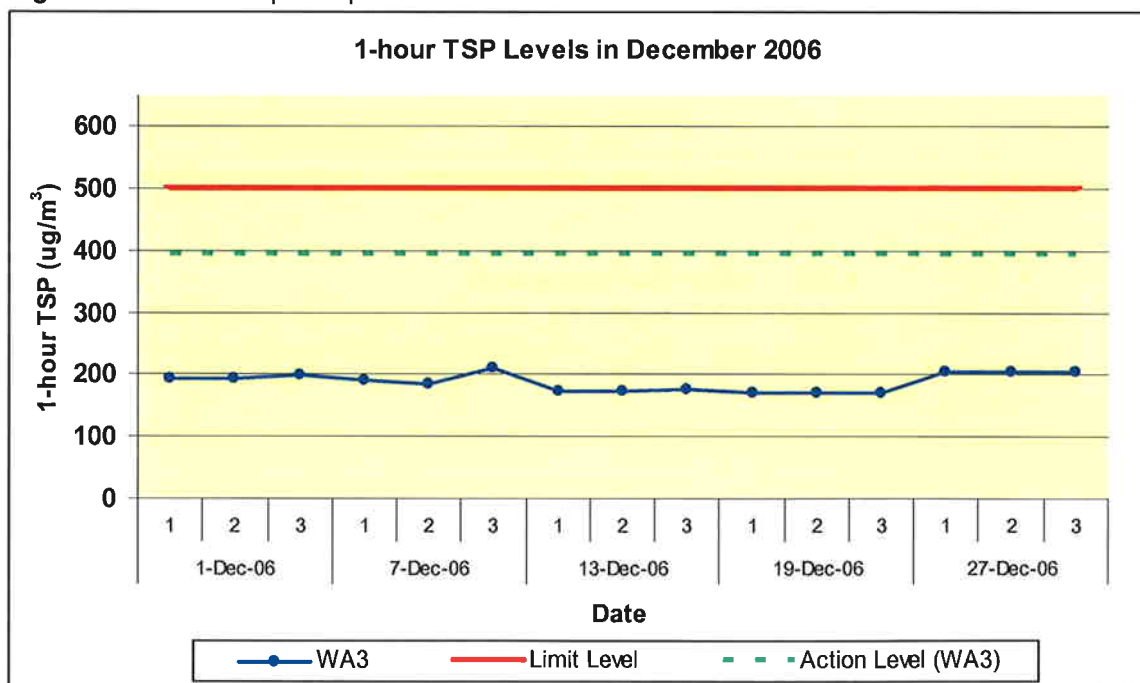
1-hour TSP

A total of 5 sets of 3 consecutive 1-hour TSP measurements were conducted on 01, 07, 13, 19 and 27 December 2006 at Savoy Height, Hong Kong Garden (WA3).

The highest 1-hour TSP level of 209.5 $\mu\text{g}/\text{m}^3$ was recorded on 07 December 2006 while lowest 1-hour TSP level of 170.0 $\mu\text{g}/\text{m}^3$ was recorded on 19 December 2006. There was no exceedance of the A/L Levels during the reporting period.

Detailed monitoring results of 1-hour TSP are attached in **Appendix E** and graphical presentation of the 1-hour TSP levels at WA3 is illustrated in **Figure 4-1**.

Figure 4-1: Graphical presentation of 1-Hour TSP levels for December 2006



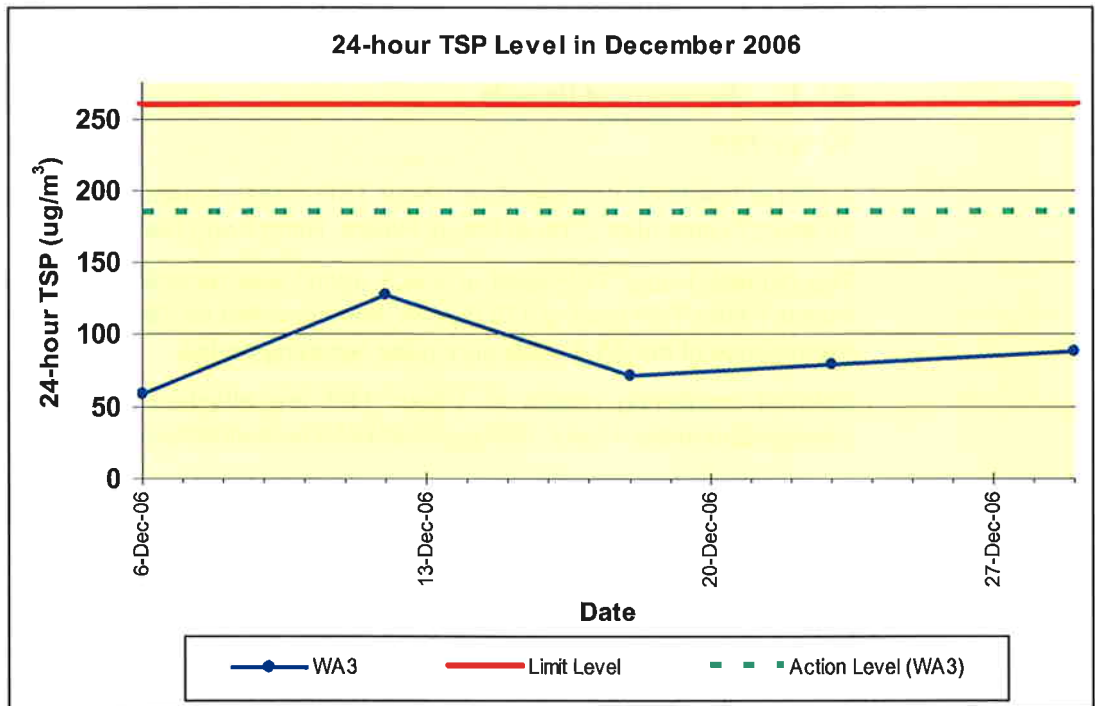
24-hour TSP

A total of 5 sets of 24-hour TSP measurement were conducted on 06, 12, 18, 23 and 29 December 2006 at Savoy Height, Hong Kong Garden (WA3).

The highest 24-hour TSP level of 127.8 $\mu\text{g}/\text{m}^3$ was recorded on 12 December 2006 while the lowest 24-hour TSP level of 58.4 $\mu\text{g}/\text{m}^3$ was recorded on 06 December 2006. There was no exceedance of the A/L Levels during the reporting period.

Detailed monitoring results of 24-hour TSP are attached in **Appendix F** and graphical presentation of the 24-hour TSP levels at WA3 is illustrated in **Figure 4-2**.

Figure 4-2: Graphical presentation of 24-Hour TSP Levels for December 2006



4.3.4 Wind Monitoring Data

Detailed wind monitoring data for December 2006 were extracted from Hong Kong Observatory – Tsing Yi Wind Monitoring Station and attached in **Appendix G**.

5 Noise Monitoring

5.1 Monitoring Equipment

Details of the integrating sound level meters used in the noise monitoring are shown in Table 5-1.

Table 5-1: Equipment list for construction noise monitoring

Equipment	Manufacturer & Model No.	Precision Grade	Qty.
Integrating sound level meter	Rion NA-27	IEC 651 Type 1 IEC 804 Type 1	1
Windshield	Brüel & Kjær UA0237		1
Acoustical calibrator	Brüel & Kjær 4230		1
LCD wind speed indicator	Kestrel Vane Anemometer	--	1

5.2 Methodology

5.2.1 Occupancy Status of Bayside Villas and Grand Bay Villa

The property management company of Bayside Villas (WN3 and WN4) and Grand Bay Villa (WN5) will be coordinated on a monthly basis within 10 working days of each month to confirm the occupancy status of these premises. Once these locations are confirmed occupied, noise quality monitoring will be resumed within 1 week.

5.2.2 Field Measurement

- The sound level meter and battery were checked to ensure that they were in proper condition.
- The sound level meter was set on a tripod at 1.2m above ground and at 1m from the exterior of the building façade.
- Before conducting the measurement, the sound level meter was calibrated by an acoustical calibrator.
- The measurement parameter was set to A-weighted sound pressure level. The time weighting was set in fast response and the time period of measurement at 30 minutes.
- The wind speed was checked during noise monitoring to ensure the steady wind speed did not exceed 5m/s, or wind with gusts did not exceed 10m/s.
- Any abnormal conditions that generated intrusive noise during the measurement were recorded on the field record sheet.
- After each measurement, the equivalent continuous sound pressure level (L_{eq}), L_{10} and L_{90} were recorded on the field record sheet.
- The sound level meter was re-calibrated by the acoustical calibrator to confirm that there was no significant drift of reading.

5.2.3 Equipment Maintenance and Calibration

All sound level meters comply with the standards of IEC 651 (Fast, Slow, Impulse RMS detector tests) and IEC 804 (L_{eq} functions). The acoustical calibrator model no. 4226 complies with IEC 942. The calibration certificates of the noise monitoring equipment are attached in Appendix H.

5.3 Results and Observations

5.3.1 Occupancy Status of Bayside Villas and Grand Bay Villa

In the reporting period, Bayside Villas (WN3 and WN4) and Grand Bay Villa (WN5) were vacant with no resident and noise monitoring was temporarily suspended.

5.3.2 Weather Conditions and Other Factors

No adverse weather conditions, in particular adverse wind speed & wind direction and fog & rain that may significantly affect or invalidate the collected noise monitoring data, were recorded during the reporting period.

Neither unusual operation of the construction site nor abnormal noise source was observed during the reporting period.

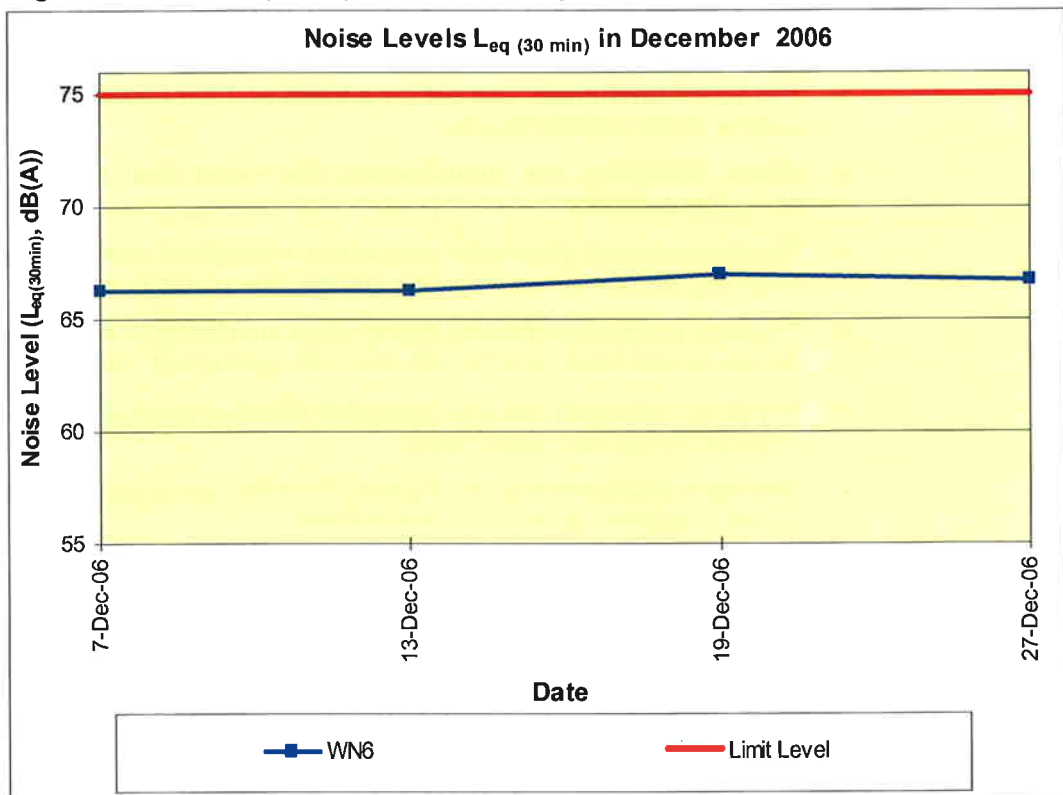
5.3.3 Summary of Results

A total of 4 sets of noise measurement were conducted between 0700-1900 hours on 07, 13, 19 and 27 December 2006 at Savoy Height, Hong Kong Garden (WN6).

The highest noise level of 67.0 dB(A) was recorded on 19 December 2006 while the lowest noise level of 66.3 dB(A) was recorded on 07 and 13 December 2006. There was no exceedance of A/L Levels during the reporting period.

Detailed construction noise monitoring results are attached in **Appendix I** and graphical presentation of the noise levels at WN6 is illustrated in **Figure 5-1**.

Figure 5-1: Graphical presentation of day-time noise levels in December 2006



6 Landscape and Visual Monitoring and Audit

Landscape and visual monitoring and audits were carried out on 08 and 21 December 2006 by a Registered Landscape Architect. The audit findings and recommendations are included in a detailed report in **Appendix J** and summarised in the following paragraphs.

6.1 Summary of Inspection – 08 December 2006

6.1.1 Matters Arising from Previous Inspections

- The Contractor had cleared away the construction waste pile at Slope 'A' access road area.
- The Contractor had pruned the damaged tree branch of existing tree T200.
- Transplanting of existing tree T113 was outstanding. The Contractor was reminded to transplant the tree as soon as possible to prevent further damage to the tree.
- Dry surface condition was observed at many areas of the Site. The Contractor was reminded to carry out more watering of the surface to prevent dust nuisance.

