

Chun Wo Construction &  
Engineering Co Ltd

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

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Monthly Environmental  
Monitoring and Audit  
Report for Reclamation  
Works (EP No EP-  
219/2005)  
May 2007

**Second Issue**

Chun Wo Construction &  
Engineering Co Ltd

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June 2007

This report takes into account the particular  
instructions and requirements of our client.  
It is not intended for and should not be relied  
upon by any third party and no responsibility  
is undertaken to any third party

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Job number 24583

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Attn : Mr. Michael S Harfoot

12 June 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 – May 2007**

We refer to the Monthly EM&A Report for Construction Works other than Reclamation – May 2007 received via email on 11 June 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 11 June 2007, the Monthly EM&A Report for Construction Works other than Reclamation – May 2007 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  
**ENSR Asia (HK) Ltd.**



Y T Tang  
Independent Environmental Checker

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## Executive Summary

This is the fifteenth monthly environmental monitoring and audit (EM&A) report presenting the progress of environmental monitoring and audit works for the reporting period between 01 and 31 May 2007. Noise monitoring at Grand Bay Villa was temporarily suspended as the premises were vacant. Marine water monitoring and weekly environmental site audit were carried out during the reporting period.

### **Marine Water Quality Monitoring**

Impact marine water quality monitoring was conducted during mid-ebb and mid-flood tidal cycles at 10 designated locations including 5 impact and 5 control stations. A baseline check was conducted on 27 February 2006 prior to the commencement of marine works and a compliance checking mechanism was established in accordance with the criteria specified in Baseline Monitoring Report.

#### **Summary of Mid-Ebb Tide**

The lowest DO level for surface & middle position of 5.45 mg/L was recorded at WWFCZ2 on 02 and 21 May 2007 and the lowest DO level for bottom position of 5.38 mg/L was recorded at WWA3 on 23 May 2007. There was no exceedance of DO level during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 6.8 Nephelometric Turbidity Unit (NTU) was recorded at WWA2 on 16 May 2007. There was 1 exceedance of Tby Action Level on 16 May 2007 during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest SS level of 19.7 mg/L was recorded at WWA3 on 14 May 2007. There were 5 exceedances of SS Baseline Check Criteria on 14 and 16 May 2007 when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The exceedances of Tby and SS Levels were likely attributed to the Project. The Contractor has provided mitigation measure by extending the silt curtain to cover a larger area, including shore of Slope 82, on 28 May 2007 and no exceedance was recorded in subsequent monitoring on 28 and 30 May 2007.

#### **Summary of Mid-Flood Tide**

The lowest DO level for surface & middle position of 5.43 mg/L was recorded at WWFCZ2 21 May 2007 and the lowest level for bottom position of 5.39 mg/L was recorded at WWA1 on 18 and 21 May 2007. There was no exceedance of DO level during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 5.7 NTU was recorded at WWA1 on 18 May 2007. There was no exceedance of Tby level during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest SS level of 18.5 mg/L was recorded at WWA3 on 07 May 2007. There was 3 exceedances of SS Baseline Check Criteria on 07, 14 and 16 May 2007 when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The exceedances of SS Levels were likely attributed to the Project. The Contractor has provided mitigation measure by extending the silt curtain to cover a larger area, including shore of Slope 82, on 28 May 2007 and no exceedance was recorded in subsequent monitoring on 28 and 30 May 2007.

### **Environmental Auditing**

A total of 5 environmental site audits were conducted in May 2007. CT was recommended to improve in the following areas:

**Air Quality:** Frequent watering during dusty works, provision of covers to stockpile and provision of wheel washing to vehicles leaving the site;

**Water Quality:** Extension of silt curtain;

**Waste Management:** Frequent clearing of general refuse and construction waste, provision of drip trays to oil drums.

### **Waste Disposal**

A total of 21.22 tonnes of Construction & Demolition (C&D) waste and 10,377.5 tonnes of C&D materials (911 tonnes transported by trucks and 9,466.5 tonnes transported by barge) were disposed of at landfills and Public Filling Reception Facility at Tuen Mun Area 38 respectively during reporting period. No chemical waste was disposed of during the reporting period.

### **Complaint Records**

There was no environmental complaint received in May 2007.

### **Exceedance**

Exceedances of T<sub>by</sub> and SS levels for marine water quality were recorded during reporting period when compared with A/L Levels and baseline check criteria.

Investigation has been conducted for the exceedances. The exceedances were likely attributed to the construction activities of the Project.

The maintenance of the original silt curtain was completed on 28 April 2007. However, muddy water was observed outside silt curtain in early May 2007. Marginal exceedances of turbidity and suspended solids were recorded on 7, 14 and 16 May 2007. Re-suspension of soil from the seabed and seepage of muddy water from Slope 82 were likely the sources of muddy plume. The Contractor was recommended to extend the silt curtain to cover a larger area, including the working area of Slope 82. The extension of the silt curtain was completed on 28 May 2007. The water quality has been improved and exceedance of A/L levels was not recorded in subsequent marine water quality monitoring on 28 and 30 May 2007.

### **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 as the Environmental Team (ET) for *Contract No. HY/2005/06 Castle Peak Road Improvements – West of Tsing Lung Tau* (hereafter called the “Project”). The reclamation at west of Tsing Lung Tau is covered by an Environmental Permit (EP) No. EP-219/2005 issued in June 2005 with reference to Section 6 of the Technical Memorandum on Environmental Impact Assessment Ordinance (TM-EIAO). The EP was issued following the approval of the application to apply directly for an EP based upon the Project Profile. In accordance with the EM&A Manual, environmental monitoring for construction noise and marine water quality will be required during the construction and operational phases. The construction phase of the Project commenced on 28 February 2006.

## 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.

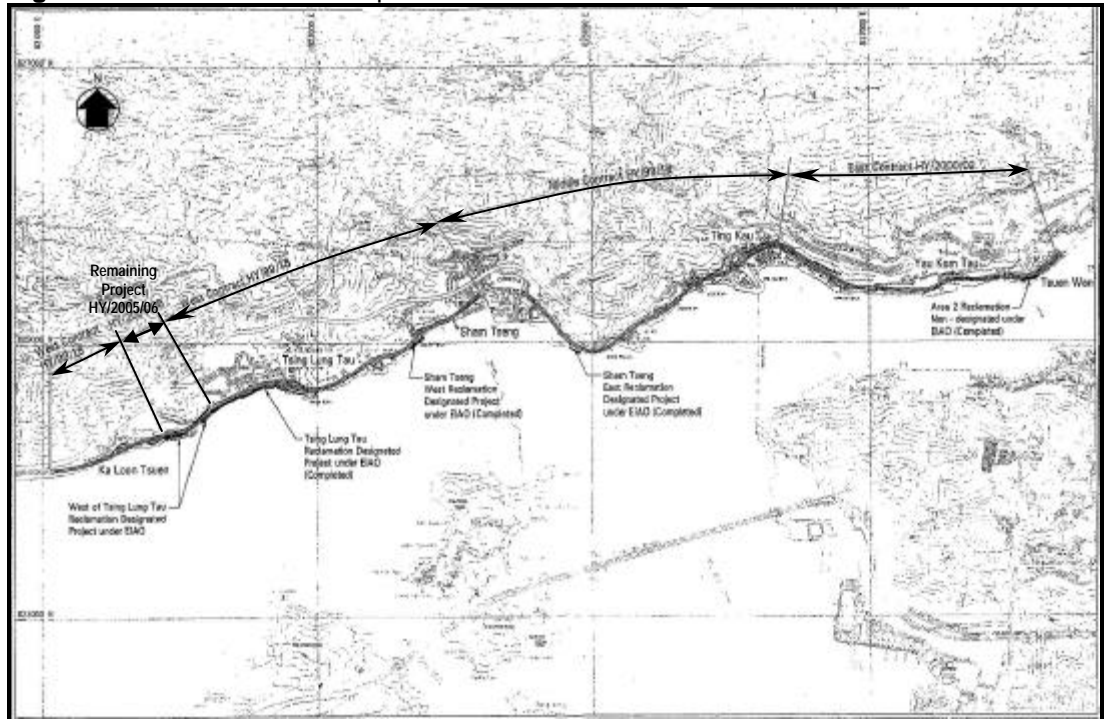
Following subsequent developments, the Route 10 project was placed under review, and Government therefore decided to implement the excised section of CPR (the Remaining Project) under the original CPR Improvement project. **Figure 1-1** shows the site location plan.

Additional reclamation (0.58 ha) at west of Tsing Lung Tau is required to support part of the remaining section of road improvement works and the additional reclamation works constitutes a material change to the reclamation works at Tsing Lung Tau.

The scope of the construction works covered by this Project is summarised as follows:

- The area of reclamation to the east of Grand Bay Villa is about 0.12 ha. The length of this part of the reclamation, measured parallel to the road, is about 107 m, and the maximum width, measured from the existing High Water Mark (HWM) to the proposed toe of the scour apron is about 16 m, of which about 13 m is sloping revetment;
- The area of reclamation west of Grand Bay Villa is about 0.46 ha. The length of this part of the reclamation, measured parallel to the road, is about 172 m, and the maximum width, measured from the existing High Water Mark (HWM) to the proposed toe of the scour apron is about 38 m, of which about 15 m is sloping revetment.

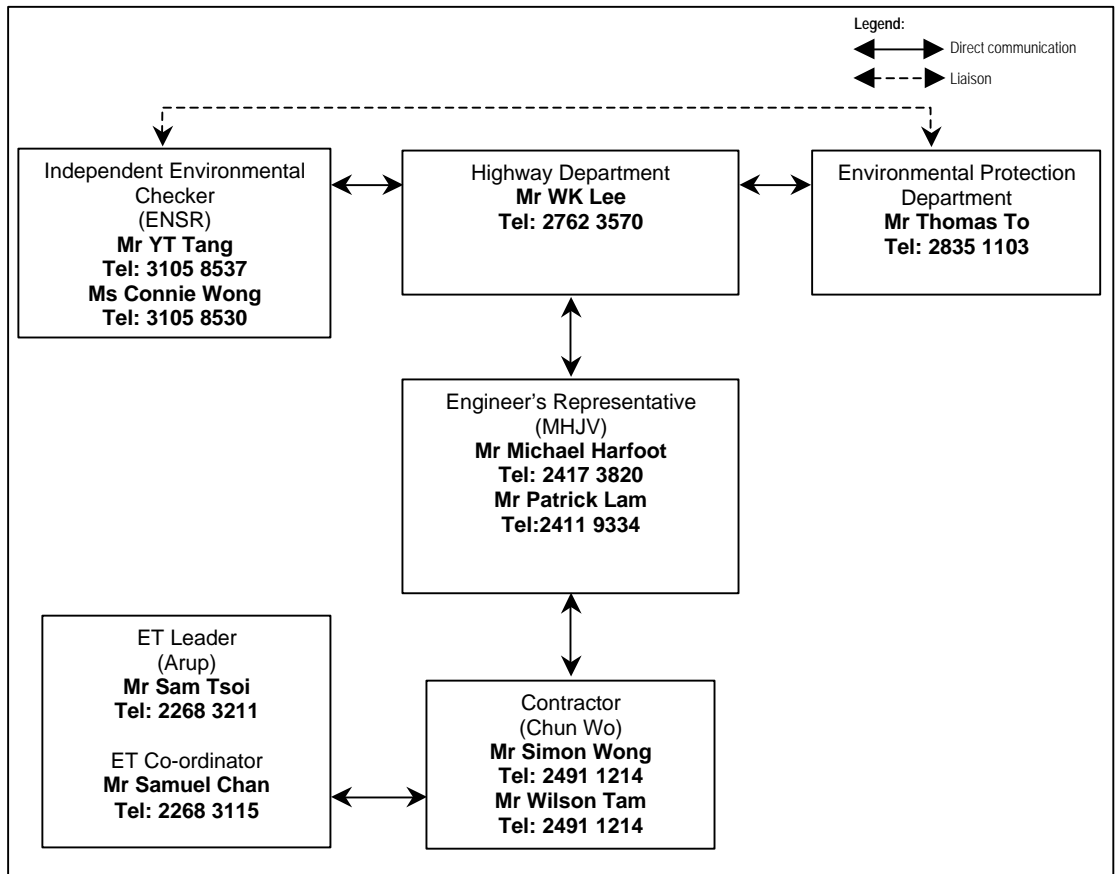
**Figure 1-1:** Site location plan



**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; the Engineer's Representative (ER) is Meinhardt Halcrow Joint Venture (MHJV); the Contractor (CT) is Chun Wo Construction & Engineering Co. Ltd; the Independent Environmental Checker (IEC) is ENSR Asia (HK) Ltd (ENSR) and the ET leader 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 followings:

- 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 Impact EM&A Requirements

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The impact environmental monitoring and audit for the Project included noise, marine water quality and environmental site audit.

### 1.4 Purpose of the Report

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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 specified under EP No. EP-219/2005.

This is the fifteenth monthly EM&A report summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the noise, marine water quality and environmental site audit from 01 May 2007 to 31 May 2007.

## 2 Scope of Construction Works

### 2.1 Construction Programme

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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

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The major construction activities carried out by CT in May 2007 included:

- Construction of retaining wall at Seawall B
- Removal of stockpile at Seawall B; and
- Concreting at slope 82.

## 3 Summary of EM&A Requirements

Marine water quality and noise monitoring at Grand Bay Villa will be conducted by an ET at all specified monitoring locations during the construction stage. Environmental site audits will also be carried out.

The monitoring schedule for May 2007 and the tentative schedule for June 2007 are attached in **Appendix B**.

### 3.1 Construction Noise

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#### 3.1.1 Monitoring Parameters

Construction noise monitoring 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.

#### 3.1.2 Monitoring Frequency

Noise measurements will be conducted on a weekly basis. The monitoring time periods, monitoring parameters and frequency are summarised in **Table 3-1**.

**Table 3-1: 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 in holidays and between the period of 1900 and 0700 hours during normal weekdays.

**3.1.3 Monitoring Location**

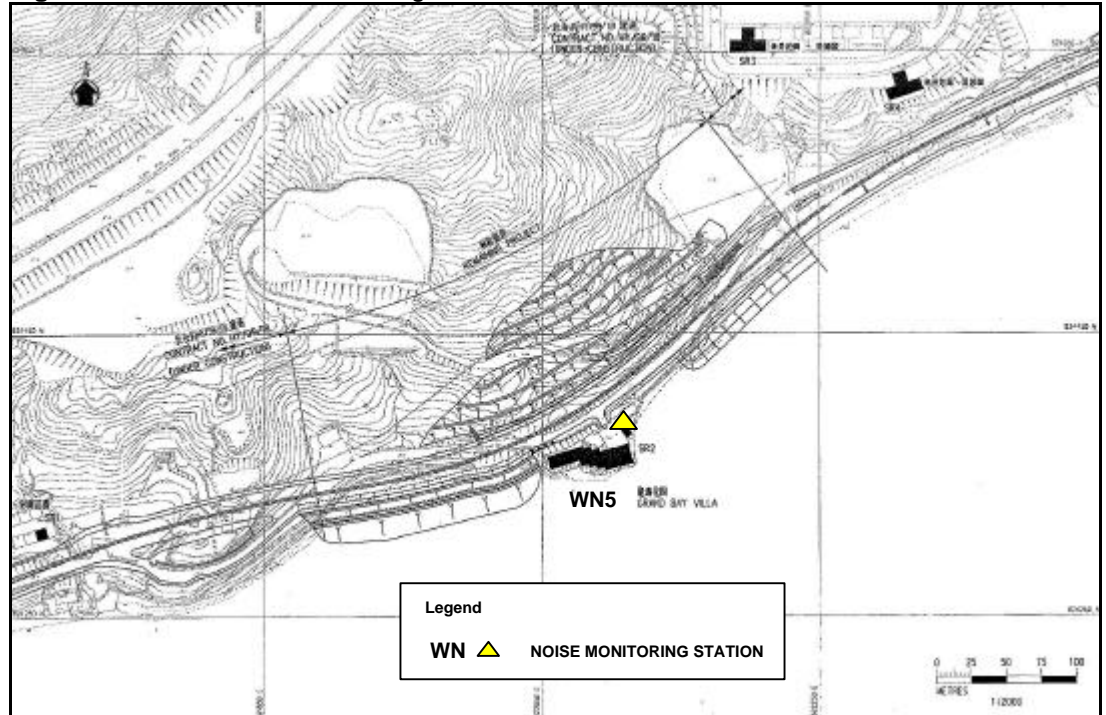
Noise monitoring will be conducted at one designated location as shown in **Figure 3-1**. The details of the noise monitoring location are given in **Table 3-2**. The measurements will be taken at a position 1m from the exterior of building façade and at a position of 1.2m above ground.

**Table 3-2: Construction noise monitoring locations**

Noise Monitoring Station No.	Location	Monitoring Point	Remarks
WN5	Grand Bay Villa	G/F, House 1	Monitoring temporarily suspended *

\* Grand Bay Villa is currently vacant with no resident. Construction noise monitoring at WN5 temporarily suspended until the premises are occupied.

**Figure 3-1: Noise monitoring station**



## 3.2 Marine Water Quality

### 3.2.1 Monitoring Parameters

Marine water quality monitoring will include Turbidity (Tby) in the unit of NTU, Dissolved Oxygen (DO) in the unit of mg/L and Suspended Solids (SS) in the unit of mg/L. In addition to the water quality parameters, other relevant data such as monitoring location/position, time, water depth, water temperature, salinity, DO saturation, weather conditions, sea conditions, tidal stage will be recorded as far as practicable together with observations of any special phenomena, works underway at the construction site, etc.