6.1.2 Site Clearance and Formation Works

- Site formation works were in progress at the proposed new Slopes A and B areas.

6.1.3 Tree Felling and Transplanting Works

- No tree transplanting was observed during the reported period.

6.1.4 Recommendations

- The Contractor was reminded to clear away all construction waste, scattered litter, garbage, etc as found on site, and to keep the site in a tidy condition at all times.
- The Contractor was reminded to provide better tree protection to existing trees to be transplanted or retained.
- The Contractor was recommended to carry out watering of the site to prevent dust nuisance during dry periods.

6.2 Summary of Inspection – 21 December 2006

6.2.1 Matters Arising from Previous Inspections

- Transplanting of existing tree T113 was still outstanding. More rocks were observed pile at the base of the tree. The Contractor was reminded to transplant the tree as soon as possible to prevent further damage to the tree.
- Dry surface condition was still observed at many areas of the Site. The Contractor was reminded to carry out more watering of the surface to prevent dust nuisance.

6.2.2 Site Clearance and Formation Works

- Site formation works were in progress at the proposed new Slopes A and B areas.
- It was observed that the existing tree was used as a temporary support for construction barriers, which had damaged the existing tree bark. The Contractor was requested to remove the construction barrier away from the existing tree and to properly protect all existing trees to be retained on site.
- Construction waste pile was observed at Seawall 'B' area. The Contractor was requested to clear it away as soon as possible.
- Construction waste and empty cement bags pile was observed at the access road area. The Contractor was requested to clear it away as soon as possible.

6.2.3 Tree Felling and Transplanting Works

- No tree transplanting was observed during the reported period.

6.2.4 Recommendations

- The Contractor was reminded to clear away all construction waste, scattered litter, garbage, etc as found on site, and to keep the site in a tidy condition at all times.
- The Contractor was reminded to provide better tree protection to existing trees to be transplanted or retained on site. Also, the Contractor was reminded to carry out proper tree root preparation works for the transplant trees.
- The Contractor was recommended to carry out watering of the site to prevent dust nuisance during dry periods.

6.3 Audit Schedule

6.3.1 Audit Schedule for January 2007

- The next audits will be conducted on 06 and 18 January 2007.

7 Site Inspection, Waste Disposal, Environmental Complaints, Environmental Licenses and Non-compliance Records

7.1 Site Audit Findings

Four weekly environmental site audits were carried out on 07, 15, 21 and 28 December 2006. The findings of the site audits are summarised in **Table 6-1**.

Table 7-1: Findings of weekly environmental site audit in December 2006

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
07 December 2006 (WTLT 046)	1. Stagnant water was observed in a dripray.	CT was reminded to clear the stagnant water.	Agreed with the ET's advice.	15 December 2006
	2. Stockpile was observed near site office.	CT was reminded to cover the stockpile.	Agreed with the ET's advice.	15 December 2006
	3. Fill material transferring from slope A to seawall B was not covered on trucks.	CT was reminded to cover all fill material during transportation.	Agreed with the ET's advice.	15 December 2006
15 December 2006 (WTLT 047)	1. Exposed slopes were observed without cover.	CT was reminded to cover the exposed slopes.	Agreed with the ET's advice.	21 December 2006
	2. Mud trails were observed along Castle Peak Road near Seawall A.	CT was reminded to clear the mud trails.	Agreed with the ET's advice.	21 December 2006
	3. Silt was accumulated in part of u-channel connected to the de-silting facility near to Maeda's site office.	CT was reminded to clear the silt regularly.	Agreed with the ET's advice.	28 December 2006
	4. Wheel-wash water cannot be diverted to collection pit.	CT was reminded to provide a cut-off drain to divert the wash water to the collection pit.	Agreed with the ET's advice.	21 December 2006
21 December 2006 (WTLT 048)	1. Construction waste and construction material were left next to the trees near site office.	CT was reminded to remove the construction waste and material from the trees.	Agreed with the ET's advice.	04 January 2007
	2. An oil drum was observed without dripray at bored piling site.	CT was reminded to provide dripray to the oil drum.	Agreed with the ET's advice.	28 December 2006
	3. Haul road and unpaved area were observed dry.	CT was reminded to provide water spraying frequently.	Agreed with the ET's advice.	28 December 2006

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
28 December 2006 (WTLT 049)	1. Unpaved area was observed dry at seawall A.	CT was to spray water frequently.	Agreed with the ET's advice.	04 January 2007
	2. Wheel washing was not provided for vehicles at seawall A.	CT was reminded to clean every vehicle before leaving the site.	Agreed with the ET's advice.	04 January 2007
	3. Discarded tyres were observed at slope A site (opposite to Grandbay Villa).	Contractor was reminded to remove the tyres from site.	Agreed with the ET's advice.	04 January 2007

7.2 Waste Disposal

Disposal of waste material during the reporting period generally complied with the corresponding waste disposal requirements. The waste disposal quantity during the reporting period is summarised in **Table 7-2**.

Table 7-2: Waste disposal quantity in December 2006

Type of waste or material	Disposal at	No. of loads or quantities
C&D waste	WENT Landfill	27.63 tonnes
C&D material	By truck Public Filling Reception Facility in Tuen Mun Area 38	260.48 tonnes
Chemical waste	Collected by licensed collector	0

7.3 Complaint Record

There was no environmental complaint received in December 2006.

7.4 Exceedance

There was no exceedance for environmental monitoring parameters recorded in December 2006.

7.5 Notification of Summons and Successful Prosecution

No notification of summon and prosecution was received during the reporting month.

7.6 Environmental Licenses

No new environmental licence was granted during reporting period. A summary of the valid environmental licences is given in **Table 7-4**.

Table 7-4: Summary of valid environmental licences in December 2006

Type of Licence	Reference No.	Valid from	Valid to
Environmental Permit	EP-219/2005	20 Jun 2005	Not applicable
Registration of Chemical Waste Producer	5111-336-C2869-49	16 Feb 2006	Not applicable
Water Discharge Licence	EP760/336/011348 I	31 Mar 2006	31 Mar 2011
Construction Noise Permit	GW-RW0326-06	9 Jun 2006	8 Dec 2006
Construction Noise Permit	GW-RW0349-06	23 Jun 2006	22 Dec 2006
Construction Noise Permit	GW-RW 0654-06	14 Nov 2006	15 Mar 2007

8 Conclusion

The EM&A programme has been conducted during the reporting period, including air quality, noise, landscape and visual monitoring and environmental site audit. Air quality and noise monitoring at Bayside Villas and air quality monitoring at Grand Bay Villa were temporarily suspended as these premises were vacant with no residents.

Exceedance of Action / Limit Level was not recorded for air and noise monitoring during the reporting period.

No complaint, summons or prosecution related to environmental issues was received during the reporting period.

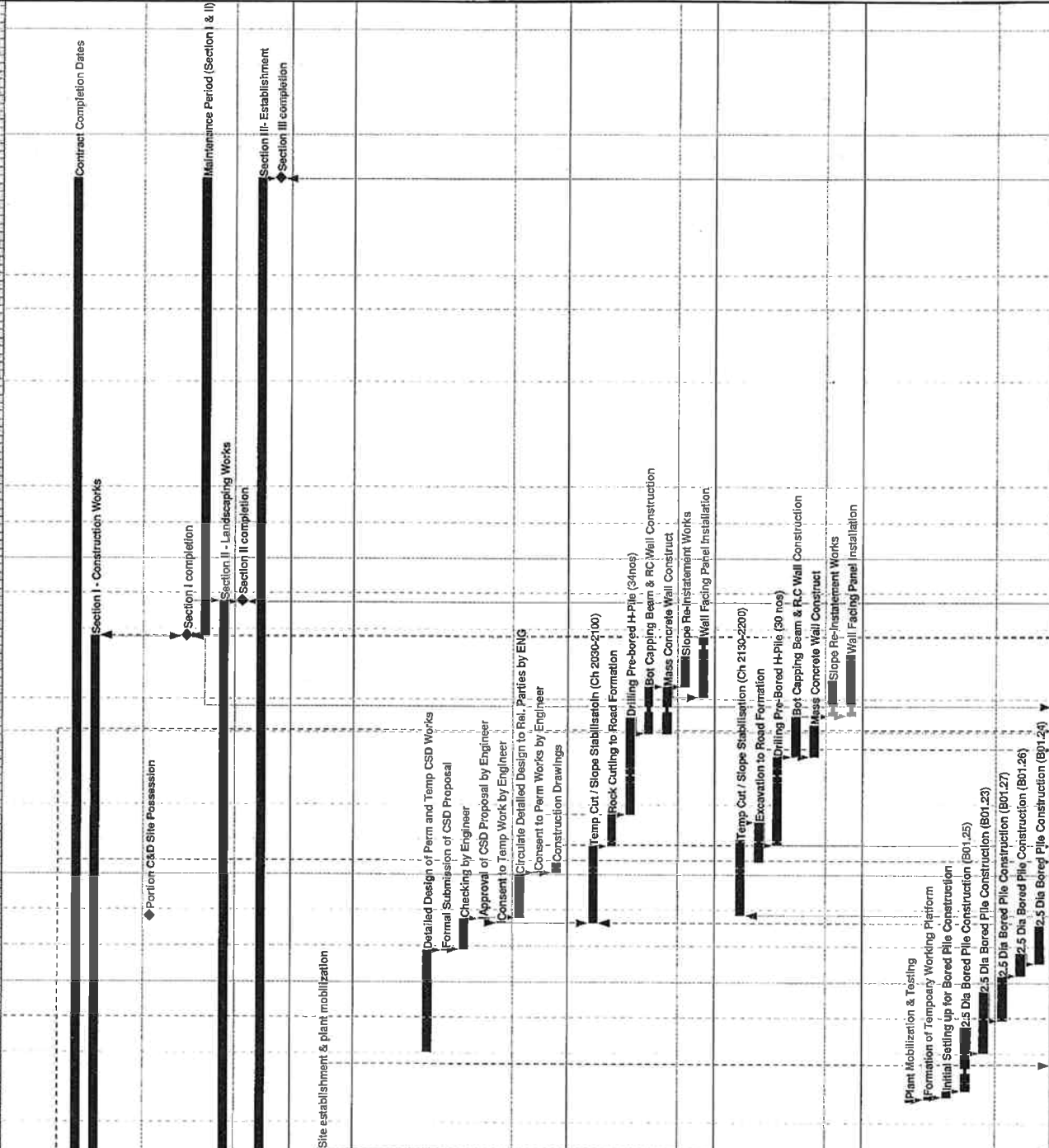
Weekly environmental site audit was carried out during the reporting period. The major environmental concerns were related to air quality, water quality, waste management and chemical waste handling.

Biweekly landscape and visual monitoring and audit was conducted during the reporting period. The CT was reminded to keep the site in a tidy condition, provide better tree protection to existing trees to be transplanted or retained, and carry out watering of the site during dry periods.

9 References

- [1] Mouchel Halcrow Joint Venture. January 2006. Supplementary Agreement No.1 – Remaining Project EM&A Manual for Construction of Reclamation West of Tsing Lung Tau.
- [2] Ove Arup & Partners Hong Kong Limited. April 2006. Contract No.HY2005/06 Castle Peak Road Improvement – West of Tsing Lung Tau. Environmental Baseline Monitoring Report for Construction Works other than Reclamation (First Issue)

Appendix A
**Construction
programme**



Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
KD0800	Commencement of Works	0 21/12/05		
KD1000	Contract Completion Dates	885 21/12/05	23/05/08	
KD1100	Section I - Construction Works	490 21/12/05	24/04/07	
KD1110	Portion A Site Possession	0 21/12/05		
KD1120	Portion B Site Possession	0 21/12/05		
KD1130	Portion C&D Site Possession	0 27/09/06*		
KD1140	Portion E Site Possession	0 21/12/05		
KD1200	Section I completion		24/04/07	
KD1300	Maintenance Period (Section I & II)	395 25/04/07	23/05/08	
KD1400	Section II - Landscaping Works	520 21/12/05	24/05/07	
KD1500	Section II completion		24/05/07	
KD1600	Section III - Establishment	885 21/12/05	23/05/08	
KD1700	Section III completion		23/05/08	

PRELIMINARIES

P1000 Site establishment & plant mobilization 40 21/12/05 05/02/06
 P1010 Submit TTM Schematic Drawing (FS1.15S(16)) 0 20/12/05

Area 4 Construction (Ch2+030 to Ch2+150)

Pre-Bored H-Pile Wall at Both Ends at GL

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
4PP0100	Detailed Design of Perm and Temp CSD Works	72 02/05/06*	27/07/06	
4PP0110	Formal Submission of CSD Proposal	1 28/07/06	28/07/06	
4PP0120	Checking by Engineer	23 29/07/06	24/08/06	
4PP0130	Approval of CSD Proposal by Engineer	1 25/08/06	25/08/06	
4PP0135	Consent to Temp Work by Engineer	1 21/08/06	21/08/06	
4PP0150	Circulate Detailed Design to Rel. Parties by ENG	31 26/08/06	30/09/06	
4PP0155	Consent to Perm Works by Engineer	1 03/10/06	03/10/06	
4PP0160	Construction Drawings	7 03/10/06	11/10/06	

Construction - West Side

A04PP1022	Temp Cut / Slope Stabilisation (Ch 2030-2100)	55 21/09/06	25/10/06	
A04PP1026	Rock Cutting to Road Formation	22 26/10/06	21/11/06	
4PP1030	Drilling Pre-bored H-Pile (34nos)	68 22/11/06	13/02/07	
4PP1040	Bot Capping Beam & RC Wall Construction	30 31/01/07	12/03/07	
4PP1050	Mass Concrete Wall Construct	30 31/01/07	12/03/07	
4PP1060	Slope Re-Instatement Works	22 13/03/07	07/04/07	
4PP1070	Wall Facing Panel Installation	40 03/03/07	23/04/07	