### 3.2.2 Monitoring Frequency

Impact marine water quality monitoring will be conducted three times per week, at mid-flood and mid-ebb tides and at 10 designated monitoring locations. The interval between two sets of monitoring will not be less than 36 hours.

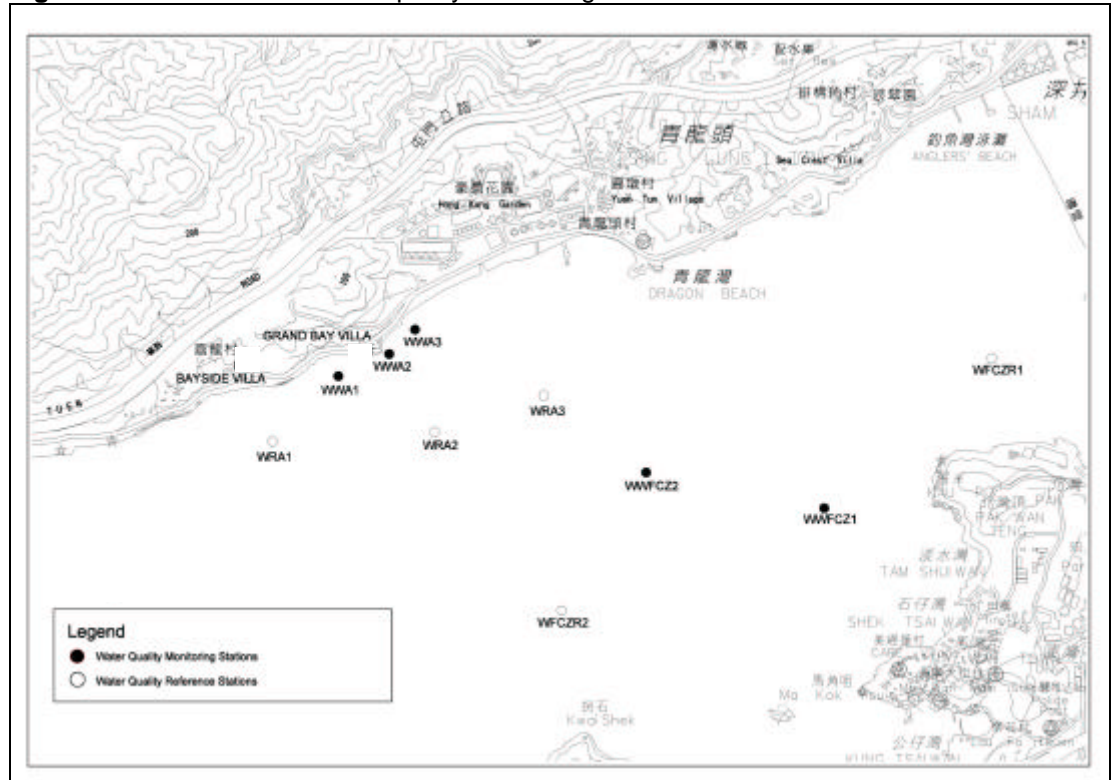
### 3.2.3 Monitoring Locations

A total of 10 locations, 5 for impact and 5 for control were specified for marine water quality monitoring in accordance with the EM&A Manual, which are summarised in **Table 3-3** and shown in **Figure 3-2**.

**Table 3-3: Marine water quality monitoring locations**

Marine Water Quality Monitoring Location No.		Location	
		Eastings	Northings
West of Grand Bay Villa	WWA1 (Impact Location)	821981	824282
	WRA1 (Control Location)	821776	824078
Grand Bay Villa	WWA2 (Impact Location)	822141	824352
	WRA2 (Control Location)	822283	824107
East of Grand Bay Villa	WWA3 (Impact Location)	822222	824429
	WRA3 (Control Location)	822625	824222
Ma Wan Fish Culture Zone	WWFCZ1 (Impact Location)	823500	823870
	WWFCZ2 (Impact Location)	822943	823983
	WFCZR1 (Control Location)	824024	824333
	WFCZR2 (Control Location)	822677	823547

**Figure 3-2:** Marine water quality monitoring locations



### 3.3 Performance Limits and Event and Action Plan

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.

#### 3.3.1 Construction Noise

The A/L Levels for the construction noise have been established during the baseline monitoring as summarised in **Table 3-4**.

**Table 3-4:** 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 exceedance of A/L Levels are summarised in the Event and Action Plan in **Table 3-5**.

**Table 3-5: Event and Action Plan for construction noise**

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



### 3.3.2 Marine Water Quality

Based on the baseline water quality monitoring data obtained. The A/L levels established using the baseline marine water quality monitoring data are shown in **Table 3-6**. If the water quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event-Action Plan in **Table 3-8** should be carried out.

As the baseline monitoring was conducted in September to October 2005, the established A/L Levels will be more representative to the marine water quality during summer months. To cope with any potential variation of baseline levels due to change in weather conditions, baseline check will be conducted in bi-annual basis in order to update any variation of the baseline water quality at the monitoring locations.

The first baseline check was conducted on 27 February 2006 prior to the commencement of marine works and the updated marine water quality monitoring data were summarised in **Table 3-7**. Compliance assessment for future impact monitoring data will be made against the updated baseline check criteria as follows:

- Tier 1 - Comparison of water quality monitoring data at Impact Stations with the A/L Levels (**Table 3-6**) established in the Baseline Monitoring Report. If the data comply with A/L Levels, go to Tier 2. Otherwise, non-compliance will be reported and Event and Action Plan will be triggered.
- Tier 2 - Comparison of water quality monitoring data at Impact Stations with the Baseline Check Level (80% of average values of baseline check data collected at 10 monitoring locations for DO and 120% of average values of baseline check data collected at 10 monitoring locations for Tby and SS) (**Table 3-7**). If the impact water quality is better than Baseline Check Level, compliance will be reported. Otherwise, go to Tier 3.
- Tier 3 - Comparison of water quality monitoring data at Impact Stations with the respective Control Stations. If the impact water quality is better than the respective Control Station, compliance will be reported. Otherwise, non-compliance will be reported and Event-Action Plan will be triggered for implementation of action based on exceedance of Action Level.

**Table 3-6:** Action and Limit Levels of marine water quality established in Baseline Monitoring Report #

Parameters		Monitoring locations									
		WWA1		WWA2		WWA3		WWFCZ1		WWFCZ2	
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
<b>Mid-ebb</b>											
DO (mg/L)	Surface & middle	3.5	3.5	3.5	3.4	3.4	3.3	5.0 *	5.0	5.0 *	5.0
	Bottom	3.4	3.4	3.4	3.3	3.4	3.2	3.7	2.0	3.6	2.0
Tby (NTU)		7.4	7.7	6.7	6.9	7.8	8.3	6.4	8.6	6.7	7.0
SS (mg/L)		25.3	26.0	22.2	23.1	24.6	25.2	26.3	30.3	22.6	22.9
<b>Mid-flood</b>											
DO (mg/L)	Surface & middle	3.3	3.3	3.4	3.3	3.5	3.3	5.0 *	5.0	5.0 *	5.0
	Bottom	3.2	3.2	3.2	3.2	3.2	3.2	3.3	2.0	3.5	2.0
Tby (NTU)		6.9	7.2	7.6	8.2	8.7	10.7	7.4	11.0	5.9	6.5
SS (mg/L)		24.1	24.3	23.5	23.6	22.3	23.5	24.4	25.8	27.4	28.0

Notes:

# Action and Limit Level for marine water quality were extracted from Baseline Monitoring Report, April 2006.

\* Based on the criteria in Table 4-6 of Baseline Monitoring Report, the originally established action levels of DO for fish culture zone at surface &amp; middle level were all below the 5.0 mg/L.

**Table 3-7:** Marine water quality data obtained in the baseline check on 27 February 2006

Parameters		Monitoring locations				
		WWA1	WWA2	WWA3	WWFCZ1	WWFCZ2
<b>Mid-ebb</b>						
DO (mg/L)	Surface & middle	5.4	5.4	5.4	5.4	5.4
	Bottom	5.4	5.4	5.4	5.4	5.4
Tby (NTU)		6.5	6.5	6.5	6.5	6.5
SS (mg/L)		13.0	13.0	13.0	13.0	13.0
<b>Mid-flood</b>						
DO (mg/L)	Surface & middle	5.3	5.3	5.3	5.3	5.3
	Bottom	5.3	5.3	5.3	5.3	5.3
Tby (NTU)		6.6	6.6	6.6	6.6	6.6
SS (mg/L)		17.0	17.0	17.0	17.0	17.0

**Table 3-8: Event-Action plan for marine water quality**

Event	Action			
	ET Leader	IEC	ER	CT
<b>Action Level</b>				
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings.</li> <li>Identify source(s) of impact.</li> <li>Inform the IEC and the CT.</li> <li>Check monitoring data, all plant, equipment and the CT's working methods.</li> <li>Discuss mitigation measures with the IEC and the CT.</li> <li>Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the CT on the mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the CT and advised the ER accordingly.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the IEC on the proposed mitigation measures.</li> <li>Make agreement on the mitigation measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing.</li> <li>Rectify unacceptable practice.</li> <li>Check all plants and equipment.</li> <li>Consider changes of working methods.</li> <li>Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER.</li> <li>Implement the agreed mitigation measures.</li> </ol>
Action level being exceeded by more than one consecutive days	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings.</li> <li>Identify source(s) of impact.</li> <li>Inform the IEC and the CT.</li> <li>Check monitoring data, all plant, equipment and the CT's working methods.</li> <li>Discuss mitigation measures with the IEC and the CT.</li> <li>Ensure mitigation measures are implemented.</li> <li>Prepare to increase the monitoring frequency to daily.</li> <li>Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the CT on the mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the CT and advised the ER accordingly.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC on the proposed mitigation measures.</li> <li>Make agreement on the mitigation measures to be implemented.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing.</li> <li>Rectify unacceptable practice.</li> <li>Check all plants and equipment.</li> <li>Consider changes of working methods.</li> <li>Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER within 3 working days.</li> <li>Implement the agreed mitigation measures.</li> </ol>
<b>Limit Level</b>				
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings.</li> <li>Identify source(s) of impact.</li> <li>Inform the IEC, the CT and the DEP.</li> <li>Check monitoring data, all plant, equipment and the CT's working methods.</li> <li>Discuss mitigation measures with the IEC, the ER and the CT.</li> <li>Ensure mitigation measures are implemented.</li> <li>Increase the monitoring frequency to daily until no exceedance of the Limit Level.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the CT on the mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the CT and advised the ER accordingly.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC, the ET Leader and the CT on the proposed mitigation measures.</li> <li>Request the CT to critically review the working methods.</li> <li>Make agreement on the mitigation measures to be implemented.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing.</li> <li>Rectify unacceptable practice.</li> <li>Check all plants and equipment.</li> <li>Consider changes of working methods.</li> <li>Discuss with the ET Leader, the IEC and the ER, and propose mitigation measures to the IEC and the ER within 3 working days.</li> <li>Implement the agreed mitigation measures.</li> </ol>
Limit level being exceeded by more than one consecutive days	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings.</li> <li>Identify source(s) of impact.</li> <li>Inform the IEC, the CT and the DEP.</li> <li>Check monitoring data, all plant, equipment and the CT's working methods.</li> <li>Discuss mitigation measures with the IEC, the ER and the CT.</li> <li>Ensure mitigation measures are implemented.</li> <li>Increase the monitoring frequency to daily until no exceedance of the Limit Level for two consecutive days.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the CT on the mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the CT and advised the ER accordingly.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC, the ET Leader and the CT on the proposed mitigation measures.</li> <li>Request the CT to critically review the working methods.</li> <li>Make agreement on the mitigation measures to be implemented.</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> <li>Consider and instruct, if necessary, the CT to slow down or to stop all or part of the marine work until no exceedance of Limit Level.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing.</li> <li>Rectify unacceptable practice.</li> <li>Check all plants and equipment.</li> <li>Consider changes of working methods.</li> <li>Discuss with the ET Leader, the IEC and the ER, and propose mitigation measures to the IEC and the ER within 3 working days.</li> <li>Implement the agreed mitigation measures.</li> <li>As directed by the ER, slow down or stop all or part of the construction activities.</li> </ol>

### 3.4 Site Inspection and Environmental Complaint Handling

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#### 3.4.1 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, noise, water and waste, and their pollution controls and mitigation measures for both within and outside the site area.

*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.

#### 3.4.2 Site Inspection Procedures

- a) The CT and/or ER will advise the Environmental Auditor (EA) of the ET for all information on any environmental related aspects.
- b) The EA will discuss with the CT and/or ER to sort out and 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 the 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 the 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.

#### 3.4.3 Environmental Complaints

A 24-hour complaint hotline at 6277 7465 has been established for the Project. 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:

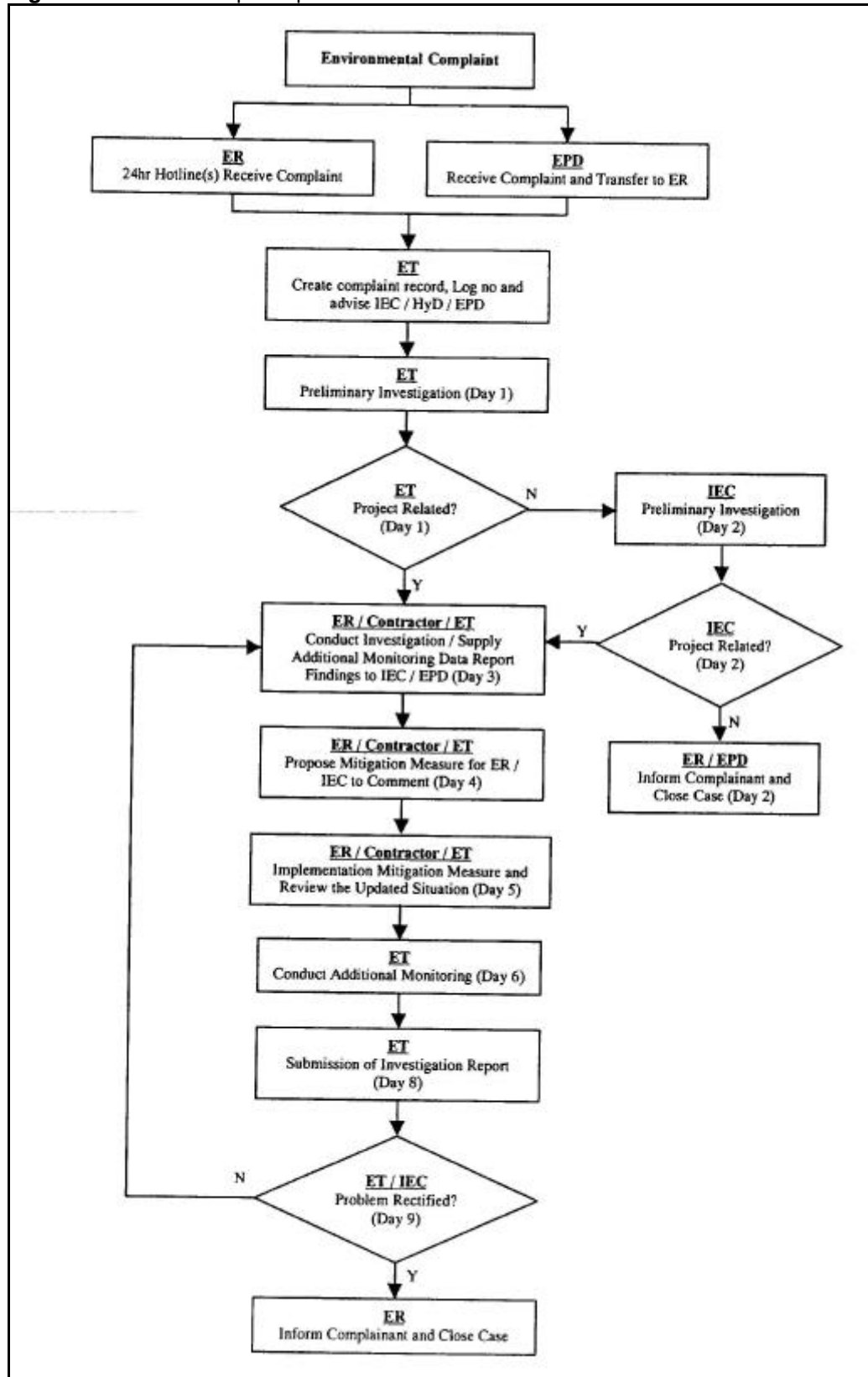
- a) The ET will record the details of the complaint and the date of receipt into the complaint database, and inform ER immediately.
- b) The ET will perform compliant investigation to determine its validity and to assess whether the source of the problem is due to work activities.
- c) The ER will instruct the CT to identify mitigation measures in consultation with the ET, if the compliant 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, the 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 3-3** for reference.

**Figure 3-3:** Complaint procedure



## 4 Noise Monitoring

### 4.1 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 4226		1
LCD wind speed indicator	Kestrel Vane Anemometer	--	1

### 4.2 Methodology

#### 4.2.1 Occupancy Status of Grand Bay Villa

The property management company of Grand Bay Villa (WN5) will be coordinated a monthly basis within 10 working days of each month to confirm the occupancy status of these premises. Once this location is confirmed occupied, noise monitoring will be resumed within 1 week.