Construction - East Side

4PP2000	Temp Cut / Slope Stabilisation (Ch 2130-2200)	59 26/08/06	31/10/06	
4PP2020	Excavation to Road Formation	28 13/10/06	15/11/06	
4PP2030	Drilling Pre-Bored H-Pile (30 nos)	60 27/10/06	10/01/07	
4PP2040	Bot Capping Beam & RC Wall Construction	30 11/01/07	14/02/07	
4PP2100	Mass Concrete Wall Construct	24 11/01/07	07/02/07	
4PP2110	Slope Re-Instatement Works	22 15/02/07	17/03/07	
4PP2120	Wall Facing Panel Installation	40 15/02/07	09/04/07	

Bored Pile Retaining Wall Construction

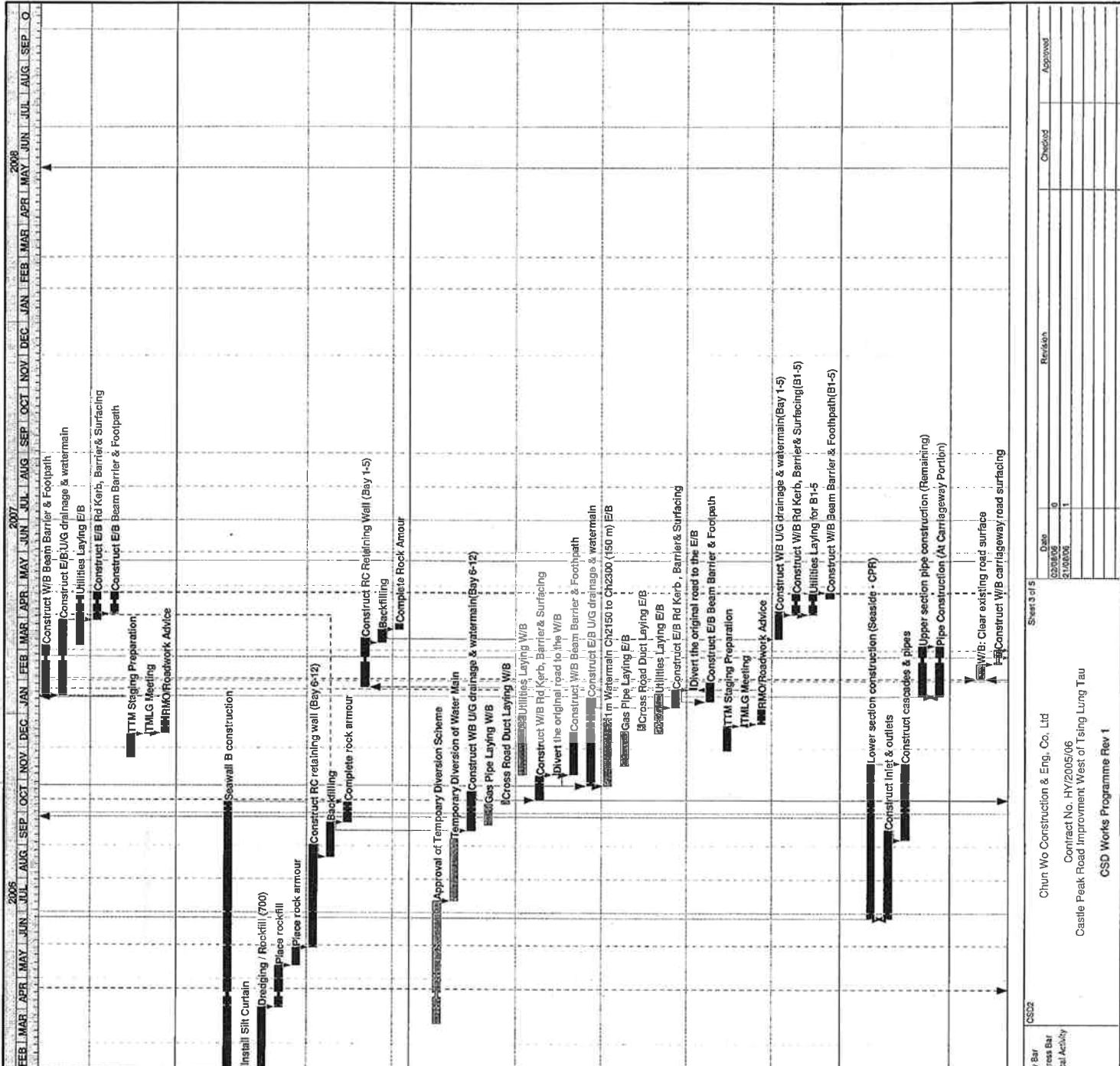
4BP3000	Plant Mobilization & Testing	2 20/03/06*	21/03/06	
4BP3010	Formation of Temporary Working Platform	3 22/03/06	24/03/06	
4BP3020	Initial Setting up for Bored Pile Construction	5 24/03/06	29/03/06	
4BP3030	2.5 Dia Bored Pile Construction (B01.25)	41 30/03/06	23/05/06	
4BP3040	2.5 Dia Bored Pile Construction (B01.23)	43 02/05/06	22/06/06	
4BP3050	2.5 Dia Bored Pile Construction (B01.27)	31 30/05/06	06/07/06	
4BP3060	2.5 Dia Bored Pile Construction (B01.28)	15 06/07/06	25/07/06	
4BP3070	2.5 Dia Bored Pile Construction (B01.24)	28 18/07/06	18/09/06	

Start Date: 21/12/05
 Finish Date: 23/05/08
 Data Date: 21/12/05
 Run Date: 22/09/06 15:00

Sheet 1 of 5

Chun Wo Construction & Eng. Co. Ltd
 Contract No. HY/2005/06
 Castle Peak Road Improvement West of Tsing Lung Tau
 CSD Works Programme Rev 1

Date	Revision	Checked	Approved
02/08/06	0		
21/06/06	1		



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
3RW2505	Construct WB Beam Barrier & Footpath	35	18/01/07	05/03/07
3RW2600	Construct E/B U/G drainage & watermain	56	18/01/07	29/03/07
A03RW4500	Utilities Laying E/B	38'	06/03/07	20/04/07
3RW2605	Construct E/B Rd Kerb, Barrier & Surfacing	18	30/03/07	24/04/07
3RW2608	Construct E/B Beam Barrier & Footpath	14	04/04/07	24/04/07
3RW2610	TTM Staging Preparation	19	21/11/06	12/12/06
3RW2620	TTM/G Meeting	1	13/12/06	13/12/06
3RW2630	RMO/Roadwork Advice	10	14/12/06	28/12/06
Area 5 Construction (Ch2+150 to Ch2+300)				
2SWB0500	Seawall B construction	204'	04/02/06	11/10/06
A02SWB100	Install Silt Curtain	3	04/02/06	07/02/06
2SWB1100	Dredging / Rockfill (700)	50	04/02/06	03/04/06
2SWB1100	Place rockfill	28	04/04/06	12/05/06
2SWB1200	Place rock armour	14	13/05/06	29/05/06
2SWB1300	Construct RC retaining wall (Bay 6-12)	80	30/05/06	01/09/06
2SWB1400	Backfilling	28	22/08/06	22/09/06
2SWB1500	Complete rock armour	14	23/09/06	11/10/06
A02SWB0500	Construct RC Retaining Wall (Bay 1-5)	35	26/01/07	13/03/07
A02SWB1000	Backfilling	10	09/03/07	20/03/07
A02SWB1100	Complete Rock Armour	5	21/03/07	26/03/07
Roadworks Construction				
A02RW0100	Approval of Temporary Diversion Scheme	90	20/03/06'	11/07/06
A02RW0500	Temporary Diversion of Water Main	50	12/07/06	07/09/06
2RW3000	Construct WB U/G drainage & watermain (Bay 6-12)	30	15/09/06	21/10/06
A02RW1900	Gas Pipe Laying W/B	14	21/09/06	09/10/06
A02RW1800	Cross Road Duct Laying W/B	4'	10/10/06	13/10/06
A02RW1600	Utilities Laying W/B	45'	08/11/06	30/12/06
2RW3010	Construct WB Rd Kerb, Barrier & Surfacing	18	14/10/06	04/11/06
2RW3510	Divert the original road to the W/B	1	06/11/06	06/11/06
2RW3510	Construct WB Beam Barrier & Footpath	35	08/11/06	15/12/06
2RW3600	Construct E/B U/G drainage & watermain	65	27/10/06	16/01/07
A01U26000	1m Watermain Ch2150 to Ch2300 (150 m) E/B	50	27/10/06	28/12/06
A02RW2100	Gas Pipe Laying E/B	28	15/11/06	16/12/06
A02RW2000	Cross Road Duct Laying E/B	4'	18/12/06	22/12/06
A02RW1700	Utilities Laying E/B	28'	15/12/06	20/01/07
2RW3610	Construct E/B Rd Kerb, Barrier & Surfacing	15	08/01/07	24/01/07
2RW3500	Divert the original road to the E/B	1	25/01/07	25/01/07
2RW3620	Construct E/B Beam Barrier & Footpath	15	13/01/07	30/01/07
2RW3700	TTM Staging Preparation	19	29/11/06	21/12/06
2RW3710	TTM/G Meeting	1	12/12/06	22/12/06
2RW3720	RMO/Roadwork Advice	10	23/12/06	06/01/07
A02RW1100	Construct WB U/G drainage & watermain (Bay 1-5)	22	19/03/07	07/04/07
A02RW1300	Construct WB Rd Kerb, Barrier & Surfacing (B1-5)	13	04/04/07	23/04/07
A02RW1200	Utilities Laying for B1-5	13	04/04/07	23/04/07
A02RW1400	Construct WB Beam Barrier & Footpath (B1-5)	5	19/04/07	24/04/07
OUTFALL EA & EB CONSTRUCTION				
3OF1000	Lower section construction (Seaside - CPR)	120'	26/06/06	16/11/06
3OF1100	Construct inlet & outlets	70	26/06/06	15/09/06
3OF1200	Construct cascades & pipes	58	07/09/06	16/11/06
3OF2000	Upper section pipe construction (Remaining)	35'	18/07/07	05/03/07
3OF2100	Pipe Construction (At Carriageway Portion)	35'	18/07/07	05/03/07
Area 1 Construction (Ch1+600 to Ch1+705)				
5RW0500	WB: Clear existing road surface	12'	03/02/07	16/02/07
5RW1500	Construct WB carriageway road surfacing	6'	17/02/07	01/03/07

Start Date: 21/12/05
 Finish Date: 23/05/08
 Data Date: 21/12/05
 Run Date: 22/02/05 15:00

CS02

Early Bar
 Progress Bar
 Critical Activity

Chun Wo Construction & Eng. Co., Ltd
 Contract No. HY/2005/06
 Castle Peak Road Improvement West of Tsing Lung Tau
 CSD Works Programme Rev 1

Sheet 3 of 5

Date: 03/08/06
 Drawn: 0
 Checked: 1
 Revision: 1
 Approved:

Appendix B

**Monitoring schedule for
December 2006 and
January 2007**

Tentative Environmental Monitoring and Audit Schedule - January 2007

- Note 1: L30 denotes $L_{eq(30\ min)}$ monitoring
- Note 2: TSP denotes Total Suspended Particulate monitoring
- Note 3: MV denotes marine water monitoring
- Note 4: L&V denotes Landscape and Visual audit and monitoring

Jan-2007						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 L30 3 x 1-hour TSP	3	4 Site Inspection 24-hour TSP	5 L30	6 L&V
7	8	9	10	11 Site Inspection 24-hour TSP	12 L30 3 x 1-hour TSP	13
14	15	16	17 24-hour TSP	18 L&V L30 3 x 1-hour TSP	19 Site Inspection	20
21	22	23	24 24-hour TSP	25 Site Inspection L30 3 x 1-hour TSP	26	27
28	29	30 24-hour TSP	31 L30 3 x 1-hour TSP			

Environmental Monitoring and Audit Schedule - December 2006

- Note 1: L30 denotes $L_{eq(30\text{ min})}$ monitoring
- Note 2: TSP denotes Total Suspended Particulate monitoring
- Note 3: MV denotes marine water monitoring
- Note 4: L&V denotes Landscape and Visual audit and monitoring

Dec-2006						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 3 x 1-hour TSP	2
3	4	5	6 24-hour TSP	7 Site Inspection L30 3 x 1-hour TSP	8 L&V	9
10	11	12 24-hour TSP	13 L30 3 x 1-hour TSP	14	15 Site Inspection	16
17	18 24-hour TSP	19 L30 3 x 1-hour TSP	20	21 Site Inspection L&V	22	23 24-hour TSP
24	25	26	27 L30 3 x 1-hour TSP	28 Site Inspection	29 24-hour TSP	30
31						

Appendix C

**Calibration certificates
of 24-hour TSP
monitoring equipment**



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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 01, 2006 Roots-meter S/N 9833620 Ta (K) - 292
 Operator Tisch Orifice I.D. - 1201 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3650	3.2	2.00
2	NA	NA	1.00	0.9560	6.3	4.00
3	NA	NA	1.00	0.8580	7.8	5.00
4	NA	NA	1.00	0.8140	8.6	5.50
5	NA	NA	1.00	0.6730	12.5	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9985	0.7315	1.4162	0.9957	0.7294	0.8843
0.9943	1.0401	2.0028	0.9916	1.0372	1.2506
0.9922	1.1564	2.2392	0.9894	1.1532	1.3983
0.9912	1.2177	2.3485	0.9884	1.2143	1.4665
0.9859	1.4650	2.8323	0.9832	1.4609	1.7687
Qstd slope (m) = 1.93144			Qa slope (m) = 1.20944		
intercept (b) = 0.00037			intercept (b) = 0.00023		
coefficient (r) = 0.99991			coefficient (r) = 0.99991		

y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$

y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$

CALCULATIONS

$V_{std} = \text{Diff. Vol} [(\text{Pa} - \text{Diff. Hg}) / 760] (298 / \text{Ta})$
 $Q_{std} = V_{std} / \text{Time}$

$V_a = \text{Diff Vol} [(\text{Pa} - \text{Diff Hg}) / \text{Pa}]$
 $Q_a = V_a / \text{Time}$

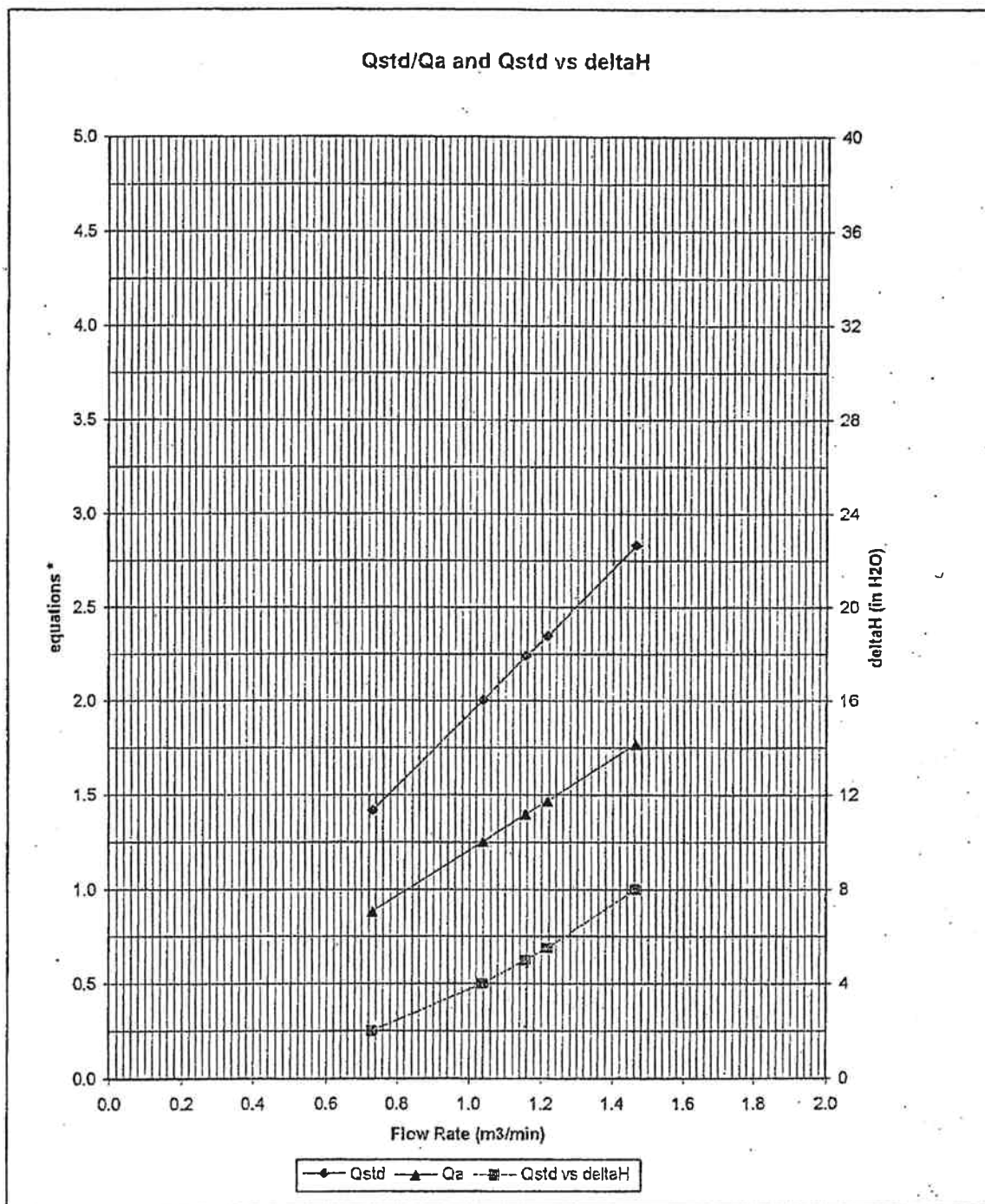
For subsequent flow rate calculations:

$Q_{std} = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))] - b \}$
 $Q_a = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))] - b \}$



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

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:

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

Qa series:

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

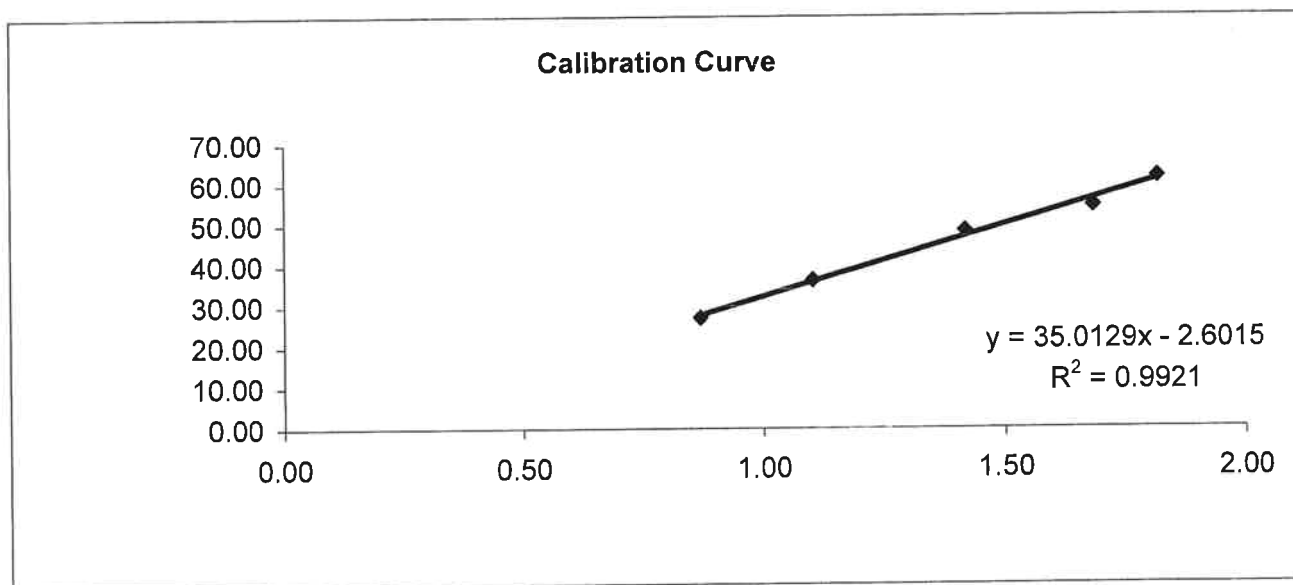
1201

Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	22-Dec-06	Barometric pressure	768 mm Hg
Calibration due date	20-Feb-07	Temperature (°C)	22 °C
Sampler location	WA3 - Hong Kong Garden (Savoy Heights)	Temperature (K)	295 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	1284	T _{std}	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1378		
Slope of the standard curve, m _s	2.00216		
Intercept of the standard curve, b _s	-0.02053		

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.90	27.00	0.87	27.28
7	4.70	36.00	1.10	36.37
10	7.80	48.00	1.42	48.50
13	11.00	54.00	1.68	54.56
18	12.80	61.00	1.82	61.63



Linear Regression

Sampler slope (m) : **35.0129**
 Sampler intercept (b) : **-2.6015**
 Correlation coefficient (R²) : **0.9921**

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: Lam

Date: 22-12-06

Checked by: Kuo

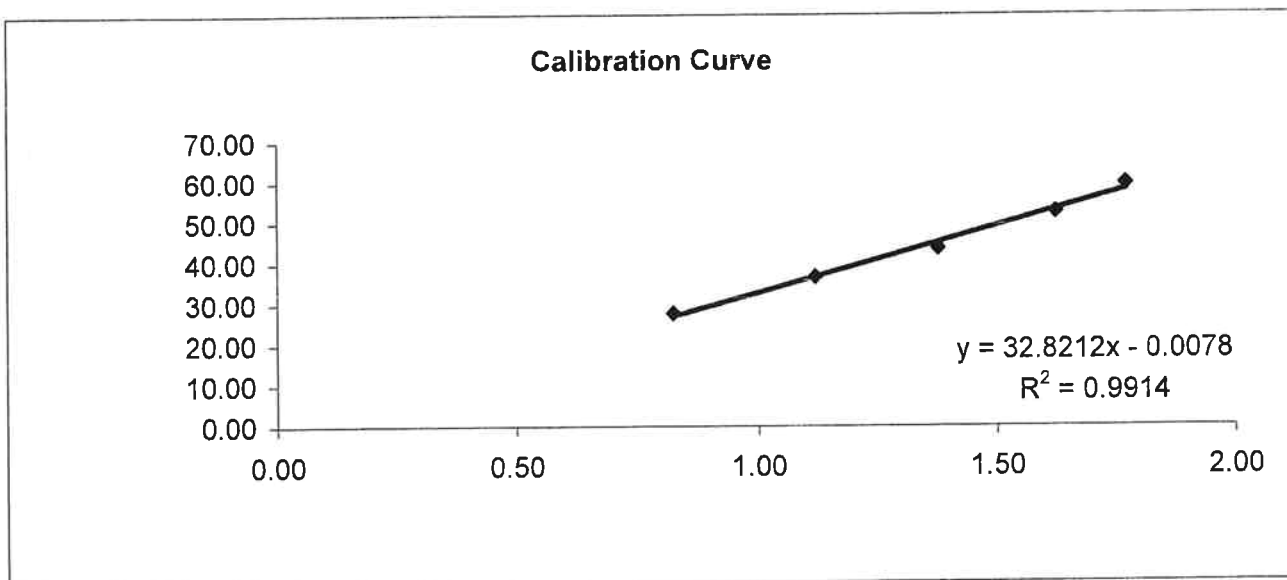
Date: 23-12-06

Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	23-Oct-06	Barometric pressure	762 mm Hg
Calibration due date	22-Dec-06	Temperature (°C)	30 °C
Sampler location	WA3 - Hong Kong Garden (Savoy Heights)	Temperature (K)	303 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	1284	T _{std}	298 K
Calibrator model		GMW-2535	
Calibrator serial number		1378	
Slope of the standard curve, m _s		2.00216	
Intercept of the standard curve, b _s		-0.02053	

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.70	28.00	0.83	27.80
7	5.00	37.00	1.12	36.74
10	7.60	44.00	1.38	43.69
13	10.60	53.00	1.63	52.63
18	12.60	60.00	1.77	59.58



Linear Regression

Sampler slope (m) : **32.8212**
 Sampler intercept (b) : **-0.0078**
 Correlation coefficient (R²) : **0.9914**

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: *Lan*

Date: *26-Nov-06*

Checked by: *Kei*

Date: *27-11-06*

Appendix D
**Calibration certificates
of 1-hour TSP
monitoring equipment**

THERMO ELECTRON

27 FORGE PARKWAY
FRANKLIN MA 02038
TOLL-FREE: 866-282-0430
TEL: 508-553-1211
FAX: 508-541-8366
WWW.THERMO.COM

MASTER # D325 LAST CALIBRATED : 3/14/06

PDR-1000 CALIBRATION

CERTIFICATE

This calibration is traceable to the National
Institute of Standards and Testing

SERIAL NUMBER: ----- 4492
CALIBRATION RATIO: ----- 0.999
AVG. PDR-1000 CONCENTRATION: ----- 2.01 mg/m3
CALIBRATION MASTER AVG. CONCENTRATION: ----- 1.74 mg/m3
DR BACKGROUND CONCENTRATION: ----- .240 mg/m3
TEMPERATURE: ----- 71.8F
HUMIDITY: ----- 24%