#### 4.2.2 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.

#### 4.2.3 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.

### 4.3 Results and Observations

#### 4.3.1 Occupancy Status of Grand Bay Villa

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



## 5 Marine Water Quality Monitoring

### 5.1 Marine Water Quality Monitoring Equipment

Monitoring of Turbidity (Tby) in NTU, Dissolved Oxygen (DO) in mg/L and Suspended Solids (SS) in mg/L was carried to ensure that any deteriorating water quality would be readily detected and timely action would be taken to rectify the situation. Tby and DO were measured in-situ while SS was determined in the laboratory. A list of the marine water quality monitoring equipment is summarised in **Table 5-1**.

**Table 5-1:** Marine water quality monitoring equipment

Equipment	Manufacturer & Model No.	Qty
Handheld DO, Temperature & Salinity Meter	YSI Model 85	1
pH meter	Hanna	1
Turbidimeter	HACH 2100P	1

### 5.2 Methodology

#### 5.2.1 DO, Temperature and Salinity Measuring Equipment

The equipment to measure DO, temperature and salinity complied with the following:

- i. The instrument was a portable, weatherproof dissolved oxygen measuring instrument complete with cable and used a DC power source. It was capable of measuring:
  - A dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation;
  - A temperature of 0-45°C; and
  - A salinity level in the range of 0-40 ppt.
- ii. It had a membrane electrode with automatic temperature compensation complete with a cable.

#### 5.2.2 Tby Measurement Instrument

The instrument was a portable, weatherproof turbidity-measuring instrument complete with comprehensive operations manual. The equipment used a DC power source. It had a photoelectric sensor capable of measuring turbidity between 0-1000 NTU and was complete with a cable.

#### 5.2.3 SS

The following equipment was used to monitor the SS:

- (1) A water sampler comprised a transparent PVC cylinder, with a capacity of not less than 2 litres and which can be effectively sealed with latex cups at both ends. The sampler had a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.
- (2) Water samples for SS measurement were collected in high density polythene bottles, packed in ice (cooled at 4°C without being frozen) and delivered to the laboratory as soon as possible after collection.

#### 5.2.4 Water Depth Detector

A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring.

#### 5.2.5 Location of the Monitoring Site

A hand-held Global Positioning System (GPS) was used during monitoring to ensure the monitoring vessel was at the correct location before taking measurements.

#### 5.2.6 Calibration and Accuracy of Instrumentation

All *in-situ* monitoring instruments were checked, calibrated and certified by a HOKLAS accredited laboratory or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Response of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring location. The calibration certificates are attached in **Appendix C**. For the on site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" was followed.

### 5.3 Results and Observations

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#### 5.3.1 Weather Conditions and Other Factors

Amber rainstorm signal was issued on 19, 20 and 27 May 2007.

#### 5.3.2 Summary of Results

Impact marine water quality monitoring was undertaken during mid-ebb and mid-flood tidal cycles at 10 designated locations including 5 impact and 5 control stations. A baseline check was conducted on 27 February 2006 prior to the commencement of marine works and a compliance checking mechanism was established in accordance with the Baseline Monitoring Report. Detailed water quality monitoring results are given in **Appendix D**. Graphical presentation of the monitoring results are illustrated in **Figures 5-1 to 5-8**.

#### **Summary of Mid-Ebb Tide**

The lowest DO level for surface & middle position of 5.45 mg/L was recorded at WWFCZ2 on 02 and 21 May 2007 and the lowest DO level for bottom position of 5.38 mg/L was recorded at WWA3 on 23 May 2007. There was no exceedance of DO level during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 6.8 Nephelometric Turbidity Unit (NTU) was recorded at WWA2 on 16 May 2007. There was 1 exceedance of Tby Action Level on 16 May 2007 during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest SS level of 19.7 mg/L was recorded at WWA3 on 14 May 2007. There were 5 exceedances of SS Baseline Check Criteria on 14 and 16 May 2007 when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The exceedances of Tby and SS Levels were likely attributed to the Project. The Contractor has provided mitigation measure by extending the silt curtain to cover a larger area, including shore of Slope 82, on 28 May 2007 and no exceedance was recorded in subsequent monitoring on 28 and 30 May 2007.

#### **Summary of Mid-Flood Tide**

The lowest DO level for surface & middle position of 5.43 mg/L was recorded at WWFCZ2 21 May 2007 and the lowest level for bottom position of 5.39 mg/L was recorded at WWA1 on 18 and 21 May 2007. There was no exceedance of DO level during reporting period

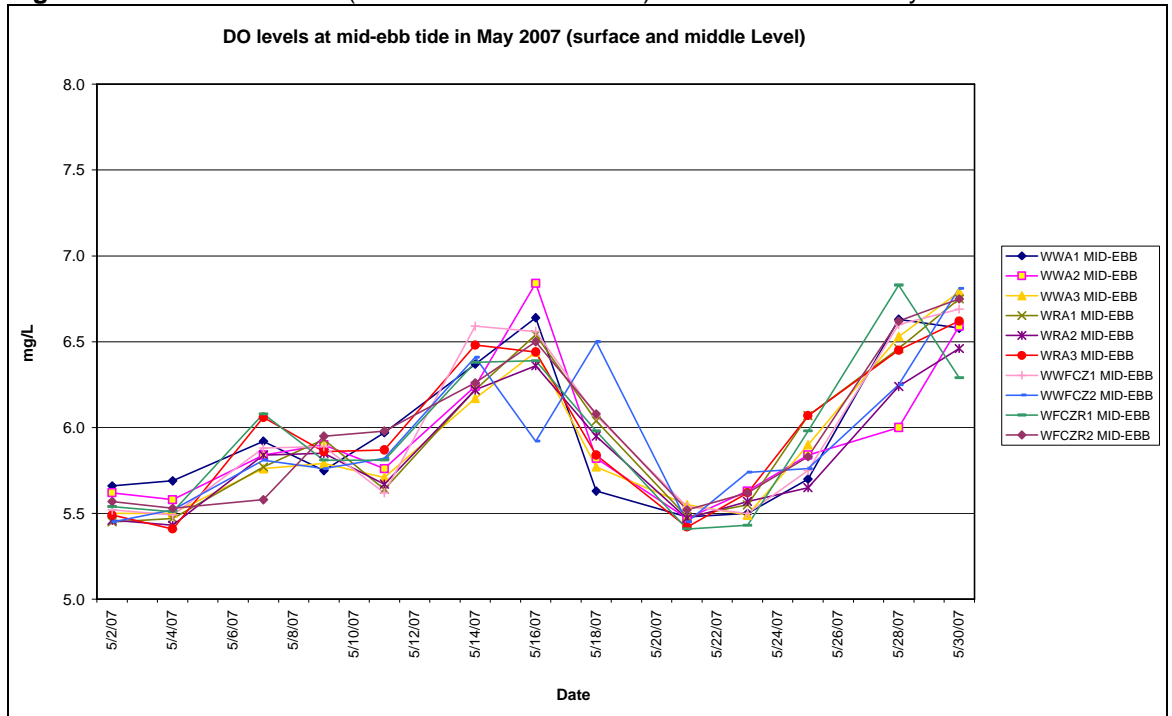
when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 5.7 NTU was recorded at WWA1 on 18 May 2007. There was no exceedance of Tby level during reporting period when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

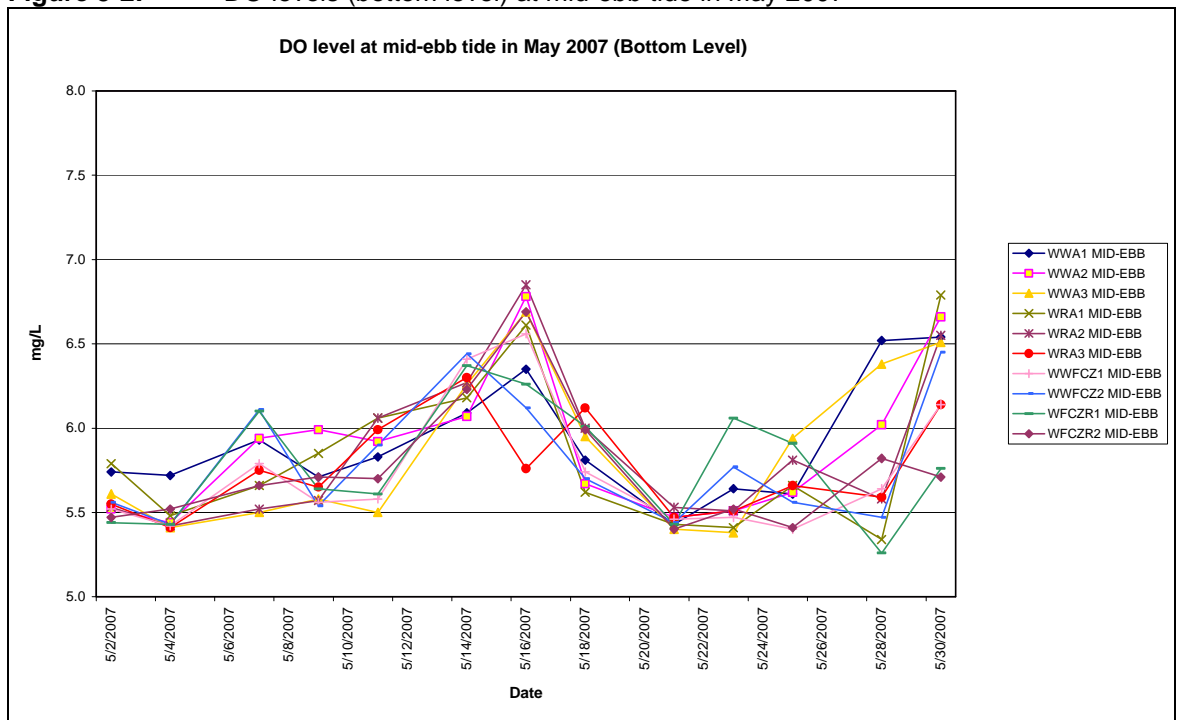
The highest SS level of 18.5 mg/L was recorded at WWA3 on 07 May 2007. There was 3 exceedances of SS Baseline Check Criteria on 07, 14 and 16 May 2007 when compared with the established A/L Levels and baseline check criteria in Section 3.3 of this report.

The exceedances of SS Levels were likely attributed to the Project. The Contractor has provided mitigation measure by extending the silt curtain to cover a larger area, including shore of Slope 82, on 28 May 2007 and no exceedance was recorded in subsequent monitoring on 28 and 30 May 2007.

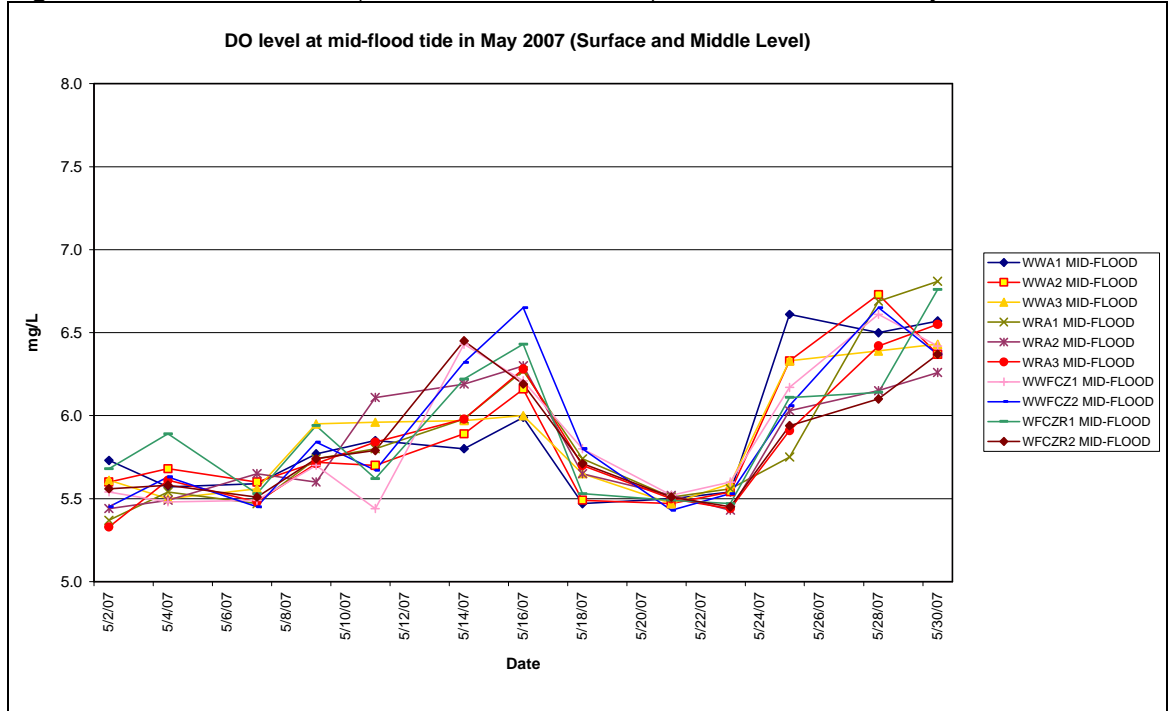
**Figure 5-1:** DO levels (surface and middle level) at mid-ebb tide in May 2007



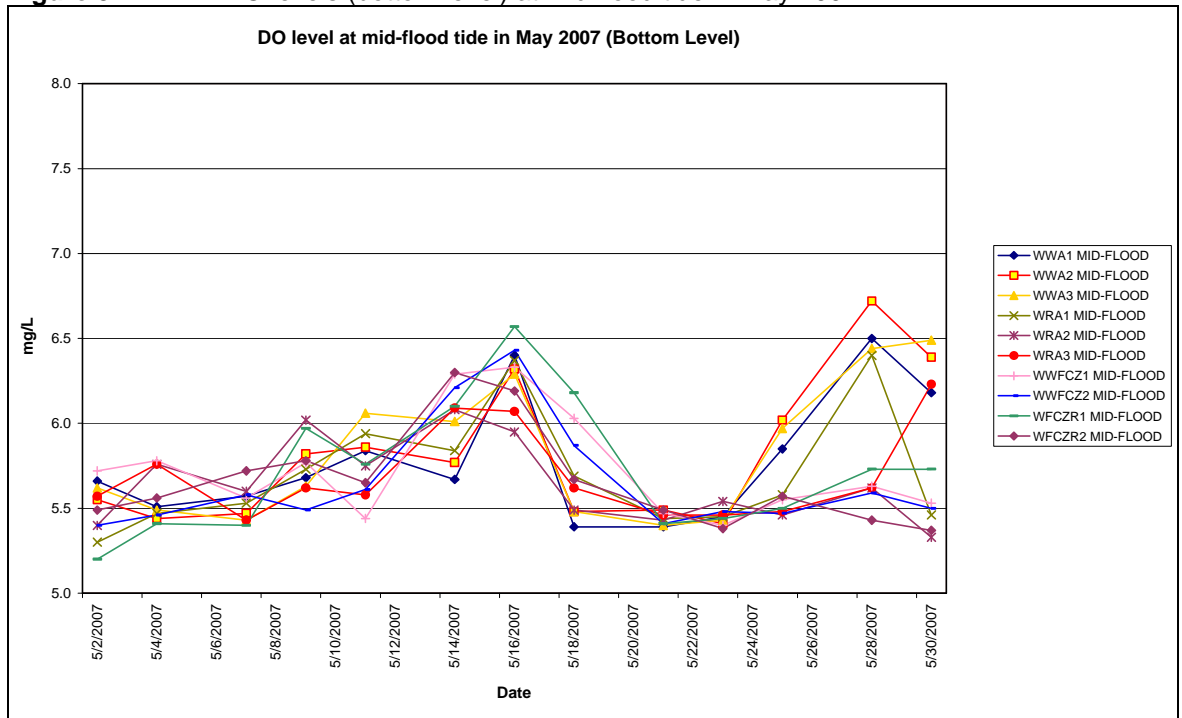
**Figure 5-2:** DO levels (bottom level) at mid-ebb tide in May 2007



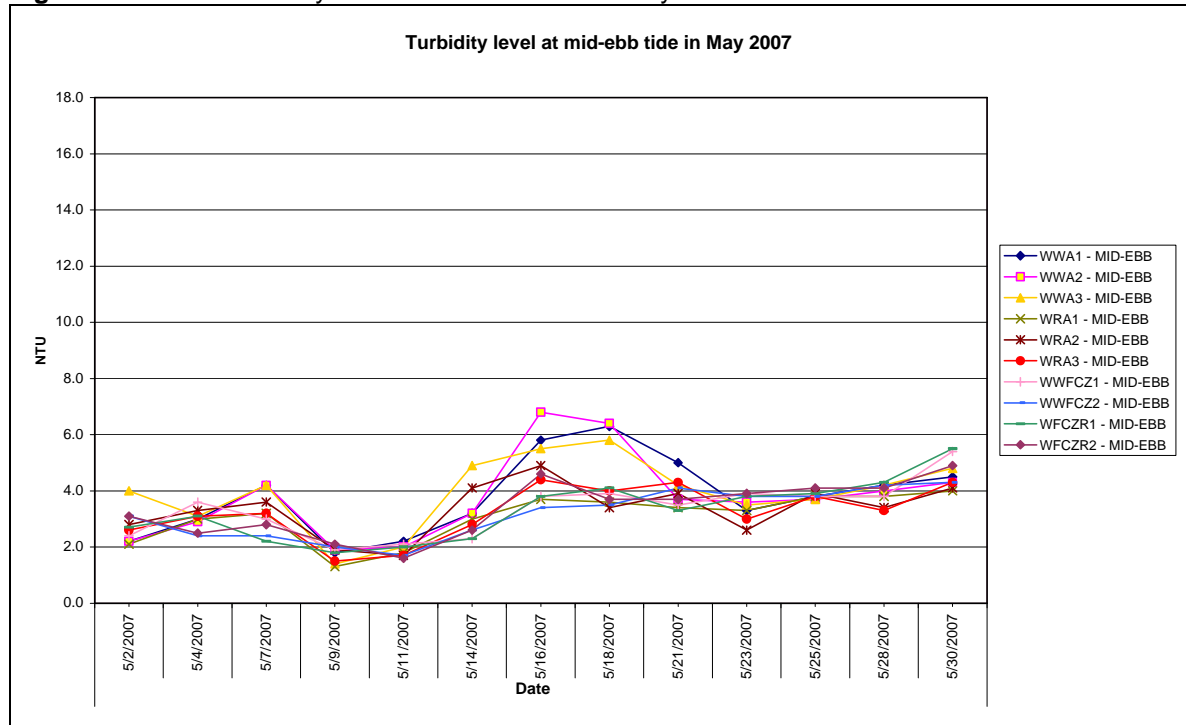
**Figure 5-3:** DO levels (surface and middle level) at mid-flood tide in May 2007



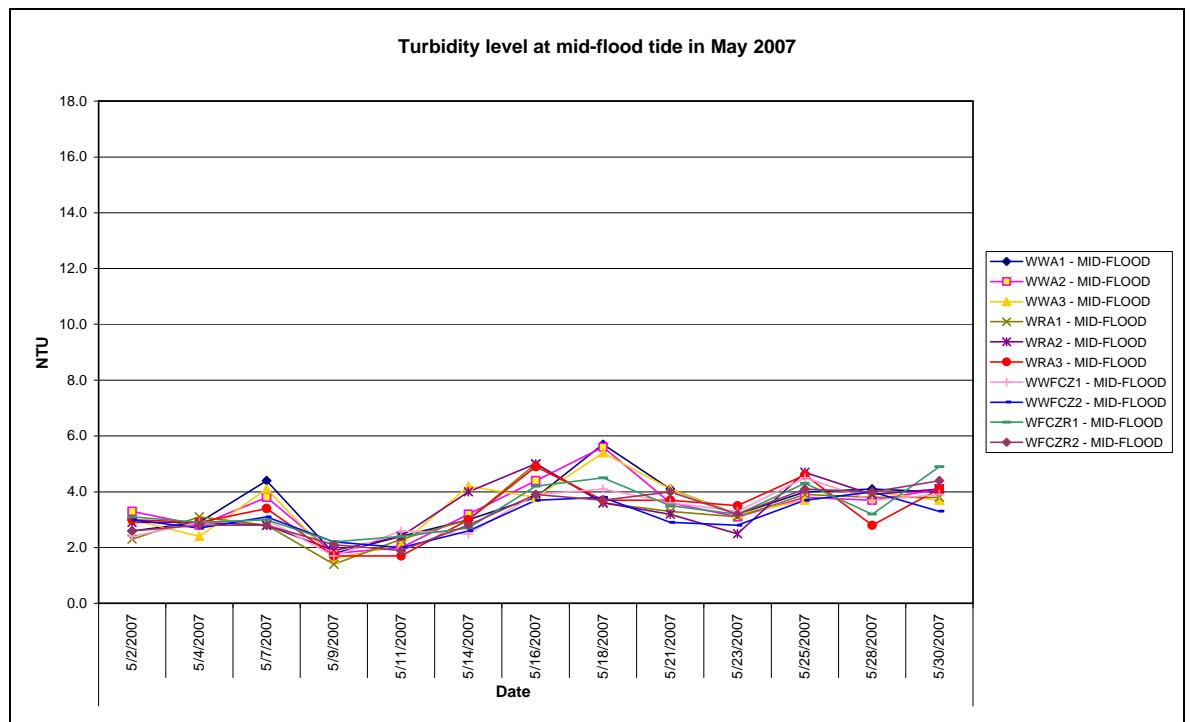
**Figure 5-4:** DO levels (bottom level) at mid-flood tide in May 2007



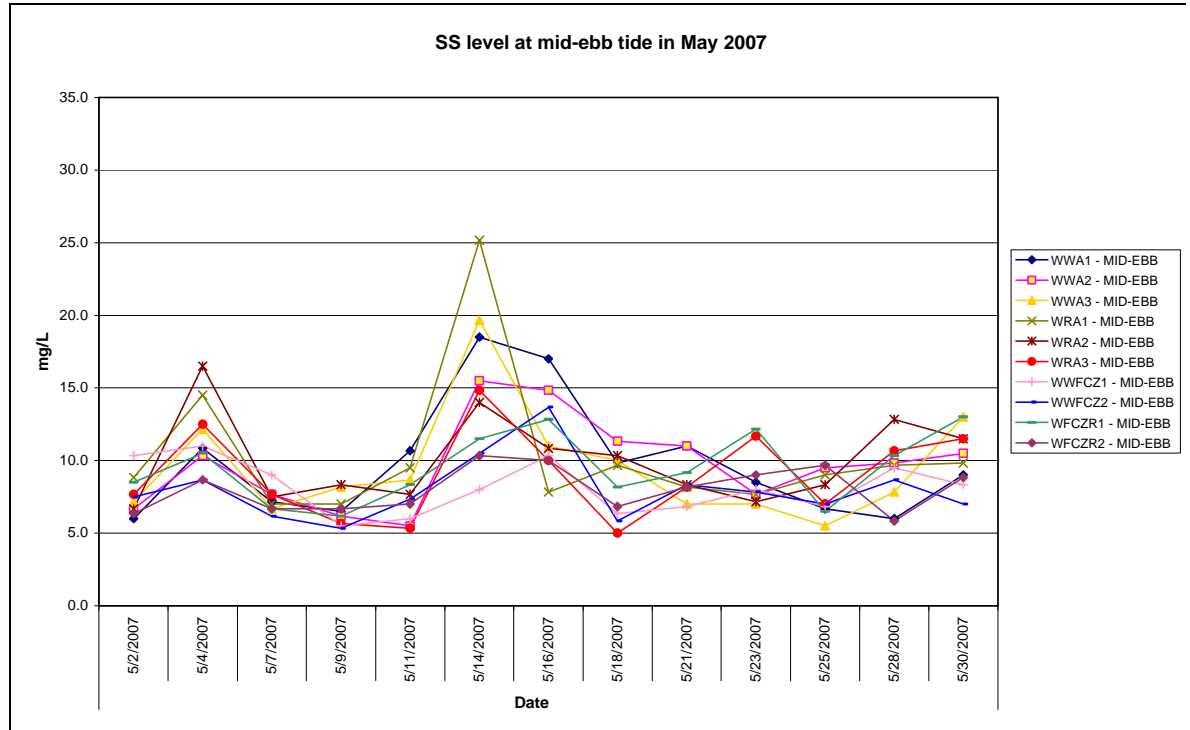
**Figure 5-5:** Turbidity levels at mid-ebb tide in May 2007



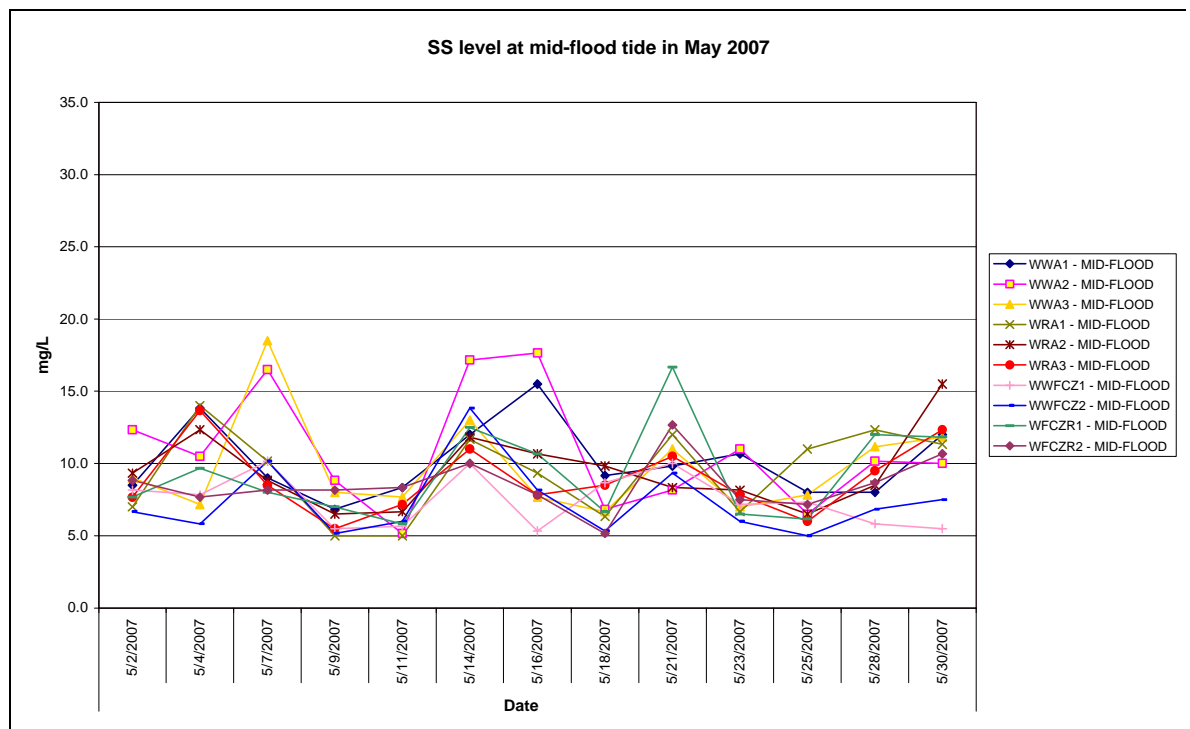
**Figure 5-6:** Turbidity levels at mid-flood tide in May 2007



**Figure 5-7:** SS levels at mid-ebb tide in May 2007



**Figure 5-8:** SS levels at mid-flood tide in May 2007



## 6 Site Inspection, Waste Disposal, environmental complaints, environmental licenses and non-compliance records

### 6.1 Site Audit Findings

Five weekly environmental site audits were carried out on 02, 09, 18, 23, and 30 May 2007. The findings of the site audits are summarised in **Table 6-1**.

**Table 6-1:** Findings of weekly environmental site audit in May 2007

Date of Issue Raised	Observation	Advice from EA	CT's Response / Action	Closing Date
Follow-up of last month's site audit	1. Exposed slope was not covered at Seawall A.	CT was reminded to cover the exposed slope.	Agreed with the ET's advice. The exposed slope was covered in early May 2007.	09 May 2007
02 May 2007 (WTLT 066)	1. Fugitive dust was observed arising from rock breaking, rock dowel and soil nailing works.	CT was reminded to provide water spraying during dusty works.	Agreed with the ET's advice. CT provided water spraying over rock breaking works, rock dowel and soil nailing works immediately.	02 May 2007
	2. Empty cement bags were observed near Seawall B.	CT was reminded to clear the empty cement bags.	Agreed with the ET's advice. CT had removed the waste.	09 May 2007
	3. Muddy water was observed outside the silt curtain at the eastern end. This might be due to re-suspension of soil at the seabed and seepage of muddy water from Slope 82. No excavation works and removal of C&D materials were observed during site audit.	CT was advised to extend the silt curtain to cover a larger area or install double silt curtain around the construction area.	CT extended the curtain to cover the outfall and shore of Slope 82 on 28 May 2007. CT also kept close monitoring of the silt curtain.	30 May 2007
09 May 2007 (WTLT 067)	1. An oil drum was observed without drip tray.	CT was reminded to provide drip tray to the oil drum.	Agreed with the ET's advice. Drip tray was provided to the oil drum.	18 May 2007
	2. C&D waste and general refuse were observed.	CT was reminded to clear the waste frequently.	Agreed with the ET's advice. The waste was being cleared during site audit.	18 May 2007
18 May 2007 (WTLT 068)	1. General refuse was observed near site office.	CT was reminded to clear the waste.	Agreed to clear the waste. The waste had been cleared on 23 May 2007.	23 May 2007



Date of Issue Raised	Observation	Advice from EA	CT's Response / Action	Closing Date
	2. Mud trails were observed at site exits.	CT was reminded to clear the mud trails frequently.	Agreed with ET's advice. CT cleared the mud trails immediately.	18 May 2007
	3. Drip tray was not large enough for the generator near Grand Bay Villa.	CT was reminded to replace the drip tray with a large one.	Agreed with the ET's advice. The drip tray was replaced.	30 May 2007
23 May 2007 (WTLT 069)	1. Stockpile of sand was observed near outfall EA and EB.	CT was reminded to cover the stockpile.	Agreed with the ET's advice. The stockpile was covered.	30 May 2007
30 May 2007 (WTLT 070)	1. Rock breaking works was observed without watering opposite to Grand Bay Villa.	CT was reminded to provide water spraying during rock breaking works.	Agreed with ET's advice. CT provided water spraying immediately.	30 May 2007
	2. Wheel washing was not provided to the vehicle at the exit near Grand Bay Villa.	CT was reminded to provide wheel washing to all vehicles leaving the site.	Agreed with ET's advice. Wheel washing was provided during site audit on 06 June 2007.	06 June 2007

## 6.2 Waste Disposal

Disposal of waste material in the reporting period generally complied with the corresponding waste disposal requirements. The waste disposal quantity in the reporting period is summarised in **Table 6-2**. CT transported C&D material to Public Filling Reception Facility in Tuen Mun Area 38 by barge and truck during reporting period. The disposal record of C&D materials by barge in May 2007 is attached in **Appendix E**.

**Table 6-2:** Waste disposal quantity in May 2007

Type of waste or material	Disposal at	No. of loads or quantities
C&D waste	SENT and WENT Landfill	21.22 tonnes
C&D material	By barge	9,466.5 tonnes
	By truck	911 tonnes
Chemical waste	Collected by licensed collector	0

## 6.3 Complaint Record

There was no environmental complaint received in May 2007.

## 6.4 Exceedance

Exceedances of T<sub>by</sub> and SS levels for marine water quality were recorded during reporting period when compared with A/L Levels and baseline check criteria.

Investigation has been conducted for the exceedances. The exceedances were likely attributed to the construction activities of the Project.

These exceedances are summarised in **Tables 6-3 and 6-4**. The details of the investigation was summarised in **Appendix F**.

Muddy water was observed outside silt curtain in early May 2007. Marginal exceedances of turbidity and suspended solids were recorded on 07, 14 and 16 May 2007. Re-suspension of soil from the seabed and seepage of muddy water from Slope 82 were likely the sources of muddy plume. The Contractor was recommended to extend the silt curtain to cover a larger area, including the working area of Slope 82. The extension of the silt curtain was completed on 28 May 2007. The water quality has been improved and exceedance of A/L levels was not recorded in subsequent marine water quality monitoring on 28 and 30 May 2007.

The details of the silt curtain inspection record were given in **Appendix G**.

**Table 6-3:** Summary of exceedances of marine water quality monitoring (related to construction works of the Project) in May 2007

Date	Tide	Location	Exceedances of monitoring data					
			Tby (NTU)			SS (mg/L)		
			Control Station	Impact Station	Exceedance of	Control Station	Impact Station	Exceedance of
07-May	Mid-flood	WWA3	-	-	-	8.5	18.5	Baseline Check
14-May	Mid-ebb	WWA2	-	-	-	14.0	15.5	Baseline Check
14-May	Mid-ebb	WWA3	-	-	-	14.8	19.7	Baseline Check
14-May	Mid-flood	WWA2	-	-	-	11.8	17.2	Baseline Check
16-May	Mid-ebb	WWA1	-	-	-	7.8	17.0	Baseline Check
16-May	Mid-ebb	WWA2	4.9	6.8	Action Level	10.8	14.8	Baseline Check
16-May	Mid-ebb	WWFCZ2	-	-	-	10.0	13.7	Baseline Check
16-May	Mid-flood	WWA2	-	-	-	10.7	17.7	Baseline Check

## 6.5 Notification of Summons and Successful Prosecution

No notification of summons and prosecution was received in May 2007.

## 6.6 Environmental Licenses

No new environmental licence was granted in the reporting period. A summary of the valid environmental licences is given in **Table 6-4**.

**Table 6-4:** Summary of valid environmental licences in May 2007

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-RW 0155-07	04 Apr 2007	15 Aug 2007
Delivery of C&D Materials to PFRF at Tuen Mun Area 38 by Barge	Application No.: CEDD00160	30 Jan 2007	30 Jun 2007

## 7 Conclusions

The construction phase of the Project was commenced on 28 February 2006. The EM&A programme has been implemented since then, including marine water quality monitoring and environmental site audits. Noise monitoring at Grand Bay Villa was temporarily suspended as these premises were vacant with no resident.

Exceedances of marine water quality were recorded during reporting period and they were likely attributed to construction activities of the Project during the reporting period. The Contractor has provided mitigation measure by extending the silt curtain to cover a larger area, including shore of Slope 82, on 28 May 2007 and no exceedance was recorded in subsequent monitoring on 28 and 30 May 2007.

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

Weekly environmental site audit was carried out during the reporting month. Environmental improvements on air quality, water quality and waste management have been recommended.