TECHNICIAN: -- DON MCELMAN

DATE: ---- 4/10/06

THERMO ELECTRON

27 FORGE PARKWAY

FRANKLIN MA 02038

TOLL-FREE: 866-282-0430

TEL: 508-553-1211

FAX: 508-541-8366

WWW.THERMO.COM

MASTER # D325 LAST CALIBRATED : 6/06/06

PDR-1000 CALIBRATION

CERTIFICATE

This calibration is traceable to the National
Institute of Standards and Testing

SERIAL NUMBER: ----- 4615

CALIBRATION RATIO: ----- 0.992

AVG. PDR-1000 CONCENTRATION: ----- 2.00 mg/m3

CALIBRATION MASTER AVG. CONCENTRATION: ----- 1.83 mg/m3

DR BACKGROUND CONCENTRATION: ----- .160 mg/m3

TEMPERATURE: ----- 71.5F

HUMIDITY: ----- 62%

TECHNICIAN: -- DON MCELMAN

DATE: ----- 6/22/06

THERMO ELECTRON

27 FORGE PARKWAY
FRANKLIN MA 02038
TOLL-FREE: 866-282-0430
TEL: 508-553-1211
FAX: 508-541-8366
WWW.THERMO.COM

MASTER # D325 LAST CALIBRATED : 3/14/06

PDR-1000 CALIBRATION

CERTIFICATE

This calibration is traceable to the National
Institute of Standards and Testing

SERIAL NUMBER: ----- 4705

CALIBRATION RATIO: ----- 1.011

AVG. PDR-1000 CONCENTRATION: ----- 1.93 mg/m³

CALIBRATION MASTER AVG. CONCENTRATION: ----- 1.68 mg/m³

DR BACKGROUND CONCENTRATION: ----- .211 mg/m³

TEMPERATURE: ----- 73.8F

HUMIDITY: ----- 24%

TECHNICIAN: -- DON MCELMAN

DATE: ---- 4/11/06

THERMO ELECTRON

27 FORGE PARKWAY

FRANKLIN MA 02038

TOLL-FREE: 866-282-0430

TEL: 508-553-1211

FAX: 508-541-8366

WWW.THERMO.COM

MASTER # D325 LAST CALIBRATED : 3/14/06

PDR-1000 CALIBRATION

CERTIFICATE

This calibration is traceable to the National
Institute of Standards and Testing

SERIAL NUMBER: ----- 4715

CALIBRATION RATIO: ----- 1.007

AVG. PDR-1000 CONCENTRATION: ----- 1.83 mg/m3

CALIBRATION MASTER AVG. CONCENTRATION: ----- 1.52 mg/m3

DR BACKGROUND CONCENTRATION: ----- .255 mg/m3

TEMPERATURE: ----- 71.8F

HUMIDITY: ----- 24%

TECHNICIAN: -- DON MCELMAN

DATE: ---- 4/10/06

Appendix E

Detailed air quality (1-hour TSP) monitoring results

Details of 1-Hour TSP Monitoring

Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (µg/m ³)	Remarks
			Start	Finish						
1-Dec-06	WA3	1	8:17	9:17	Fine	Normal Operation	23.0	764.0	193.8	
1-Dec-06	WA3	2	9:17	10:17	Fine	Normal Operation	23.0	764.0	193.7	
1-Dec-06	WA3	3	10:17	11:17	Fine	Normal Operation	23.0	764.0	199.8	
7-Dec-06	WA3	1	14:20	15:20	Fine	Normal Operation	27.0	764.0	189.4	
7-Dec-06	WA3	2	15:20	16:20	Fine	Normal Operation	27.0	764.0	184.1	
7-Dec-06	WA3	3	16:20	17:20	Fine	Normal Operation	27.0	764.0	209.5	
13-Dec-06	WA3	1	13:44	14:44	Rainy	Normal Operation	22.0	764.0	173.5	
13-Dec-06	WA3	2	14:44	15:44	Rainy	Normal Operation	22.0	764.0	172.5	
13-Dec-06	WA3	3	15:44	16:44	Rainy	Normal Operation	22.0	764.0	175.6	
19-Dec-06	WA3	1	13:04	14:04	Fine	Normal Operation	21.0	770.0	170.9	
19-Dec-06	WA3	2	14:04	15:04	Fine	Normal Operation	21.0	770.0	170.5	
19-Dec-06	WA3	3	15:04	16:04	Fine	Normal Operation	21.0	770.0	170.0	
27-Dec-06	WA3	1	8:16	9:16	Fine	Normal Operation	22.0	765.0	203.2	
27-Dec-06	WA3	2	9:16	10:16	Fine	Normal Operation	22.0	765.0	203.4	
27-Dec-06	WA3	3	10:16	11:16	Fine	Normal Operation	22.0	765.0	204.7	



Appendix F

Detailed air quality (24-hour TSP) monitoring results



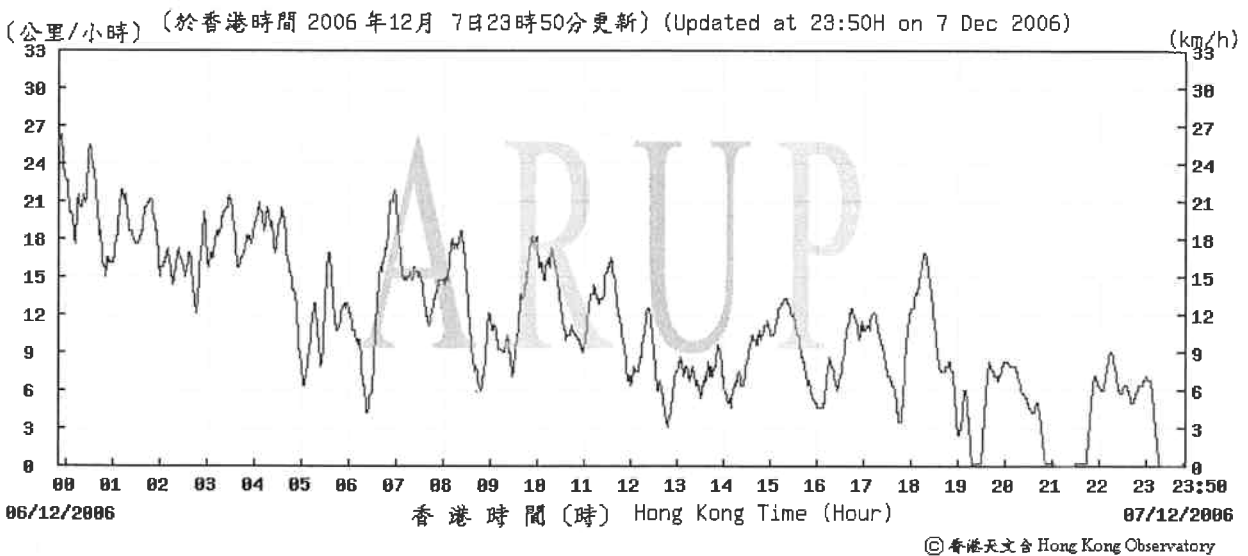
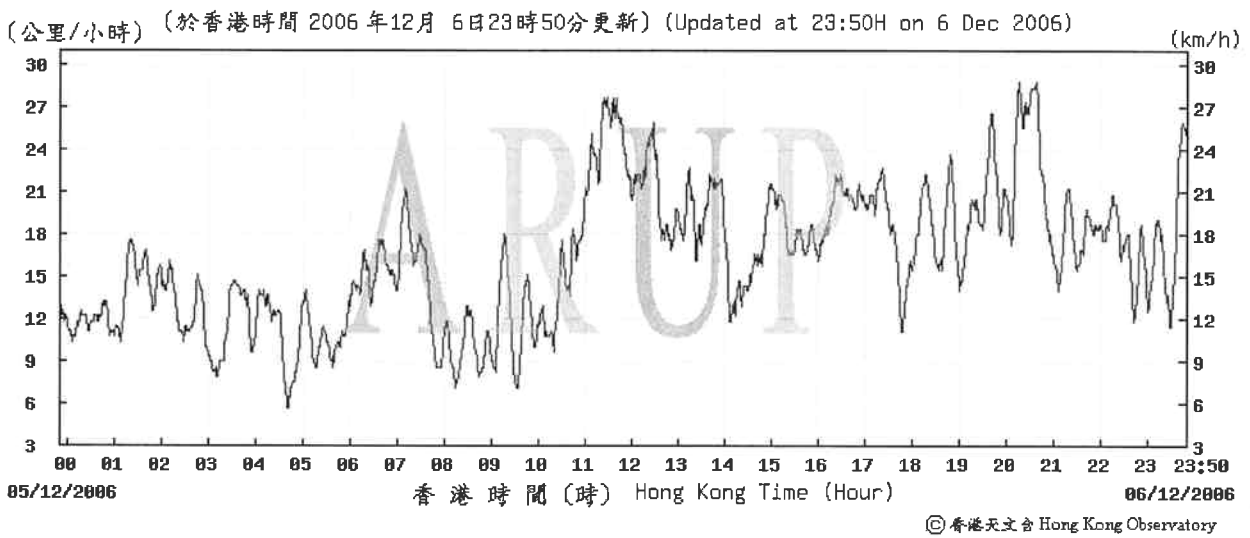
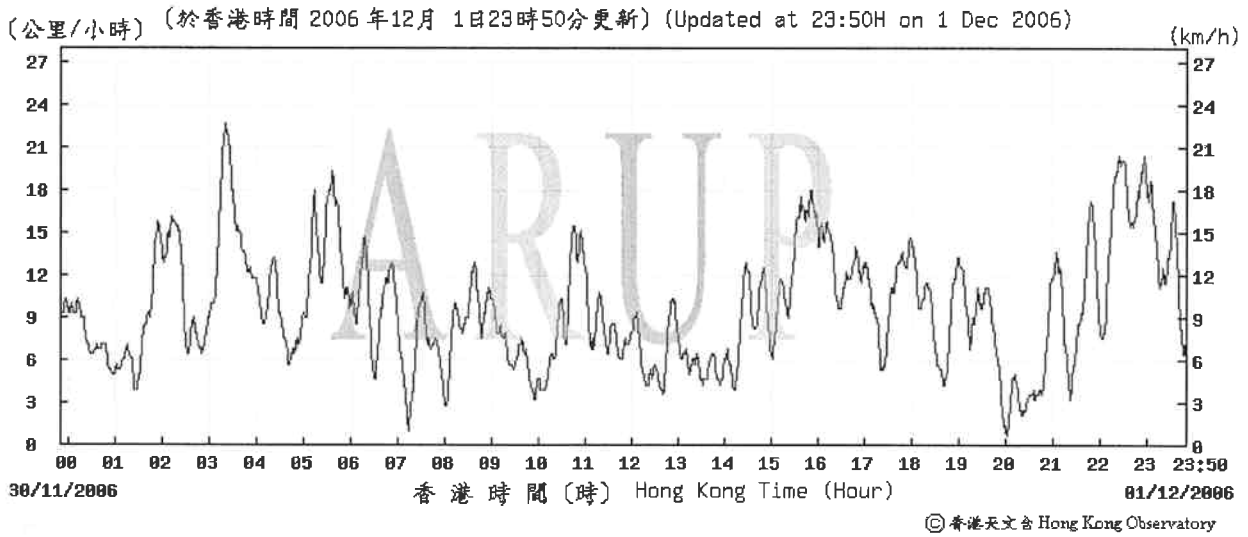
Details of 24-Hour TSP Monitoring