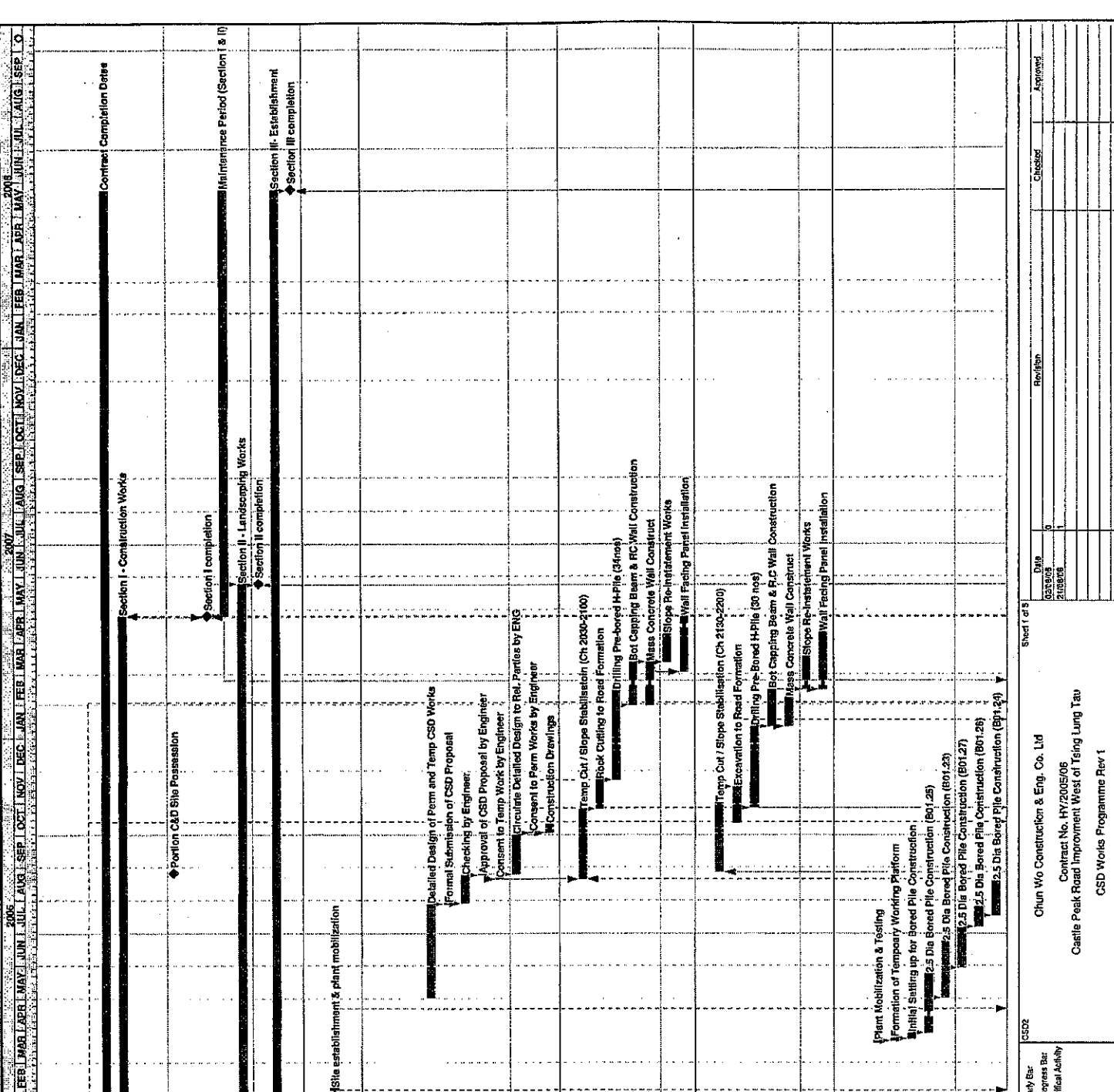
C&D materials were transported to PFRF at Tuen Mun Area 38 by barge and truck during the reporting period.

## 8 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 Reclamation Works (EP No. EP-219/2005) (Second Issue)

**Appendix A**  
**Construction**  
**programme**

---



Activity ID	Activity Description	Orig Dir	Early Start	Early Finish
<b>GENERAL KEY DATES</b>				
KD0900	Commencement of Works	0	21/12/05	20/05/06
KD1000	Contract Completion Dates	885	21/12/05	24/04/07
KD1100	Section I - Construction Works	490	21/12/05	24/04/07
KD1110	Portion A Site Possession	0	21/12/05	0
KD1120	Portion B Site Possession	0	21/12/05	0
KD1130	Portion C&D Site Possession	0	27/08/06	0
KD1140	Portion E Site Possession	0	21/12/05	0
KD1200	Section I completion	0	24/04/07	24/04/07
KD1300	Maintenance Period (Section I & II)	395	25/04/07	23/05/08
KD1400	Section II completion	500	21/12/05	24/05/07
KD1500	Section II - Landscaping Works	0	24/05/07	24/05/07
KD1600	Section III - Establishment	885	21/12/05	23/05/08
KD1700	Section III completion	0	23/05/08	23/05/08
<b>PRELIMINARIES</b>				
P1000	Site establishment & plant mobilization	40	21/12/05	05/02/06
P1010	Submit T14 Schematic Drawing (PS1-15S(16))	0	21/12/05	20/12/05
<b>Area A Construction (Ch2-030 to Ch2-150)</b>				
<b>Pre-Bored H-Pile Wall at Both Ends at GL</b>				
<i>Pre-Construction</i>				
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	26/09/06	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
<i>Construction - West Side</i>				
A04PP1022	Temp Cut / Slope Stabilisation (Ch 2030-2100)	55	21/09/06	28/10/06
A04PP1028	Rock Cutting to Road Formation	22	28/10/06	21/11/06
4PP1030	Drilling Pre-bored H-Pile (34nos)	68	22/11/06	13/02/07
4PP1040	Bot Capping Beam & R.C 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
<i>Construction - East Side</i>				
4PP2000	Temp Cut / Slope Stabilisation (Ch 2130-2200)	53	28/08/06	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 & R.C 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
<b>Bored Pile Retaining Wall Construction</b>				
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 (B01.23)	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 (B01.24)	15	08/07/06	25/07/06
4BP3070	2.5 Dia Bored Pile Construction (B01.24)	28	18/07/06	18/08/06

Start Date: 21/12/05  
 Finish Date: 23/05/08  
 Data Date: 21/12/05  
 Run Date: 20/05/15 00:00

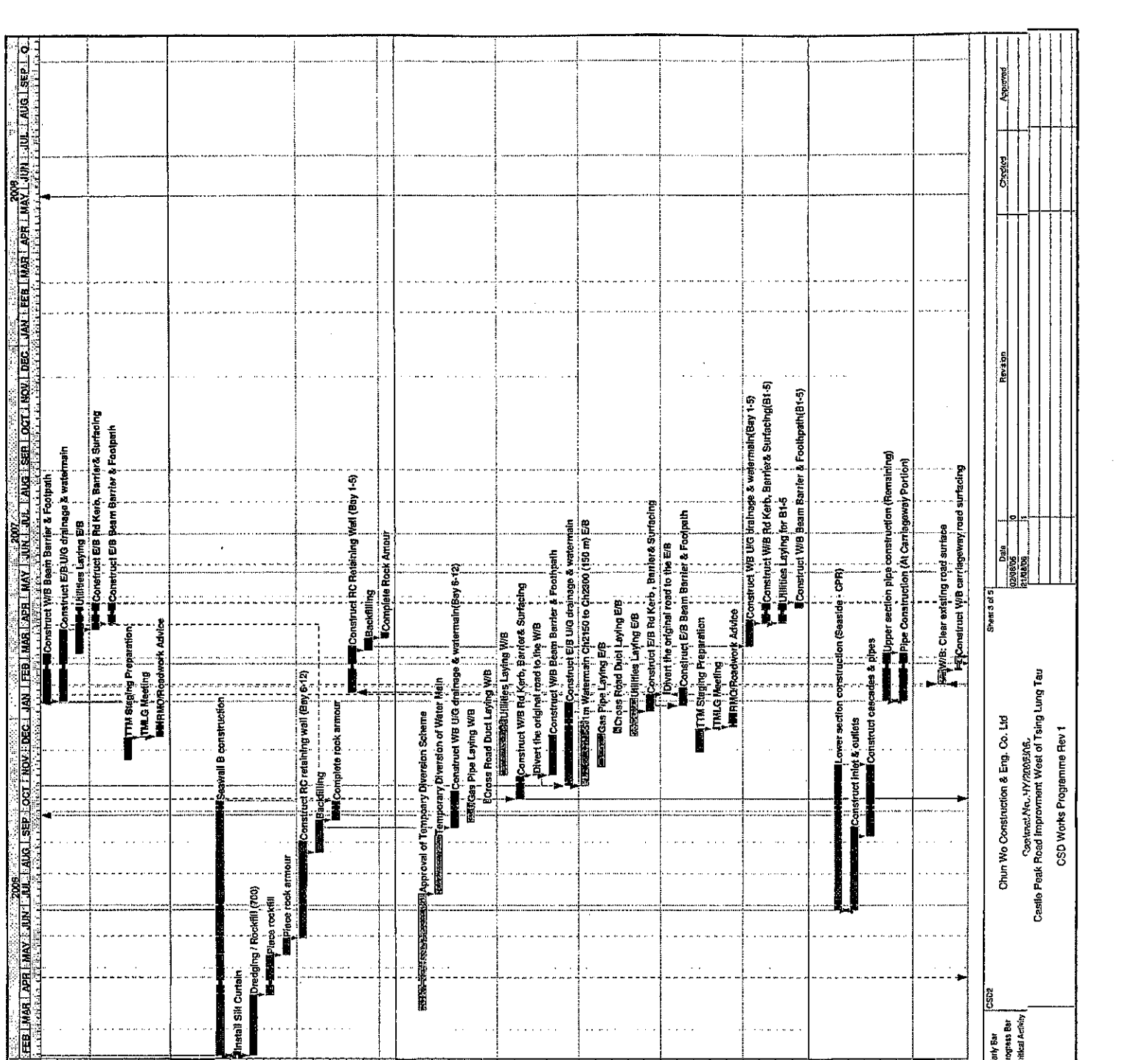
Progress Bar:  
 [Legend for Early Bar, Progress Bar, Critical Activity]

2Primavera Systems, Inc.

Sheet 1 of 3  
 Chun Wo Construction & Eng. Co. Ltd  
 Contract No. HY/2005/06  
 Cattle Peak Road Improvement West of Tsing Lung Tau  
 CSD Works Programme Rev 1

Checklist:  
 Checked: [ ]  
 Approved: [ ]





Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2008 FEB	2008 MAR	2008 APR	2008 MAY	2008 JUN	2008 JUL	2008 AUG	2008 SEP
3RW2505	Construct WB Beam Barrier & Footpath	35	18/07/07	05/03/07								
A02RW2600	Construct EB U/G drainage & watermain	56	18/07/07	29/03/07								
A02RW4500	Utilities Laying EB	36	06/03/07	20/04/07								
3RW2605	Construct EB Rd Kerb, Barriers & Surfacing	18	30/03/07	24/04/07								
3RW2608	Construct EB Beam Barrier & Footpath	14	04/04/07	24/04/07								
3RW2610	TTM Staging Preparation	19	21/11/06	15/12/06								
3RW2650	TMLG Meeting	1	13/12/06	13/12/06								
3RW2630	RMO/Roadwork Advice	10	14/12/06	28/12/06								
<b>Area 5 Construction (Ch2-150 to Ch2-300)</b>												
2SWB0500	Seawall B construction	204	04/02/06	11/10/06								
A02SWB100	Install Silt Curtain	3	04/02/06	07/02/06								
2SWB1000	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	22/06/06	22/06/06								
2SWB1500	Complete rock armour	14	23/06/06	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								
<b>Roadworks Construction</b>												
A02RW0100	Approval of Temporary Diversion Scheme	90	20/03/06	11/07/06								
A02RW0500	Temporary Diversion of Water Main	50	12/07/06	07/08/06								
2RW2900	Construct WB U/G drainage & watermain (Bay 6-12)	30	16/09/06	21/10/06								
A02RW1900	Gas Pipe Laying WB	14	21/09/06	09/10/06								
A02RW1800	Cross Road Duct Laying WB	4	10/10/06	13/10/06								
A02RW1600	Utilities Laying WB	45	08/11/06	30/12/06								
2RW2010	Construct WB Rd Kerb, Barriers & Surfacing	18	14/10/06	04/11/06								
2RW2501	Divert the original road to the WB	1	08/11/06	06/11/06								
2RW3510	Construct WB Beam Barrier & Footpath	35	06/11/06	15/12/06								
2RW3600	Construct EB U/G drainage & watermain	65	27/11/06	16/01/07								
A01U2500	1m Watermain Ch2150 to Ch2300 (130 m) EB	50	27/10/06	28/12/06								
A02RW2100	Gas Pipe Laying EB	28	15/11/06	16/12/06								
A02RW2000	Cross Road Duct Laying EB	4	18/12/06	22/12/06								
A02RW1700	Utilities Laying EB	28	15/12/06	30/01/07								
2RW3610	Construct EB Rd Kerb, Barriers & Surfacing	15	09/01/07	24/01/07								
2RW3500	Divert the original road to the EB	1	25/01/07	25/01/07								
2RW3620	Construct EB Beam Barrier & Footpath	15	13/01/07	30/01/07								
2RW3700	TTM Staging Preparation	19	29/11/06	21/12/06								
2RW3710	TMLG Meeting	1	29/12/06	29/12/06								
2RW3720	RMO/Roadwork Advice	10	23/12/06	06/01/07								
A02RW1100	Construct WB U/G drainage & watermain (Bay 1-5)	22	13/03/07	07/04/07								
A02RW1300	Construct WB Rd Kerb, Barriers & 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								
<b>OUTFALL EA &amp; EB CONSTRUCTION</b>												
3CF1030	Lower section construction (Seaside - CPR)	120	26/03/06	16/11/06								
3CF1100	Construct inlets & outlets	70	28/03/06	15/09/06								
3CF1200	Construct cascaides & pipes	58	07/05/06	16/11/06								
3CF2000	Upper section pipe construction (Remaining)	35	18/01/07	05/03/07								
3CF2100	Pipe Construction (At Carriageway Portion)	35	18/01/07	05/03/07								
<b>Area 1 Construction (Ch1-500 to Ch1-705)</b>												
3RW0500	WB: Clear existing road surface	12	03/02/07	16/02/07								
3RW1500	Construct WB carriageway road surfacing	6	17/02/07	01/03/07								

2008 FEB | 2008 MAR | 2008 APR | 2008 MAY | 2008 JUN | 2008 JUL | 2008 AUG | 2008 SEP | Q

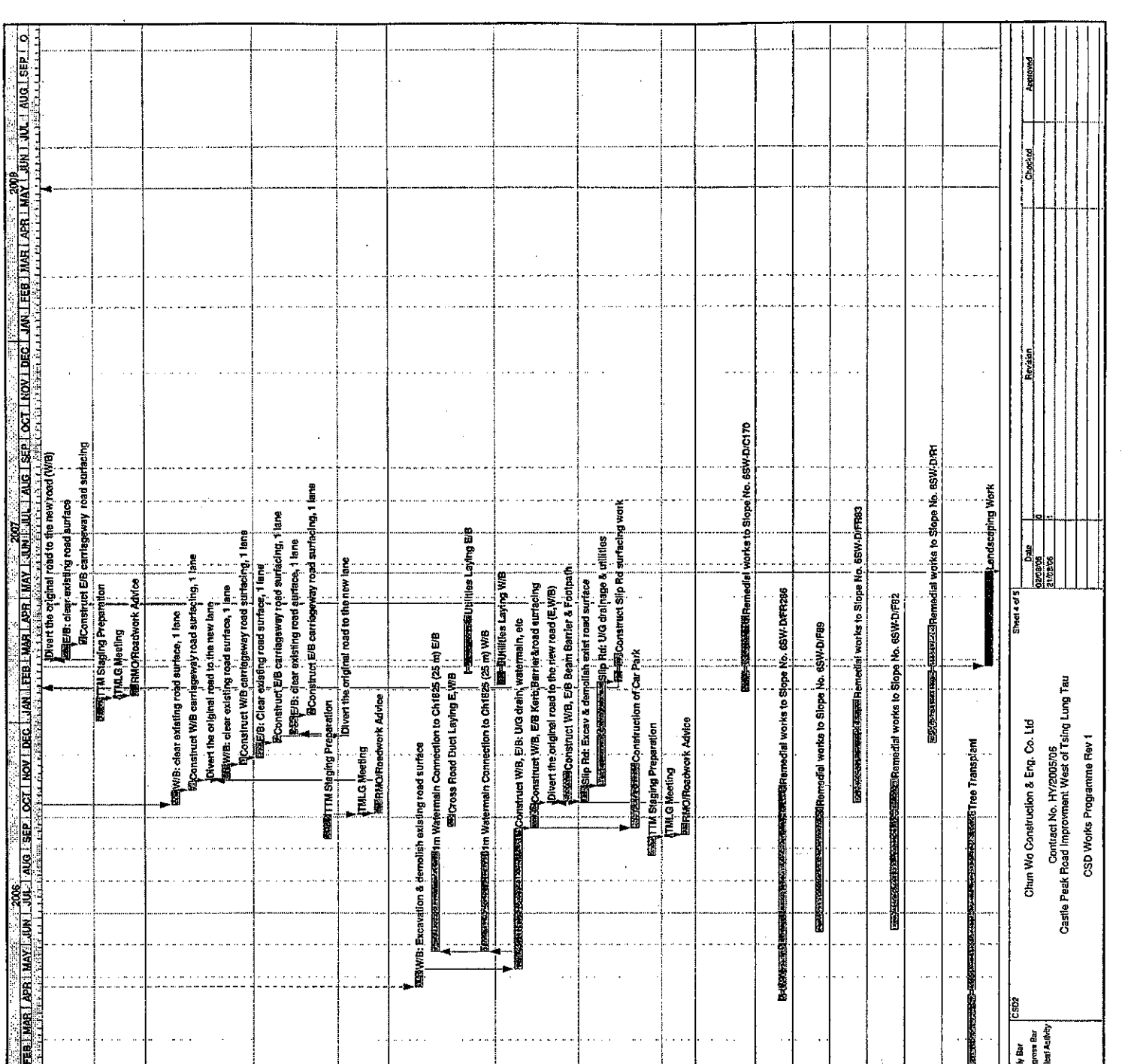
Date: 02/08/08  
 Checked: [Signature]  
 Approved: [Signature]

Chun Wo Construction & Eng. Co. Ltd  
 Casale Peak Road Improvement West of Tsing Lung Tau  
 CSD Works Programme Rev 1

Start Date: 21/12/05  
 Finish Date: 23/09/08  
 Date Date: 21/12/05  
 Run Date: 22/06/08 16:00

EPM by: [Signature]  
 Progress Bar: [Signature]  
 Critical Activity: [Signature]

Sheet 3 of 5



Activity ID	Activity Description	Orig. Start	Early Start	Early Finish
5RW2000	Divert the original road to the new road (WB)	12/03/07	02/03/07	02/03/07
5RW2500	E/B: clear existing road surface	12/03/07	16/03/07	16/03/07
5RW3500	Construct E/B carriageway road surfacing	8/17/07	23/03/07	23/03/07
5RW3510	TTM Staging Preparation	19/03/07	24/07/07	24/07/07
5RW3520	TM/G Meeting	1/25/07	25/07/07	25/07/07
5RW3530	RMO/Roadwork Advice	10/26/07	06/02/07	06/02/07
<b>Area 6 Construction (Ch2+300 to Ch2+400)</b>				
5RW4000	WB: clear existing road surface, 1 lane	12/14/06	27/10/06	27/10/06
5RW1500	Construct WB carriageway road surfacing, 1 lane	6/28/06	04/11/06	04/11/06
5RW2000	Divert the original road to the new lane	1/06/11/06	06/11/06	06/11/06
5RW2100	WB: clear existing road surface, 1 lane	12/07/11/06	20/11/06	20/11/06
5RW2200	Construct WB carriageway road surfacing, 1 lane	6/21/11/06	27/11/06	27/11/06
5RW2300	E/B: Clear existing road surface, 1 lane	12/28/11/06	11/12/06	11/12/06
5RW3000	Construct E/B carriageway road surfacing, 1 lane	6/12/12/06	18/12/06	18/12/06
5RW3501	E/B: clear existing road surface, 1 lane	12/21/12/06	06/01/07	06/01/07
5RW3502	Construct E/B carriageway road surfacing, 1 lane	8/08/01/07	13/01/07	13/01/07
5RW3510	TTM Staging Preparation	19/11/06/06	03/10/06	03/10/06
5RW3511	Divert the original road to the new lane	1/18/12/06	19/12/06	19/12/06
5RW3520	TM/G Meeting	1/04/10/06	04/10/06	04/10/06
5RW3530	RMO/Roadwork Advice	10/05/10/06	17/10/06	17/10/06
<b>Area 2 Construction (Ch1+705 to Ch1+825)</b>				
1RW0500	WB: Excavation & demolish existing road surface	12/21/04/06	06/05/06	06/05/06
AOLU25700	1m Watermain Connection to Ch1825 (25 m) E/B	8/25/05/06	28/09/06	28/09/06
AOLRW0800	Cross Road Duct Laying E/W/B	8/23/09/06	03/10/06	03/10/06
AOLRW0600	Utilities Laying E/B	42/17/02/07	13/04/07	13/04/07
AOLRW0700	1m Watermain Connection to Ch1825 (25 m) WB	8/25/05/06	28/09/06	28/09/06
AOLRW0900	Utilities Laying WB	14/10/02/07	27/02/07	27/02/07
1RW1000	Construct WB, E/B: U/G drain, watermain, etc	11/5/05/06	20/09/06	20/09/06
1RW1500	Construct WB, E/B (Kerb Barriers) road surfacing	19/21/09/06	14/10/06	14/10/06
1RW2000	Divert the original road to the new road (E/W/B)	24/17/10/06	16/10/06	16/10/06
1RW2500	Slip Rd: Excav & demolish exist road surface	12/17/10/06	31/10/06	31/10/06
1RW3000	Slip Rd: U/G drainage & utilities	82/01/11/06	09/02/07	09/02/07
1RW3500	Construct Slip Rd surfacing work	18/09/02/07	07/03/07	07/03/07
AOLRW0500	Construction of Car Park	5/21/09/06	2/11/06	2/11/06
1RW3510	TTM Staging Preparation	15/28/08/06	12/09/06	12/09/06
1RW3520	TM/G Meeting	1/13/09/06	13/09/06	13/09/06
1RW3530	RMO/Roadwork Advice	10/14/09/06	25/09/06	25/09/06
<b>Slope Remedial Works</b>				
<b>Remedial Work 6SW-D/C170</b>				
5RW3000	Remedial works to Slope No. 6SW-D/C170	5/7/30/01/07	12/04/07	12/04/07
<b>Remedial Work 6SW-D/FR286</b>				
5RW3500	Remedial works to Slope No. 6SW-D/FR286	18/7/06/04/06	31/10/06	31/10/06
<b>Remedial Work 6SW-D/FR89</b>				
5RW4000	Remedial works to Slope No. 6SW-D/FR89	10/7/13/06/06	10/10/06	10/10/06
<b>Remedial Work 6SW-D/FR83</b>				
5RW5000	Remedial works to Slope No. 6SW-D/FR83	8/7/15/10/06	22/01/07	22/01/07
<b>Remedial Work 6SW-D/FR2</b>				
5RW5500	Remedial works to Slope No. 6SW-D/FR2	1/20/15/06/06	06/11/06	06/11/06
<b>Remedial Work 6SW-D/FR1</b>				
5RW6000	Remedial works to Slope No. 6SW-D/FR1	8/7/21/12/06	10/09/07	10/09/07
<b>Section II - Landscaping Works</b>				
AOLW1000	Tree Transplant	20/06/02/06	06/10/06	06/10/06
LW1000	Landscaping Work	9/24/02/07	24/03/07	24/03/07

Sheet 4 of 5

Chun Chu Construction & Eng. Co. Ltd  
Contract No. HY2005/05  
Castle Peak Road Improvement, West of Tsing Lung Tau  
CSD Works Programme Rev 1

Start Date	21/12/06	Early Bar	
Finish Date	23/09/07	Programme Bar	
Site Code	210901A 1500	Critical Activity	
Run Date			

2P:mevra Systems, Inc.





Appendix B

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**Monitoring schedule for  
May 2007 and June  
2007**

### Environmental Monitoring and Audit Schedule - May 2007

- 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

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

### Tentative Environmental Monitoring and Audit Schedule - June 2007

- 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

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

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 - Mar 20, 2007 Rootsometer S/N 9833620 Ta (K) - 293  
 Operator Tisch Orifice I.D. - 1378 Pa (mm) - 760.73

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORIFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4080	3.2	2.00
2	NA	NA	1.00	0.9920	6.4	4.00
3	NA	NA	1.00	0.8880	8.0	5.00
4	NA	NA	1.00	0.8470	8.8	5.50
5	NA	NA	1.00	0.6980	12.9	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0137	0.7200	1.4269	0.9958	0.7072	0.8777
1.0095	1.0176	2.0180	0.9916	0.9996	1.2412
1.0072	1.1343	2.2561	0.9894	1.1142	1.3877
1.0062	1.1880	2.3663	0.9884	1.1670	1.4555
1.0007	1.4338	2.8538	0.9830	1.4083	1.7553
Qstd slope (m) = 2.00163			Qa slope (m) = 1.25339		
intercept (b) = -0.01513			intercept (b) = -0.00931		
coefficient (r) = 0.99997			coefficient (r) = 0.99997		
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:

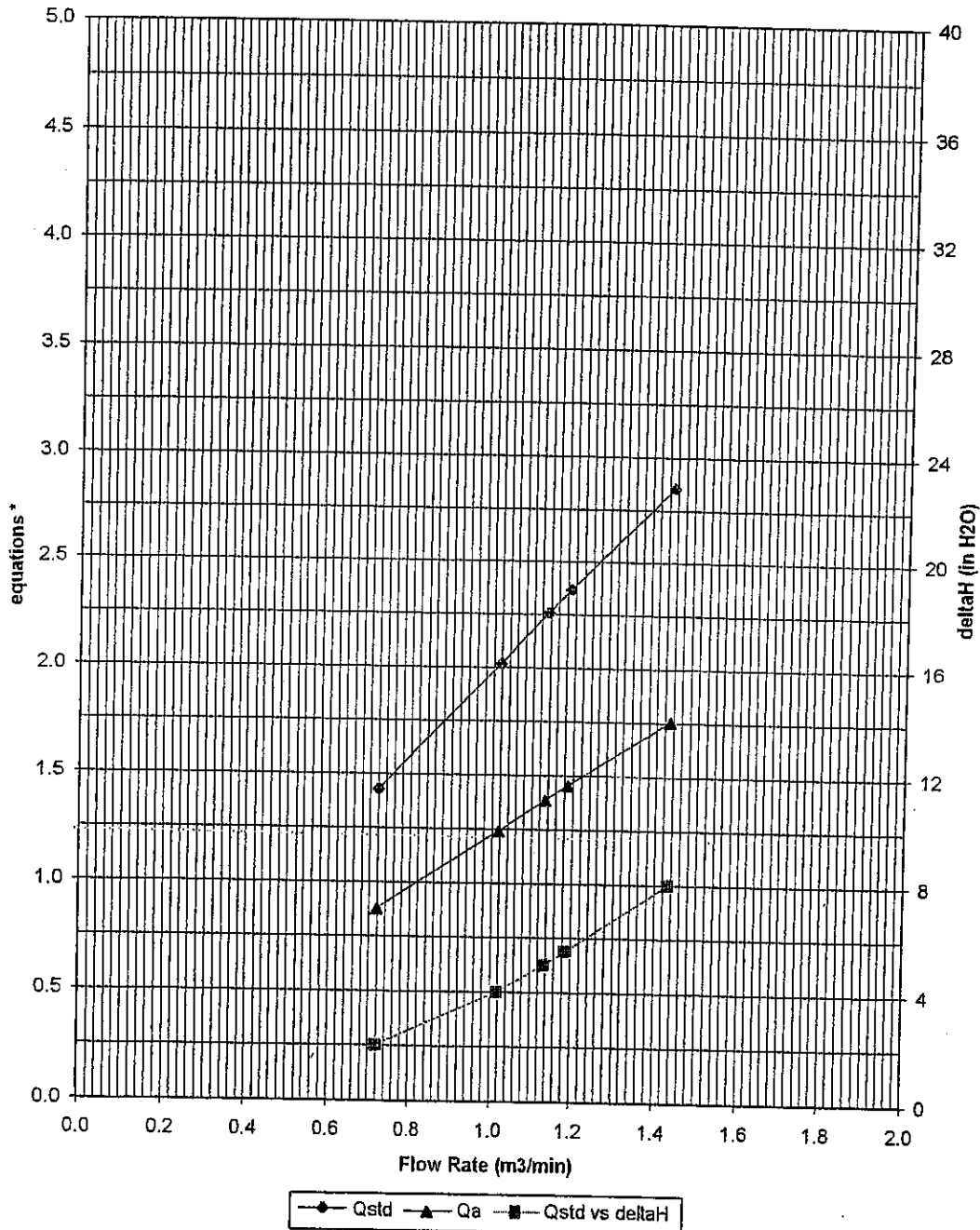
Qstd = 1/m{ [SQRT(H2O(Pa/760)(298/Ta))] - b}  
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



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

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

# 1378

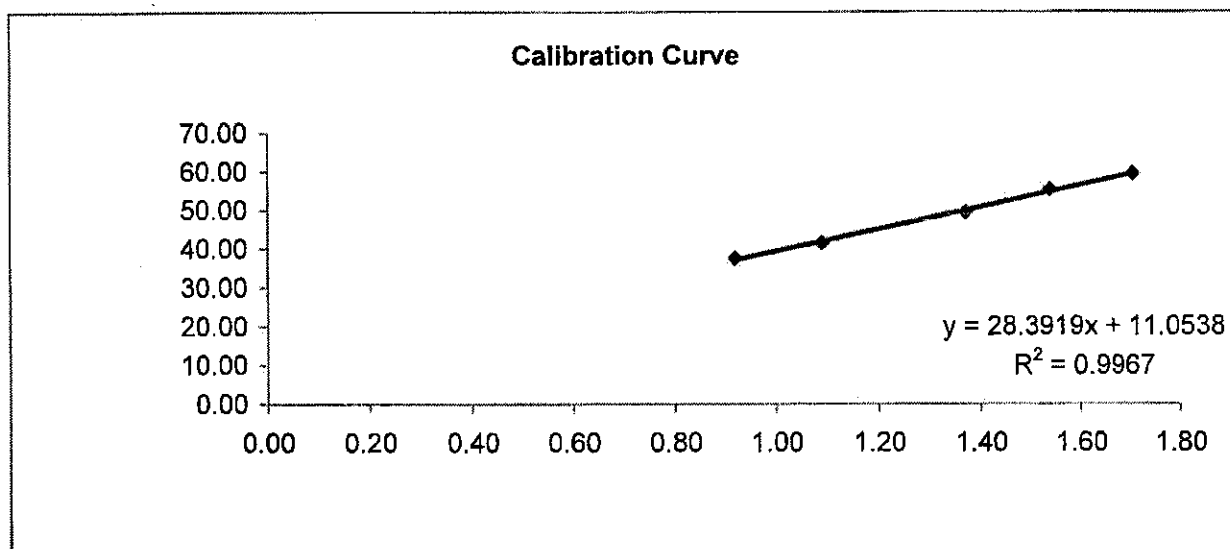
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	2-Apr-07	Barometric pressure	758 mm Hg
Calibration due date	1-Jun-07	Temperature (°C)	26 °C
Sampler location	WA3 - Hong Kong Garden (Savoy Heights)	Temperature (K)	299 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	1378	T <sub>std</sub>	293 K

Calibrator model	GMW-2535
Calibrator serial number	1378
Slope of the standard curve, m <sub>s</sub>	2.00163
Intercept of the standard curve, b <sub>s</sub>	-0.01513

Resistance Plate No.	Manometer Reading (inch H <sub>2</sub> O)	Flow Recorder Reading (CFM)	Calculated Q <sub>std</sub> (m <sup>3</sup> /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.40	38.00	0.92	37.57
7	4.80	42.00	1.09	41.52
10	7.60	50.00	1.37	49.43
13	9.60	56.00	1.54	55.36
18	11.80	60.00	1.70	59.32



**Linear Regression**

Sampler slope (m) : **28.3919**  
 Sampler intercept (b) : **11.0538**  
 Correlation coefficient (R<sup>2</sup>) : **0.9967**

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

Performed by: Lam

Date: 2-4-07

Checked by: ki

Date: 3-4-07



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: ----- 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 <sup>3</sup> )	Remarks
			Start	Finish						
8-May-07	WA3	1	9:00	10:00	Sunny	Normal Operation	29.0	760.0	229.9	
8-May-07	WA3	2	10:00	11:00	Sunny	Normal Operation	29.0	760.0	192.5	
8-May-07	WA3	3	11:00	12:00	Sunny	Normal Operation	29.0	760.0	177.9	
10-May-07	WA3	1	15:21	16:21	Fine	Normal Operation	27.0	759.0	196.5	
10-May-07	WA3	2	16:21	17:21	Fine	Normal Operation	27.0	759.0	194.0	
10-May-07	WA3	3	17:21	18:21	Fine	Normal Operation	27.0	759.0	180.1	
17-May-07	WA3	1	14:14	15:14	Fine	Normal Operation	30.0	758.0	303.1	
17-May-07	WA3	2	15:14	16:14	Fine	Normal Operation	30.0	758.0	313.0	
17-May-07	WA3	3	16:14	17:14	Fine	Normal Operation	30.0	758.0	290.8	
22-May-07	WA3	1	15:10	16:10	Cloudy	Normal Operation	25.0	754.0	231.7	
22-May-07	WA3	2	16:10	17:10	Cloudy	Normal Operation	25.0	754.0	197.5	
22-May-07	WA3	3	17:10	18:10	Cloudy	Normal Operation	25.0	754.0	199.1	
29-May-07	WA3	1	8:52	9:52	Sunny	Normal Operation	28.0	756.0	259.7	
29-May-07	WA3	2	9:52	10:52	Sunny	Normal Operation	28.0	756.0	171.3	
29-May-07	WA3	3	10:52	11:52	Sunny	Normal Operation	28.0	756.0	179.7	

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 <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m <sup>3</sup> )	24-hour TSP Level (µg/m <sup>3</sup> )	Remarks
				Initial	Final		Initial	Final		Start	Finish				
4-May-07	WA3	Cloudy	Normal Operation	2.8609	2.9737	0.1128	0.7370	0.8107	0.7739	9692.05	9716.05	1440.00	1114.34	101.2	
9-May-07	WA3	Fine	Normal Operation	2.8485	2.9398	0.0913	0.8786	0.9139	0.8963	9716.05	9740.05	1440.00	1290.60	70.7	
15-May-07	WA3	Fine	Normal Operation	2.8613	3.0085	0.1472	1.0850	1.2244	1.1547	9740.05	9764.05	1440.00	1662.77	86.5	
21-May-07	WA3	Fine	Normal Operation	2.8575	2.9951	0.1376	0.8724	0.8736	0.8730	9764.05	9788.05	1440.00	1257.12	109.5	
28-May-07	WA3	Cloudy	Normal Operation	2.8465	2.9080	0.0615	0.7963	0.7291	0.7637	9788.05	9812.05	1440.00	1099.73	55.9	