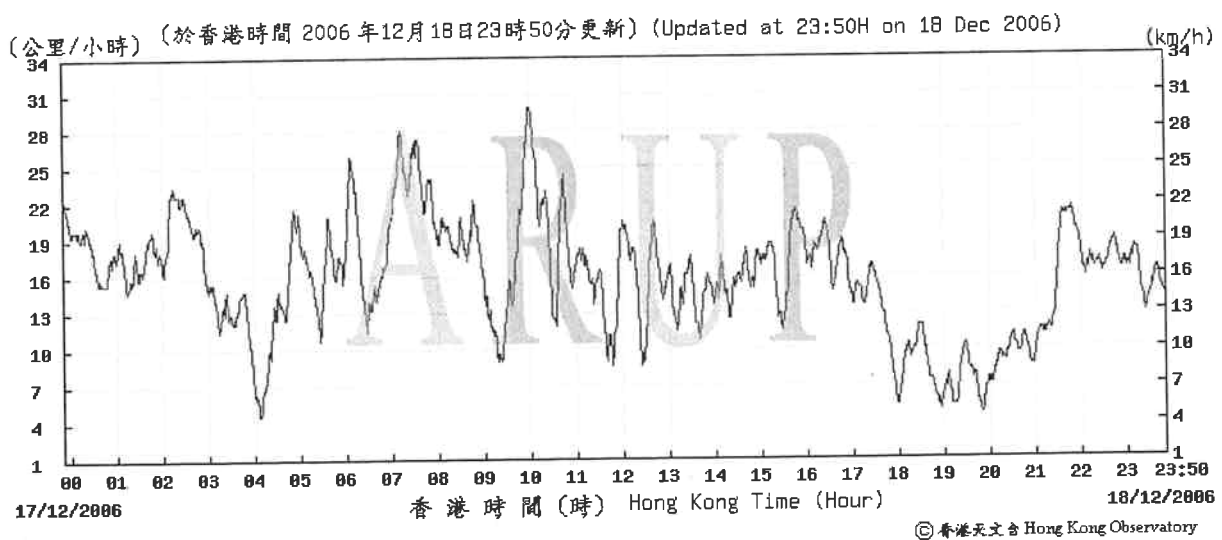
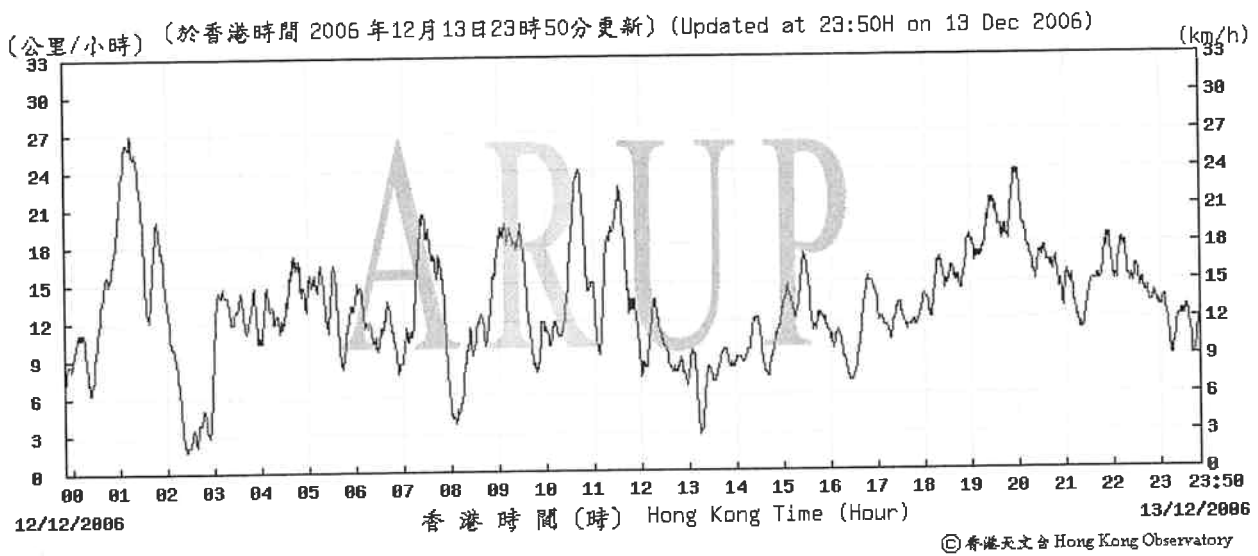
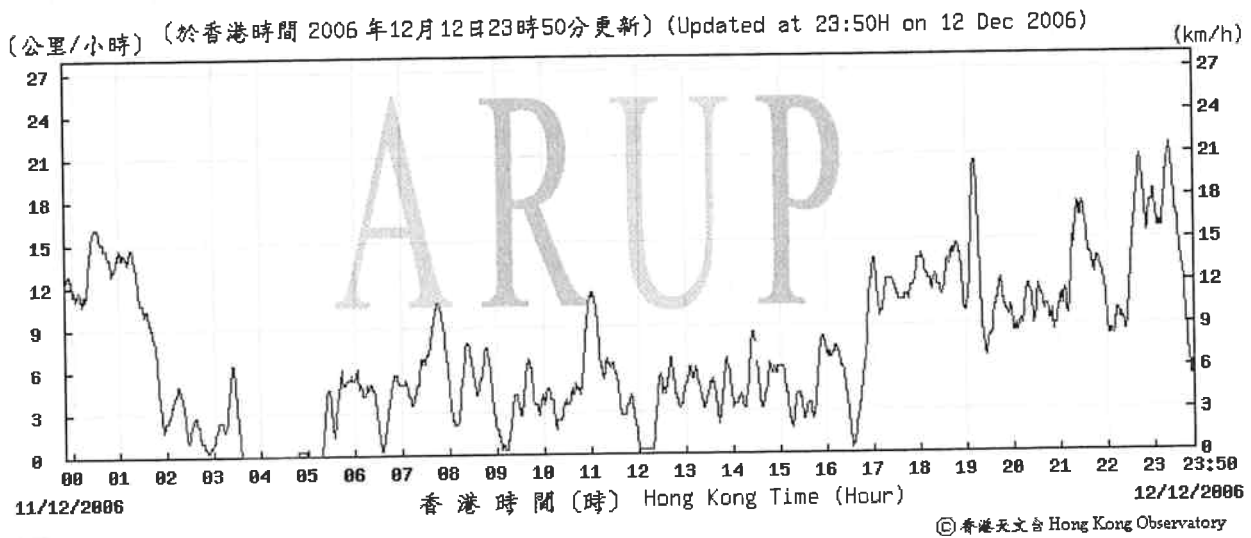
Date	Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)	Remarks
				Initial	Final		Initial	Final		Start	Finish				
6-Dec-06	WA3	Fine	Normal Operation	2.8631	2.8668	0.1037	1.2342	1.2305	1.2324	9102.05	9126.05	1440.00	1774.58	58.4	
12-Dec-06	WA3	Fine	Normal Operation	2.8857	3.0923	0.2066	1.1094	1.1363	1.1229	9126.05	9150.05	1440.00	1616.90	127.8	
18-Dec-06	WA3	Fine	Normal Operation	2.8856	3.0165	0.1309	1.2503	1.3105	1.2804	9150.05	9174.05	1440.00	1843.78	71.0	
23-Dec-06	WA3	Fine	Normal Operation	2.8770	3.0187	0.1417	1.2397	1.2362	1.2380	9174.05	9198.05	1440.00	1782.65	79.5	
29-Dec-06	WA3	Fine	Normal Operation	2.8642	3.0351	0.1709	1.2987	1.4177	1.3582	9198.05	9222.05	1440.00	1955.81	87.4	

Appendix G

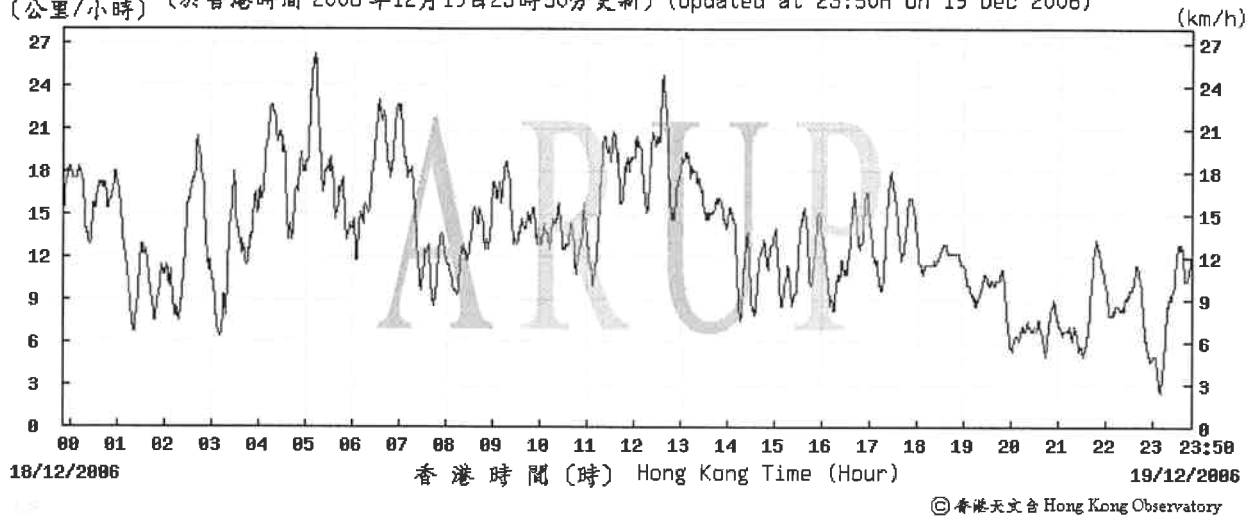
**Detailed wind
monitoring data for the
air quality monitoring
period**

Wind Monitoring Data – Wind Speed during air quality monitoring in December 2006

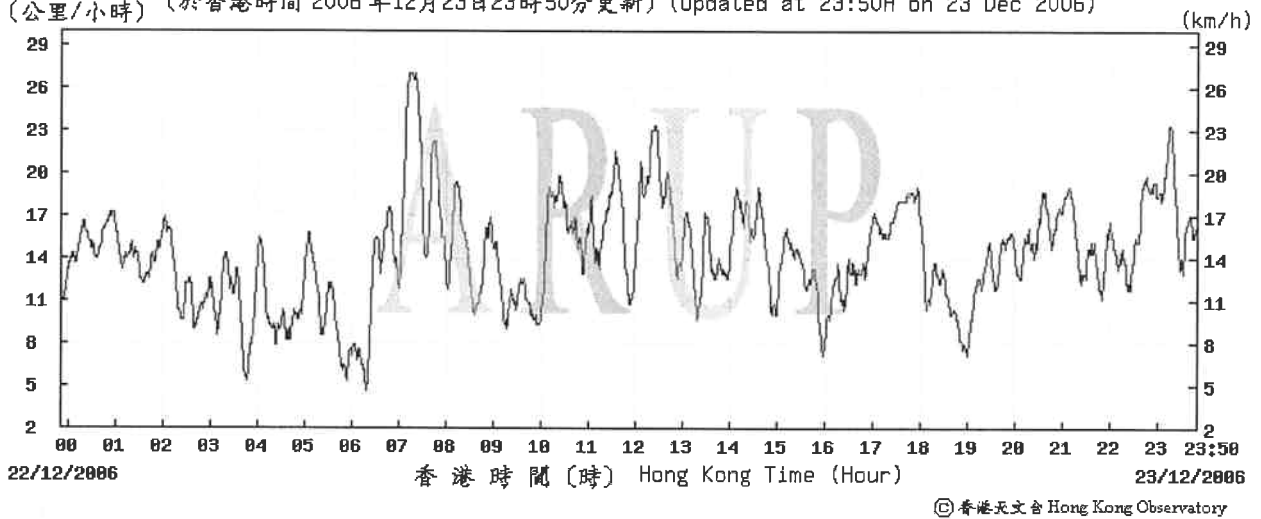




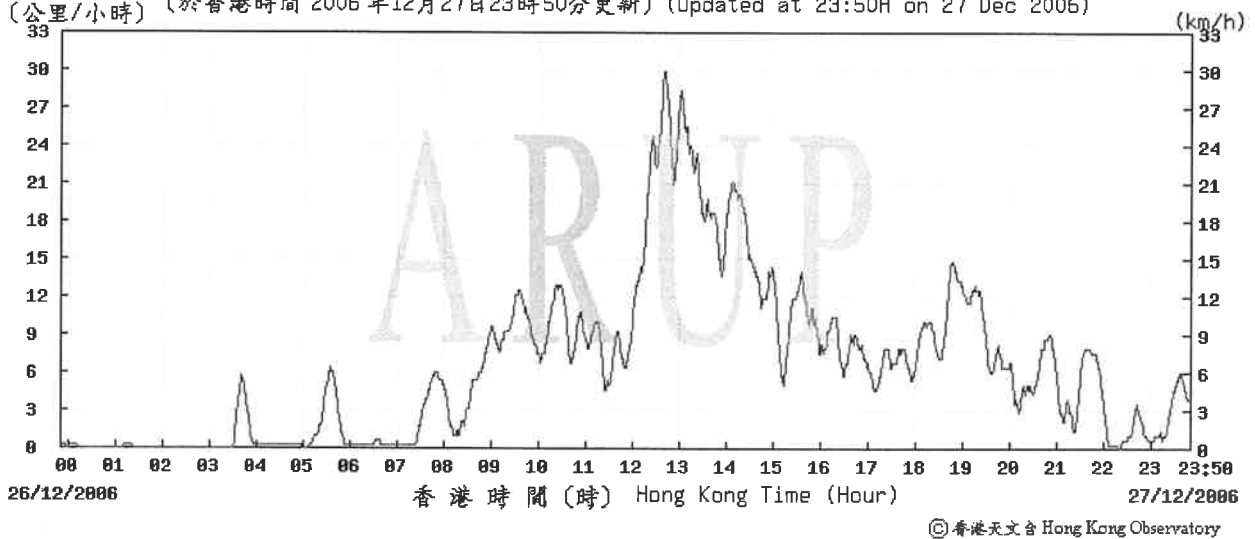
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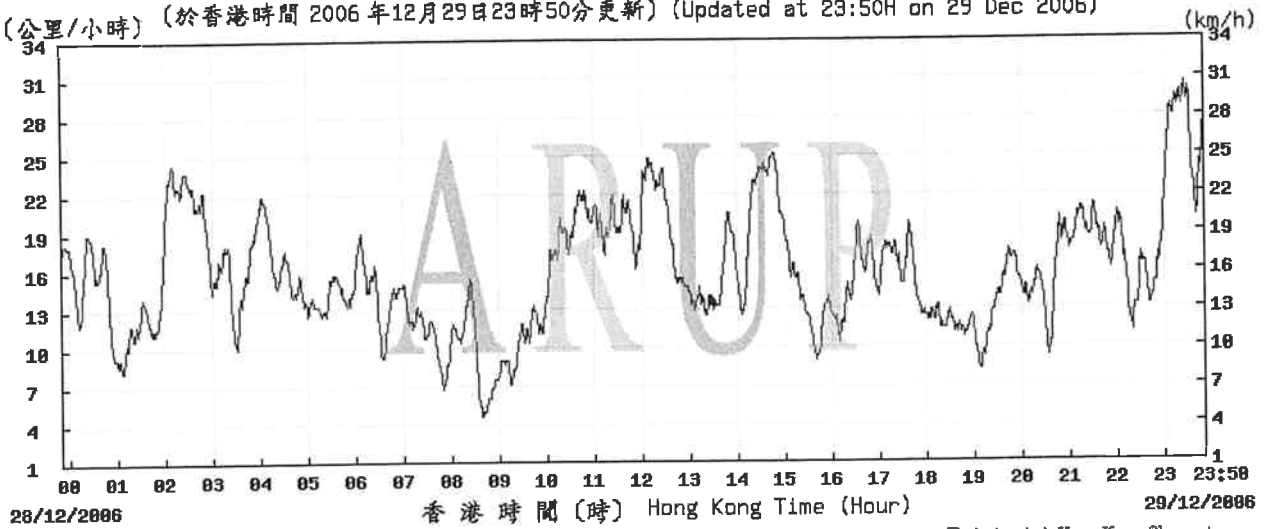
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(公里/小時) (於香港時間 2006 年12月27日23時50分更新) (Updated at 23:50H on 27 Dec 2006)

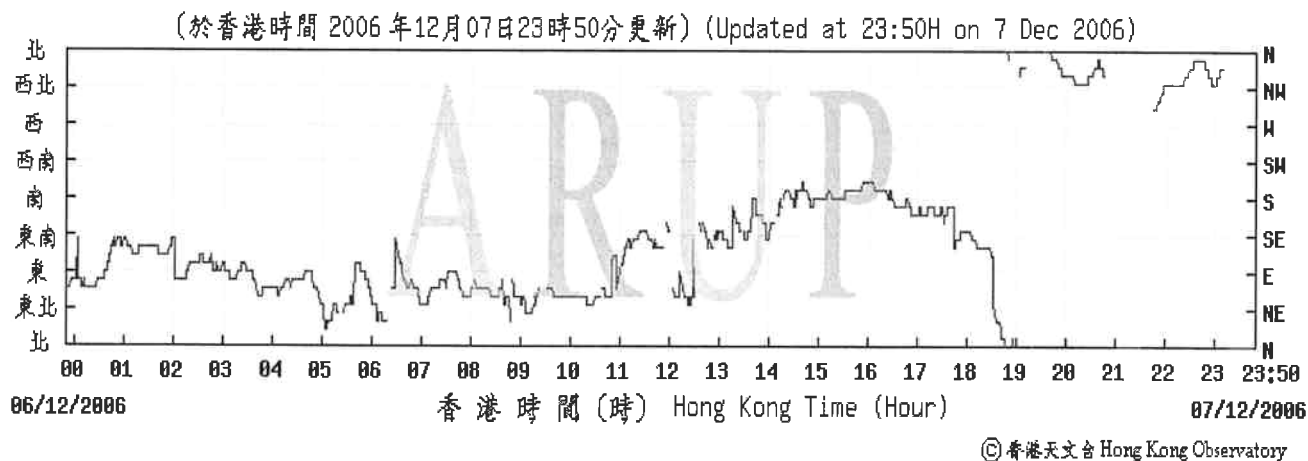
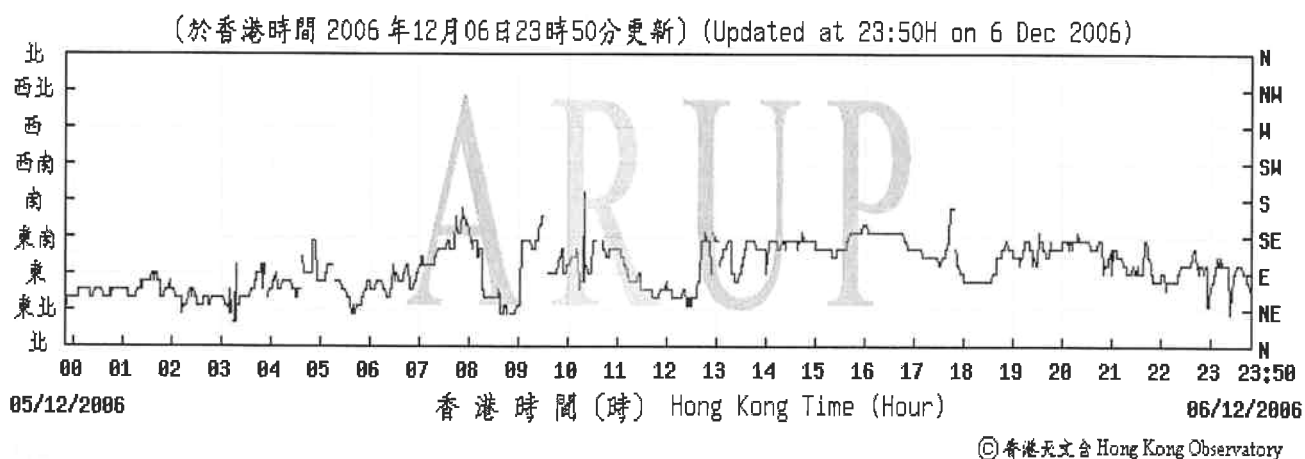
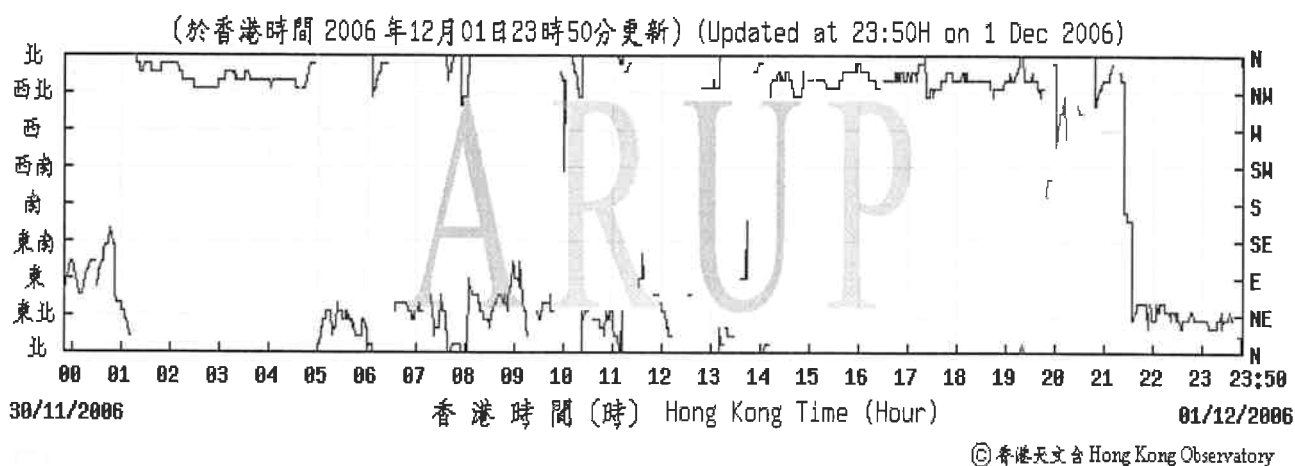


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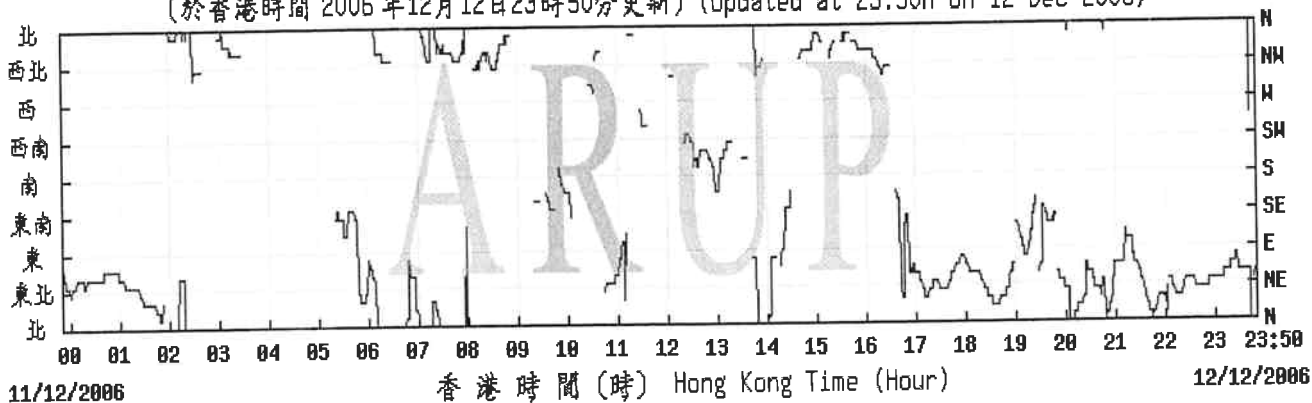


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Wind Monitoring Data – Wind direction during air quality monitoring in December 2006



(於香港時間 2006 年 12 月 12 日 23 時 50 分更新) (Updated at 23:50H on 12 Dec 2006)



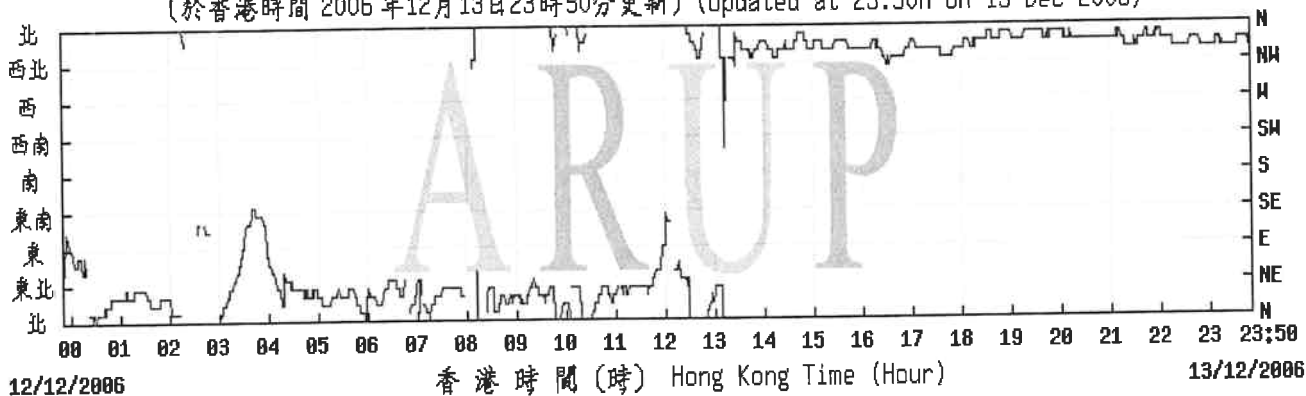
11/12/2006

香港時間 (時) Hong Kong Time (Hour)

12/12/2006

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(於香港時間 2006 年 12 月 13 日 23 時 50 分更新) (Updated at 23:50H on 13 Dec 2006)



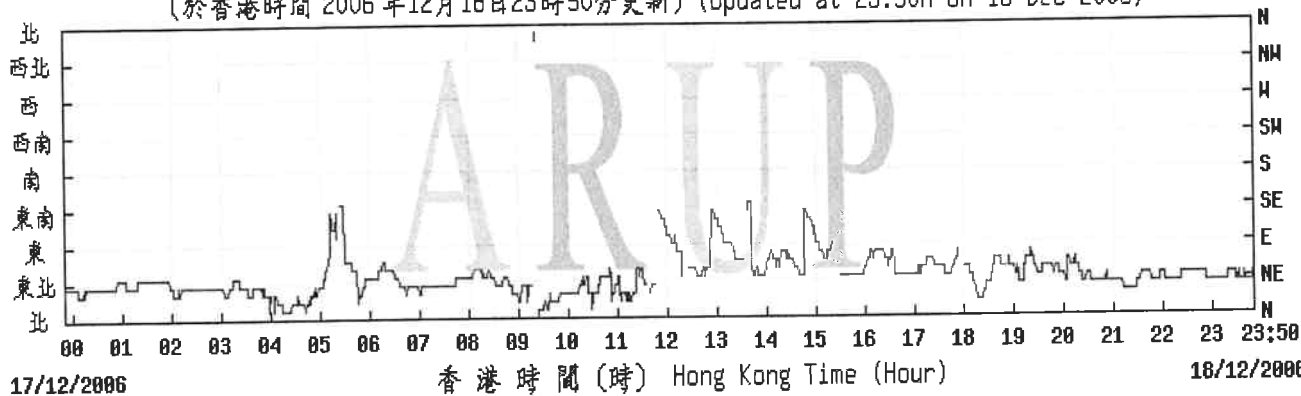
12/12/2006

香港時間 (時) Hong Kong Time (Hour)

13/12/2006

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(於香港時間 2006 年 12 月 18 日 23 時 50 分更新) (Updated at 23:50H on 18 Dec 2006)



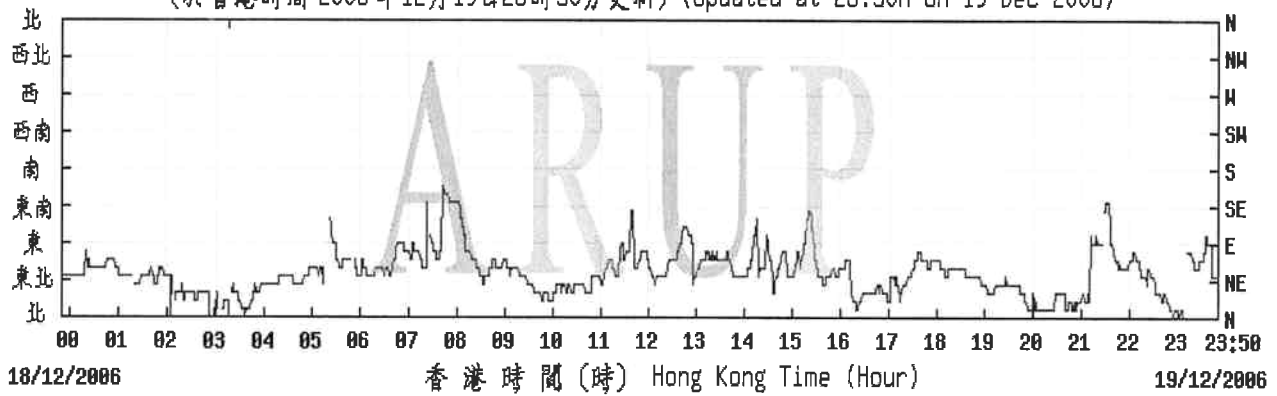
17/12/2006

香港時間 (時) Hong Kong Time (Hour)