Appendix G

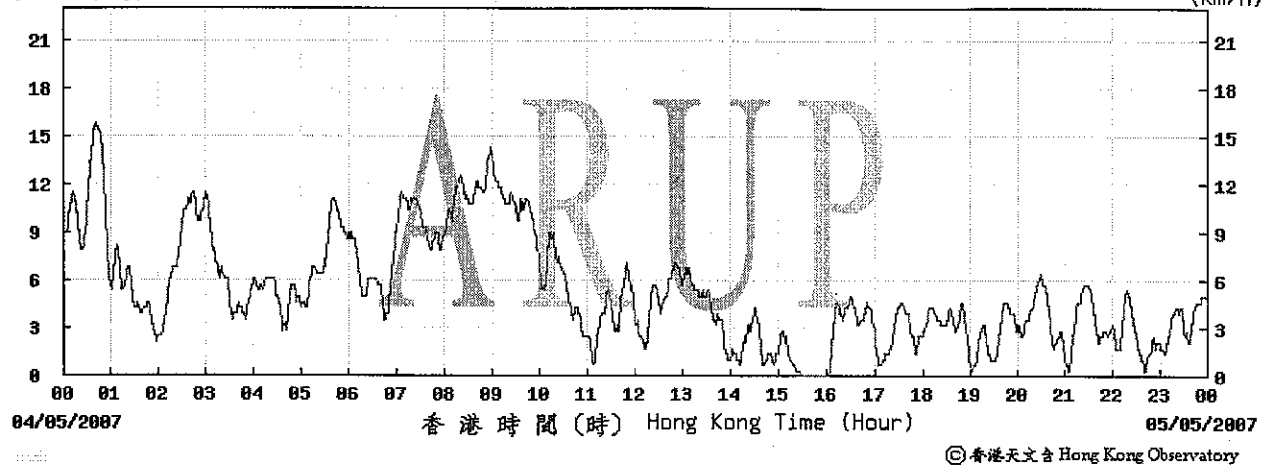
---

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

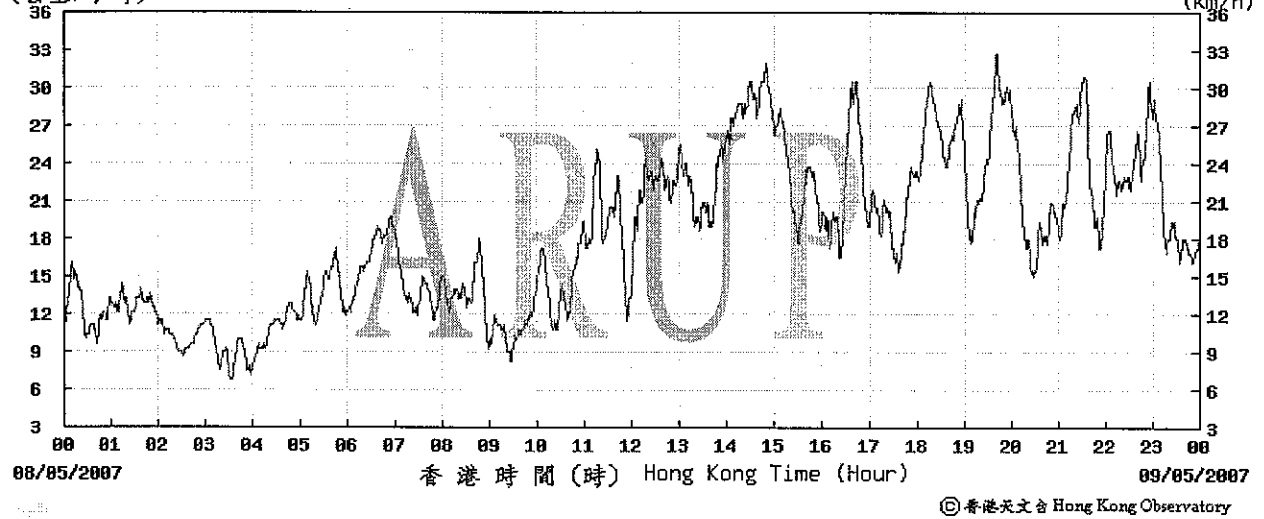


# Wind Monitoring Data – Wind Speed during air quality monitoring in May 2007

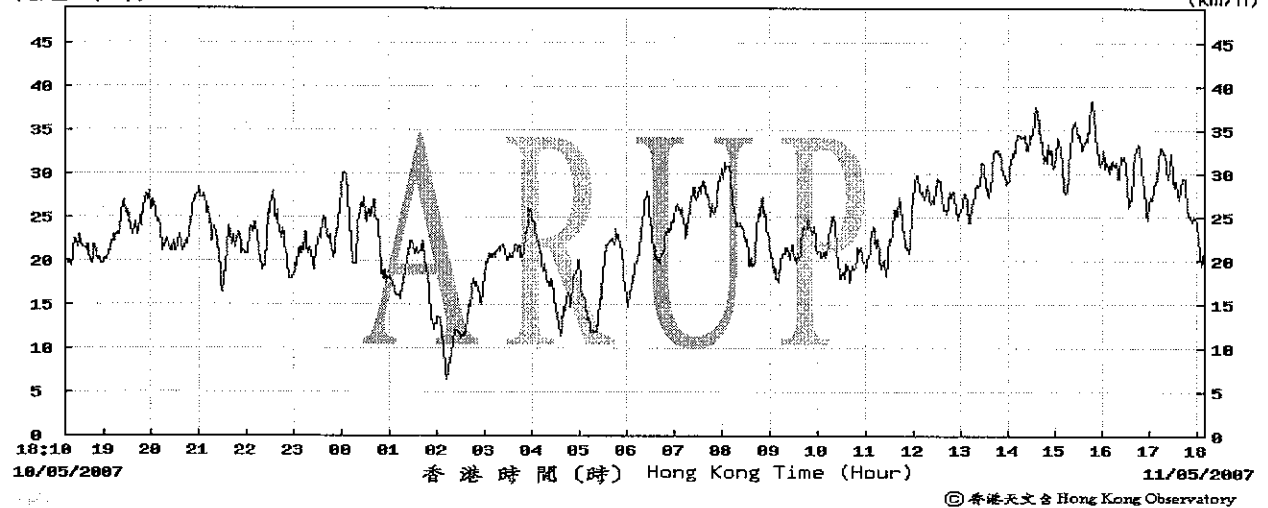
(公里/小時) (於香港時間 2007 年 5 月 5 日 0 時 0 分更新) (Updated at 00:00H on 5 May 2007)



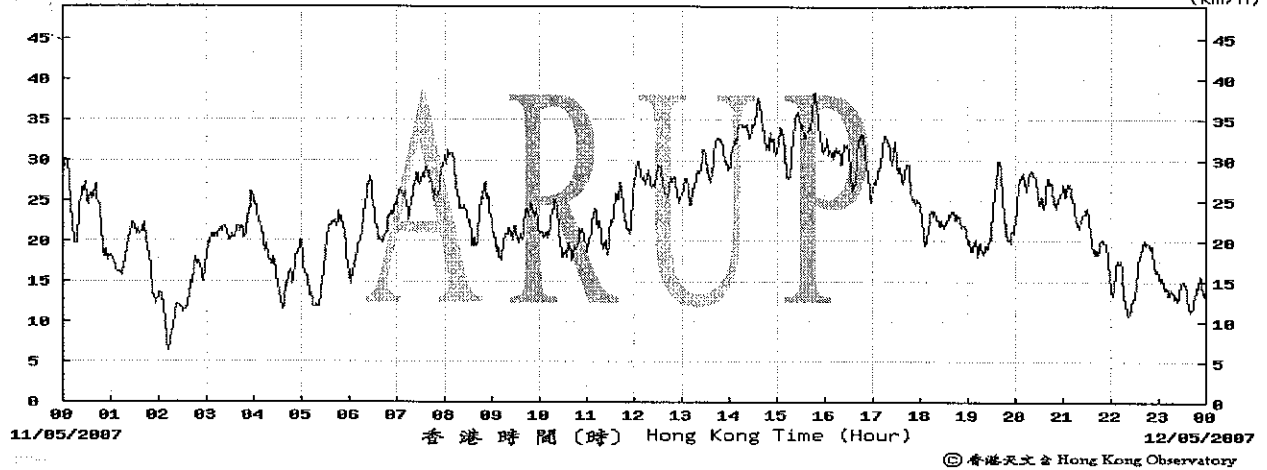
(公里/小時) (於香港時間 2007 年 5 月 9 日 0 時 0 分更新) (Updated at 00:00H on 9 May 2007)



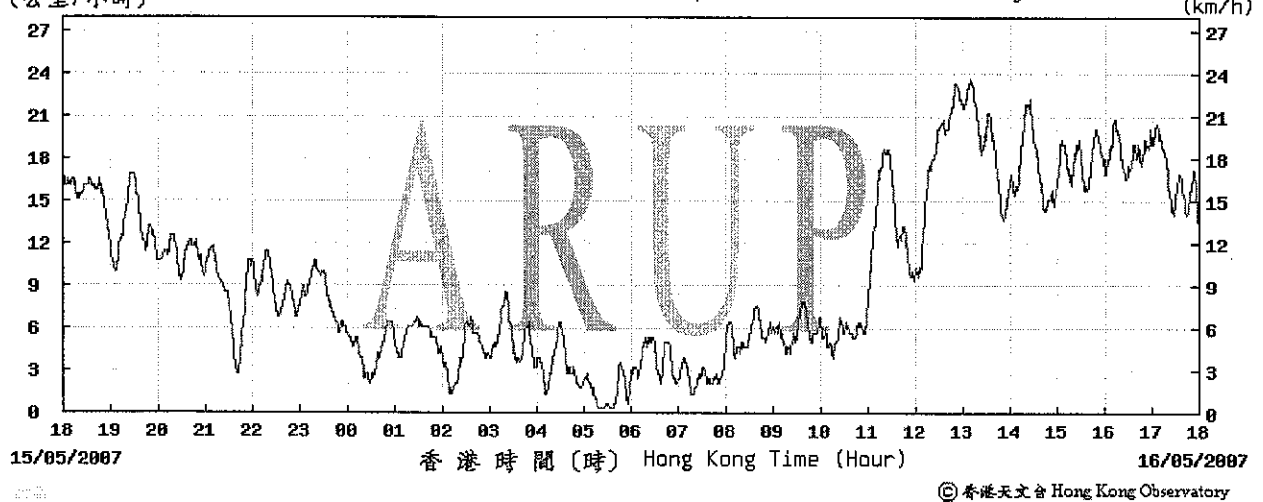
(公里/小時) (於香港時間 2007 年 5 月 11 日 18 時 10 分更新) (Updated at 18:10H on 11 May 2007)



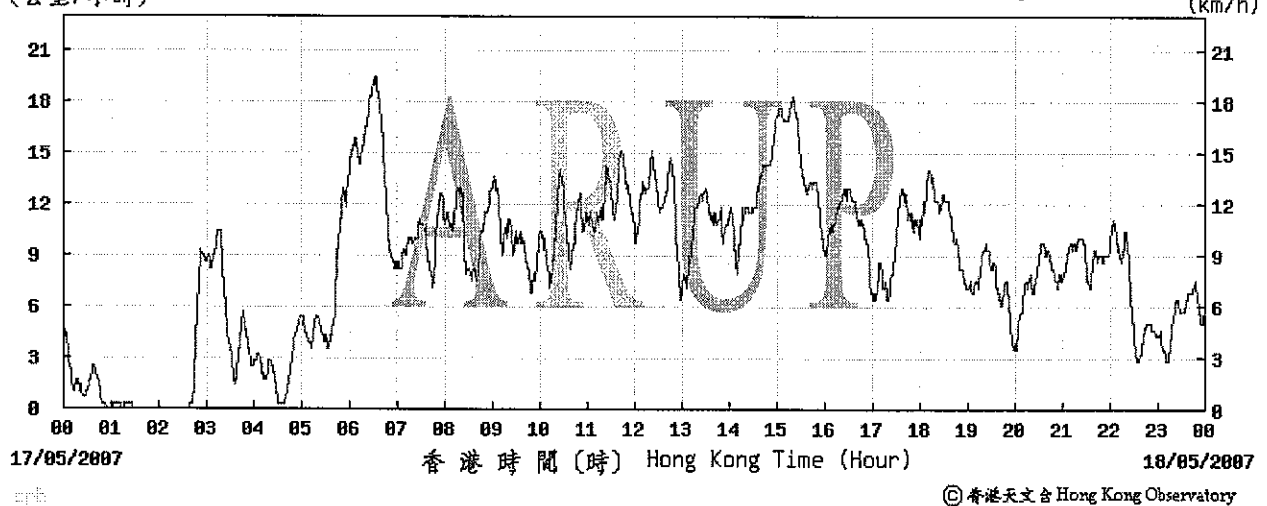
(公里/小時) (於香港時間 2007 年 5 月 12 日 0 時 0 分更新) (Updated at 00:00H on 12 May 2007) (km/h)



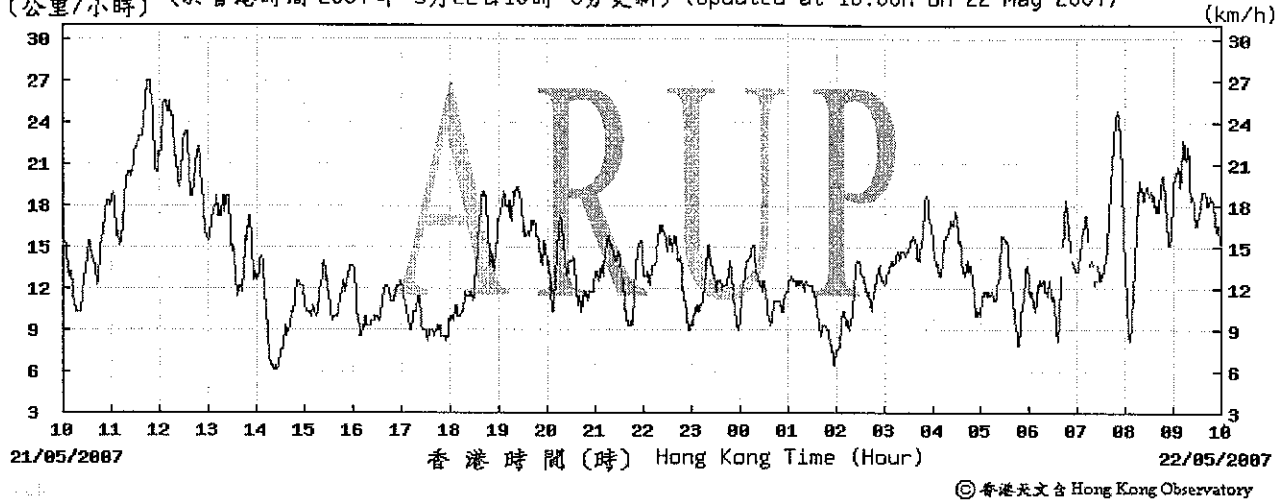
(公里/小時) (於香港時間 2007 年 5 月 16 日 18 時 0 分更新) (Updated at 18:00H on 16 May 2007) (km/h)



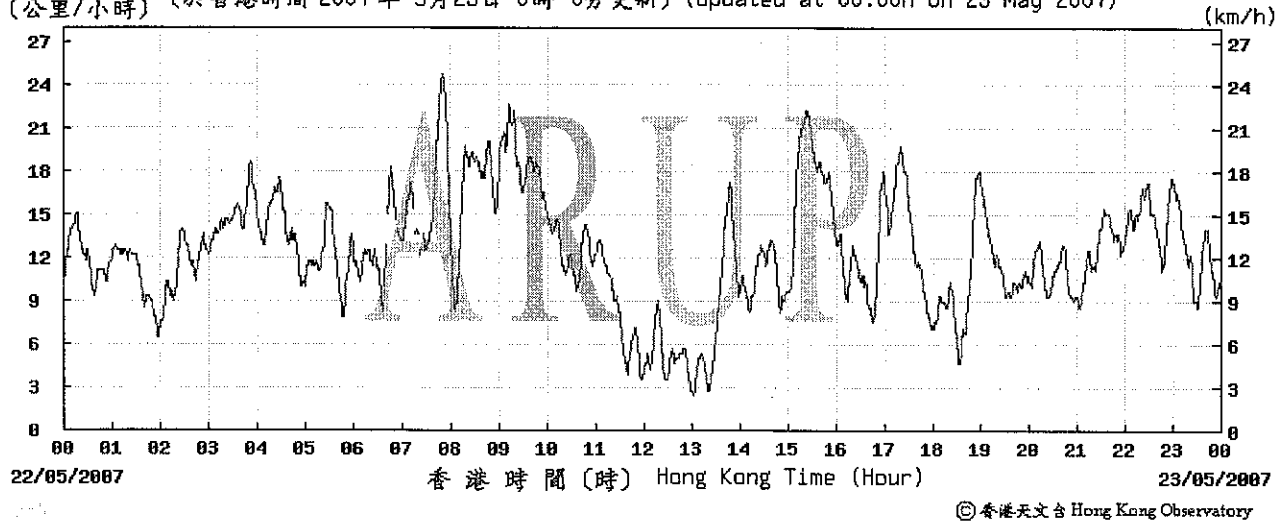
(公里/小時) (於香港時間 2007 年 5 月 18 日 0 時 0 分更新) (Updated at 00:00H on 18 May 2007) (km/h)