18/12/2006

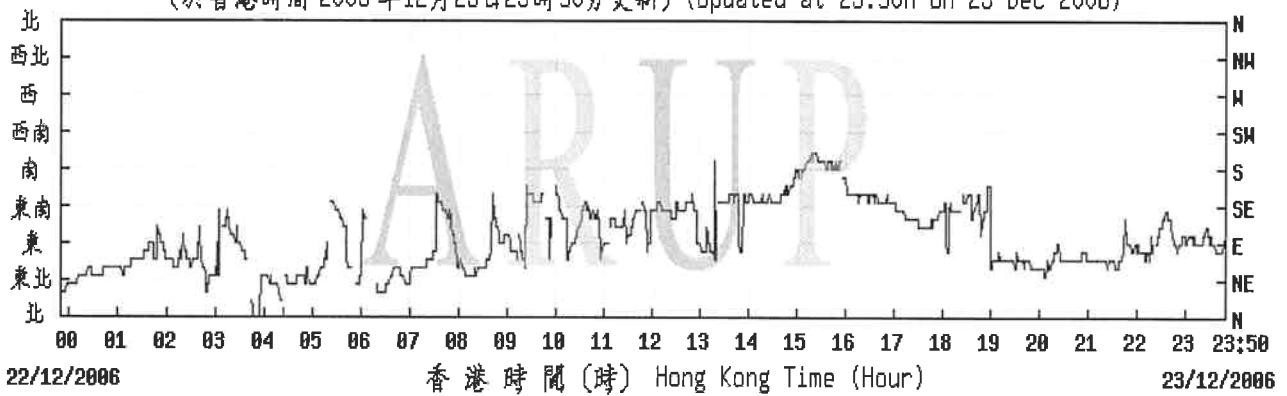
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(於香港時間 2006 年12月19日23時50分更新) (Updated at 23:50H on 19 Dec 2006)



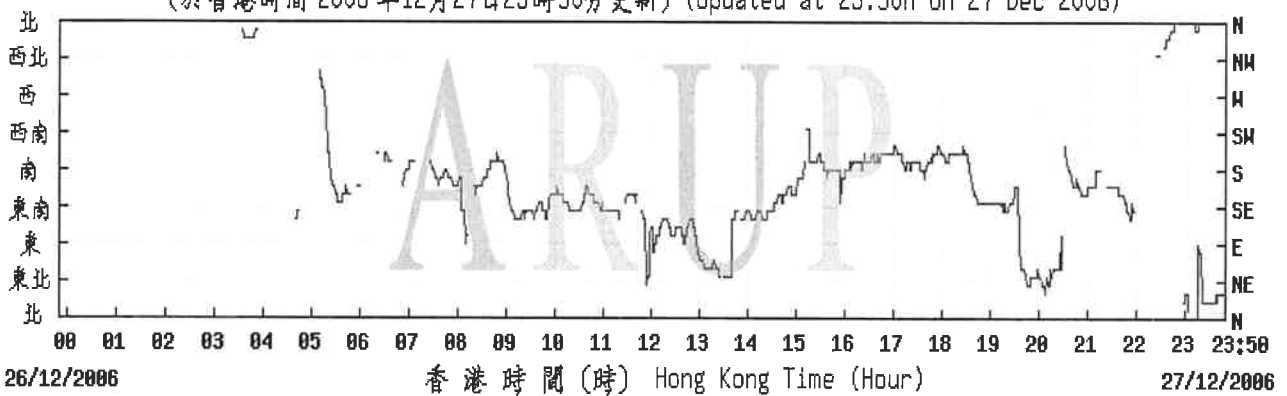
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(於香港時間 2006 年12月23日23時50分更新) (Updated at 23:50H on 23 Dec 2006)



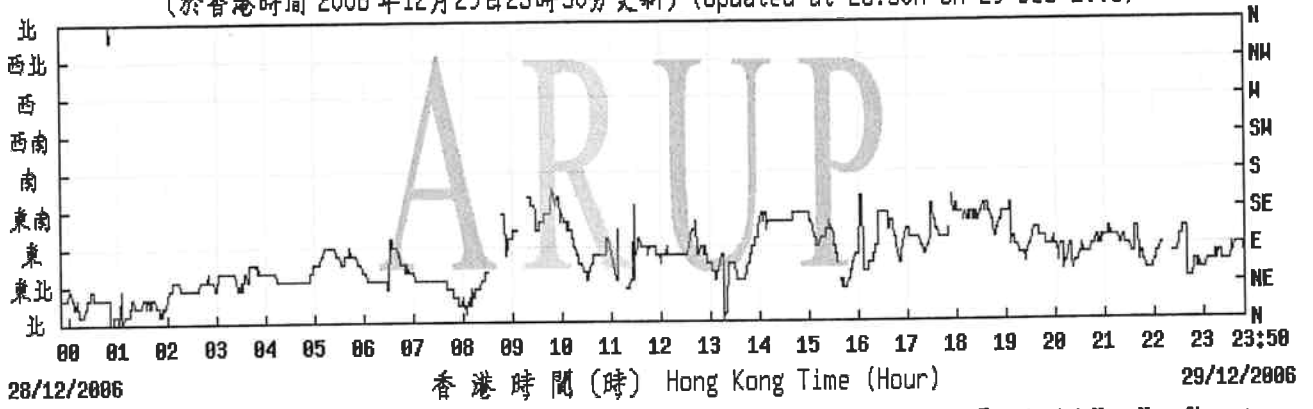
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(於香港時間 2006 年12月27日23時50分更新) (Updated at 23:50H on 27 Dec 2006)



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(於香港時間 2006 年 12 月 29 日 23 時 50 分更新) (Updated at 23:50H on 29 Dec 2006)



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Appendix H

**Calibration certificates
of noise monitoring
equipment**

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
HONG KONG

AAc Certificate No. 2006006

Fax: +852 2268 3950

Tel: +852 2268 3216

CERTIFICATE OF CONFORMITY

<u>Description of Test Instrument</u>	<u>Type No</u>	<u>Serial No</u>
Brüel & Kjær Sound Level Meter Kit	2238	2320694
Brüel & Kjær ½ " Microphone Kit	4188	2274284

Date of Test: 11 September 2006

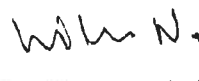
Carried out by: Cissy Chan

Approved by: William Ng

Signature:



Signature:



Ambient Conditions During Test	
Atmospheric Pressure:	1KPa
Air Temperature:	21°C
Relative Humidity:	58%

This document is to certify that the above Test Instrumentation did conform to the manufacturer's original specification on the date of the test. Any adjustments that were required to bring the instrumentation back into specification are duly noted in this document. The tests were carried out using the reference calibrator described below.

<u>Description of Reference Calibrator</u>	<u>Type No</u>	<u>Serial No</u>
Brüel & Kjær Multi Frequency Calibrator	4226	1531372
Brüel & Kjær Coupler	UA0915	1531372
Certificate of Calibration Serial No.	14260	
By Brüel & Kjær (UK) Ltd Calibration Date:	21 September 2005	
NAMAS Accredited Calibration Laboratory No.	0174	

The reference calibrator, Type 4226, has traceable calibration back to National Measurement Standards. As such it is used as Arup Acoustics own 'Primary Standard' and is used only for controlled laboratory calibration tests on all sound measuring equipment owned by Arup Acoustics.

Footnote:

Arup Acoustics is not a registered NAMAS accredited calibration laboratory. This certificate is for internal use only (unless otherwise authorised) and is part of Arup Acoustics development and commitment to QC and QA procedures.

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
HONG KONG

AAC Certificate No. 2006007

Fax: +852 2268 3950

Tel: +852 2268 3216

CERTIFICATE OF CONFORMITY

<u>Description of Test Instrument</u>	<u>Type No</u>	<u>Serial No</u>
Brüel & Kjær Sound Level Meter Kit	2238	2320696
Brüel & Kjær ½ " Microphone Kit	4188	2274286

Date of Test: 11 September 2006

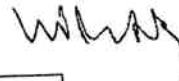
Carried out by: Cissy Chan

Approved by: William Ng

Signature:



Signature:



Ambient Conditions During Test	
Atmospheric Pressure:	1KPa
Air Temperature:	21°C
Relative Humidity:	58%

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Appendix I

**Detailed noise
monitoring results**

Details of Noise Impact Monitoring

Date	NSR No.	Time periods		Weather condition	Avg. wind speed (m/s)	Noise Level dB(A)			Influencing factors/ Site condition
		Start	Finish			L _{eq}	L ₁₀	L ₉₀	
7-Dec-06	WN6	15:30	16:00	Fine	2.0	66.3	69.0	62.5	Normal operation
13-Dec-06	WN6	10:50	11:20	Cloudy	1.6	66.3	68.5	61.5	Normal operation
19-Dec-06	WN6	15:45	16:15	Fine	1.8	67.0	70.5	63.5	Normal operation
27-Dec-06	WN6	15:30	16:00	Fine	1.4	66.7	68.5	61.0	Normal operation

Appendix J

**Landscape and visual
monitoring and audit
report**

**Contract No. HY/2005/06
Castle Peak Road Improvements –
West of Tsing Lung Tau**

Landscape & Visual Audit and Monitoring


Monthly Inspection Report No. 10

(December 2006)

Prepared by

URBIS LIMITED

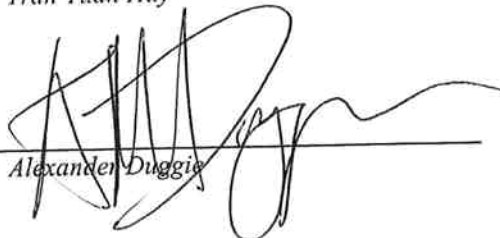
Prepared by :



Tran Tuan Huy

5th January 2007

Approved by :



Alexander Duggie

5th January 2007

1.0 INTRODUCTION

This is a Landscape and Visual Audit conducted to fulfill the requirements of the EIA during the Construction and Operational Phases of the project, and is based on the procedures and requirements as set out in the Castle Peak Road Improvements – West of Tsing Lung Tau, Environmental Monitoring and Audit Manual.

Under the EIA, the proposed mitigation measures include both the planting works and treatment to structures. As stated in Section 6.4 of the EM & A, all measures undertaken by both the Contractor and the Landscape Contractor during the construction phase and the first 12 months of the operational phase shall be audited on a bi-weekly and bi-monthly basis respectively to ensure compliance with the intended aims of the mitigation measures.

2.0 SCOPE OF AUDIT

The broad scope of the audit on mitigation measures is as detailed below:

2.1 Planting Proposals

- Regular inspection of the agreed works areas to ensure no unnecessary intrusion by the Contractor outside the limit of the works;
- Regular review of the progress of engineering works to identify the earliest practical opportunity for the landscape works;
- Monitoring of tree transplanting and planting operations;
- Monitoring of works around the area of existing trees to be retained and protected;
- Monitoring of protection works for existing trees;
- Ensure planting works are carried out in accordance with the Specification and within the right planting season;
- Monitoring of the maintenance operations during the Establishment Period to ensure all plants are well watered and nutrients applied.

2.2 Standard Treatment to Structures

- Monitoring and review to ensure the proposed architectural treatments to retaining walls, viaducts, bridges, and noise barriers are implemented in accordance with the approved design, and where appropriate, to soften the hard edges to structures with planting works.

3.0 INSPECTIONS

3.1 Summary of Inspection – 8th December 2006

3.1.1 Matters Arising from Previous Inspections

- The Contractor had cleared away the construction waste pile at Slope ‘A’ access road area.
- The Contractor had pruned the damaged tree branch of existing tree T200.
- Transplanting of existing tree T113 was outstanding. The Contractor was reminded to transplant the tree as soon as possible to prevent further damage to the tree.
- Dry surface condition was observed at many areas of the Site. The Contractor was reminded to carry out more watering of the surface to prevent dust nuisance.

3.1.2 Site Clearance and Formation Works

- Site formation works were in progress at the proposed new Slopes A and B areas.

3.1.3 Tree Felling and Transplanting Works

- No tree transplanting was observed during the reported period.

3.1.4 Recommendations

- The Contractor was reminded to clear away all construction waste, scattered litter, garbage, etc as found on site, and to keep the site in a tidy condition at all times.
- The Contractor was reminded to provide better tree protection to existing trees to be transplanted or retained.
- The Contractor was recommended to carry out watering of the site to prevent dust nuisance during dry periods.

3.2 Summary of Inspection – 21st December 2006

3.2.1 Matters Arising from Previous Inspections

- Transplanting of existing tree T113 was still outstanding. More rocks were observed pile at the base of the tree. The Contractor was reminded to transplant the tree as soon as possible to prevent further damage to the tree.
- Dry surface condition was still observed at many areas of the Site. The Contractor was reminded to carry out more watering of the surface to prevent dust nuisance.

3.2.2 Site Clearance and Formation Works

- Site formation works were in progress at the proposed new Slopes A and B areas.
- It was observed that the existing tree was used as a temporary support for construction barriers, which had damaged the existing tree bark. The Contractor was requested to remove the construction barrier away from the existing tree and to properly protect all existing trees to be retained on site.
- Construction waste pile was observed at Seawall 'B' area. The Contractor was requested to clear it away as soon as possible.
- Construction waste and empty cement bags pile was observed at the access road area. The Contractor was requested to clear it away as soon as possible.

3.2.3 Tree Felling and Transplanting Works

- No tree transplanting was observed during the reported period.

3.2.4 Recommendations

- The Contractor was reminded to clear away all construction waste, scattered litter, garbage, etc as found on site, and to keep the site in a tidy condition at all times.
- The Contractor was reminded to provide better tree protection to existing trees to be transplanted or retained on site. Also, the Contractor was reminded to carry out proper tree root preparation works for the transplant trees.
- The Contractor was recommended to carry out watering of the site to prevent dust nuisance during dry periods.

4.0 AUDIT SCHEULE

4.1 Audit Schedule for January 2007

The next audits are scheduled to be conduct on 6th, and 18th January 2007.