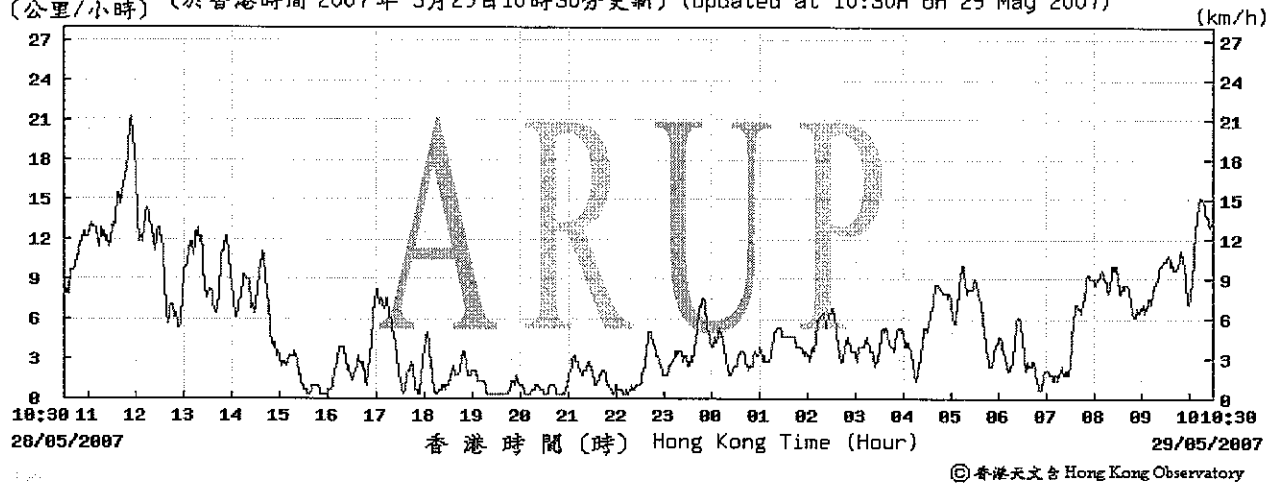
(公里/小時) (於香港時間 2007 年 5 月 22 日 10 時 0 分更新) (Updated at 10:00H on 22 May 2007)



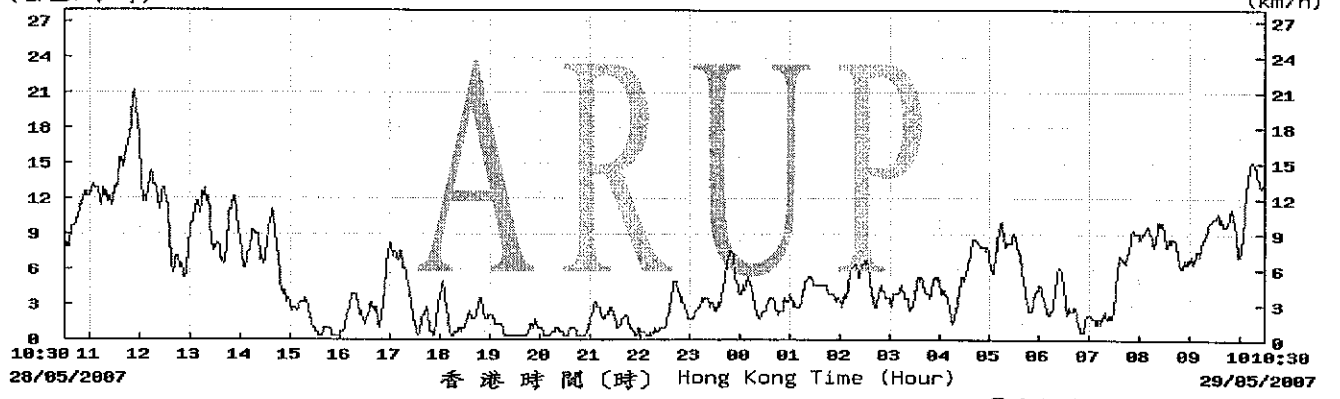
(公里/小時) (於香港時間 2007 年 5 月 23 日 0 時 0 分更新) (Updated at 00:00H on 23 May 2007)



(公里/小時) (於香港時間 2007 年 5 月 29 日 10 時 30 分更新) (Updated at 10:30H on 29 May 2007)



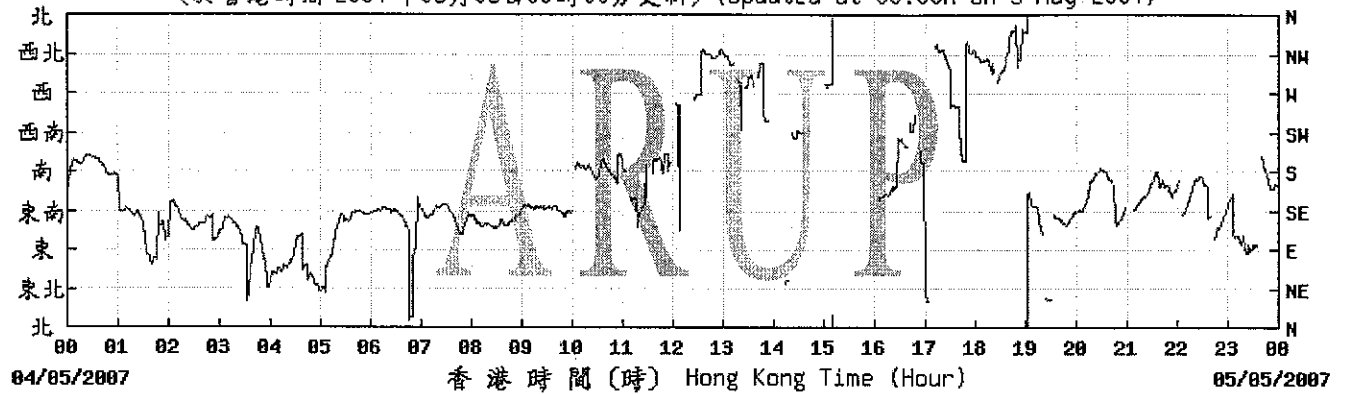
(公里/小時) (於香港時間 2007 年 5 月 29 日 10 時 30 分更新) (Updated at 10:30H on 29 May 2007)



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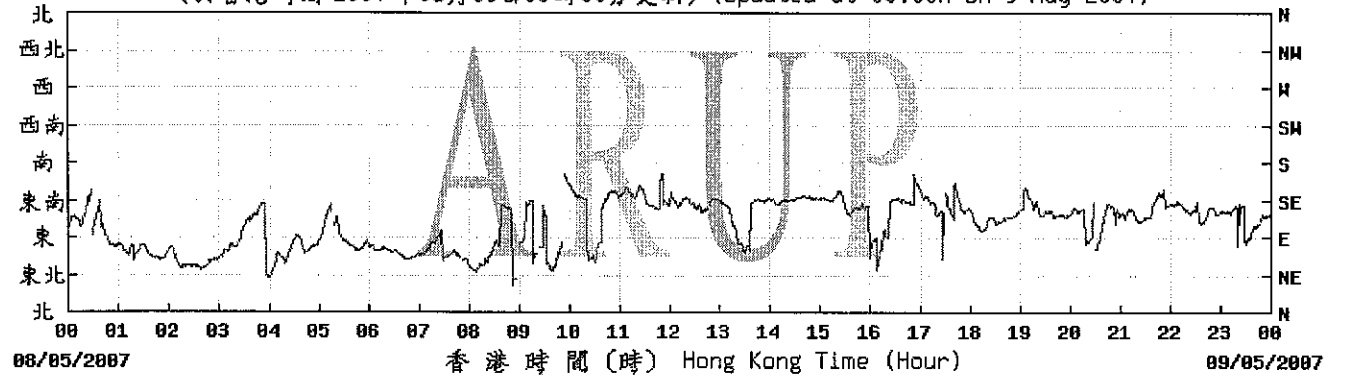
# Wind Monitoring Data – Wind direction during air quality monitoring in May 2007

(於香港時間 2007 年 05 月 05 日 00 時 00 分更新) (Updated at 00:00H on 5 May 2007)



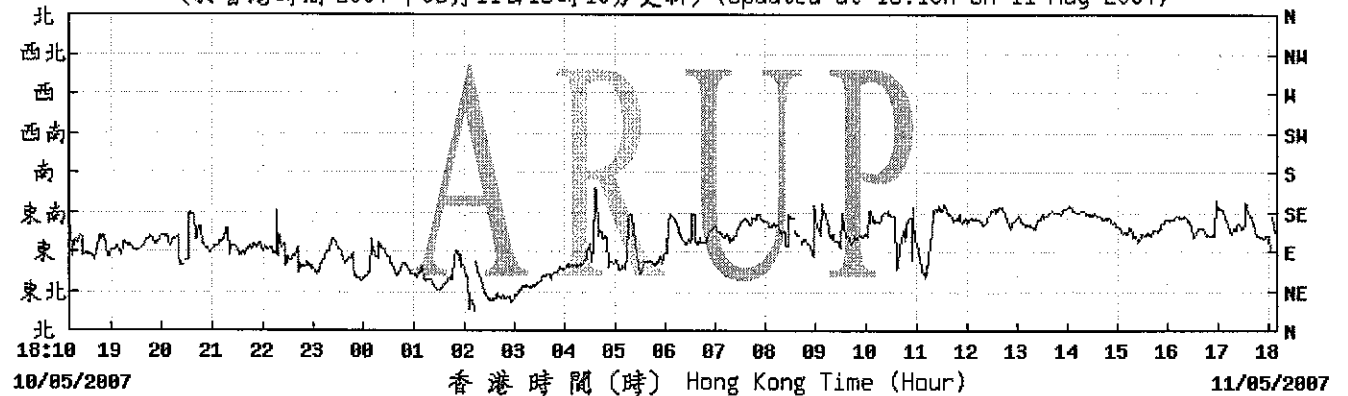
© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 09 日 00 時 00 分更新) (Updated at 00:00H on 9 May 2007)



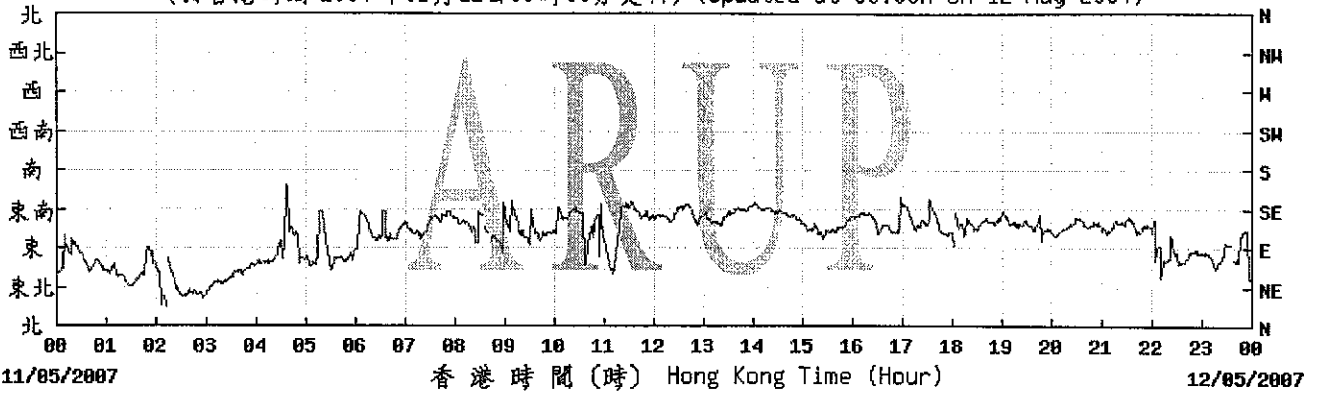
© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 11 日 18 時 10 分更新) (Updated at 18:10H on 11 May 2007)



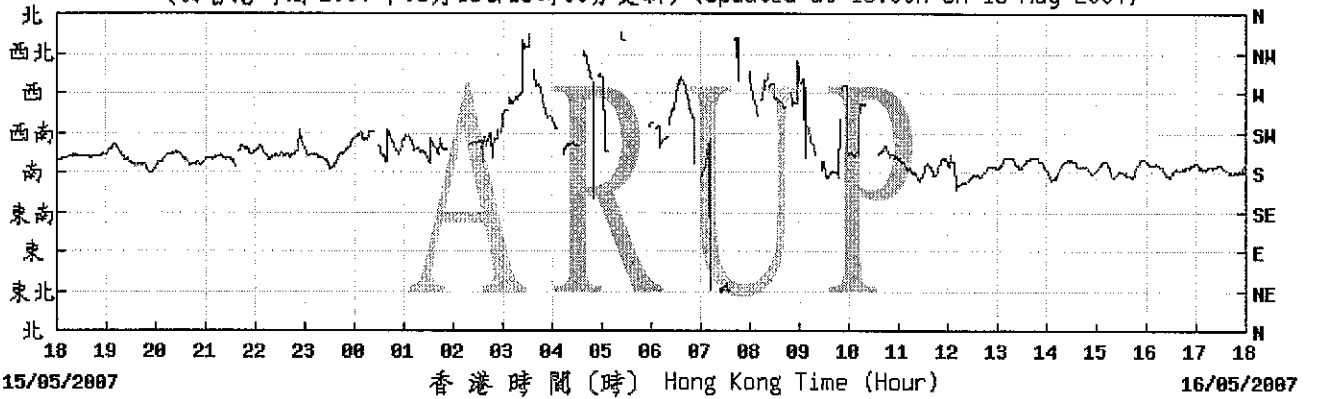
© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 12 日 00 時 00 分更新) (Updated at 00:00H on 12 May 2007)



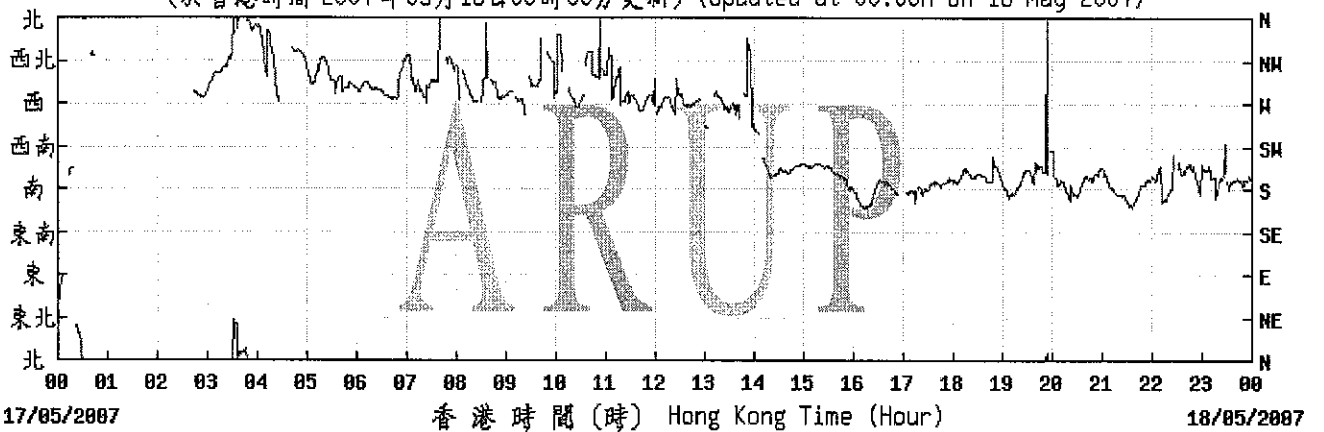
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(於香港時間 2007 年 05 月 16 日 18 時 00 分更新) (Updated at 18:00H on 16 May 2007)



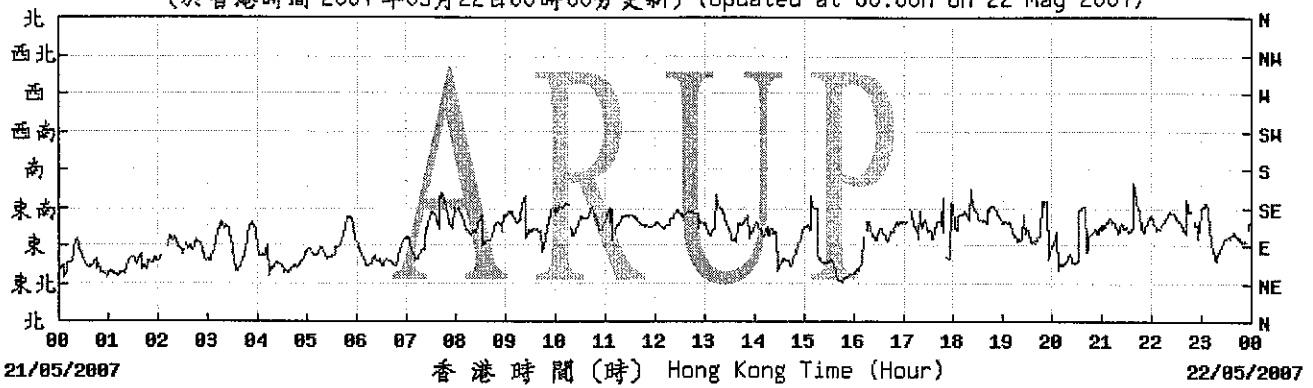
© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 18 日 00 時 00 分更新) (Updated at 00:00H on 18 May 2007)



© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 22 日 00 時 00 分更新) (Updated at 00:00H on 22 May 2007)



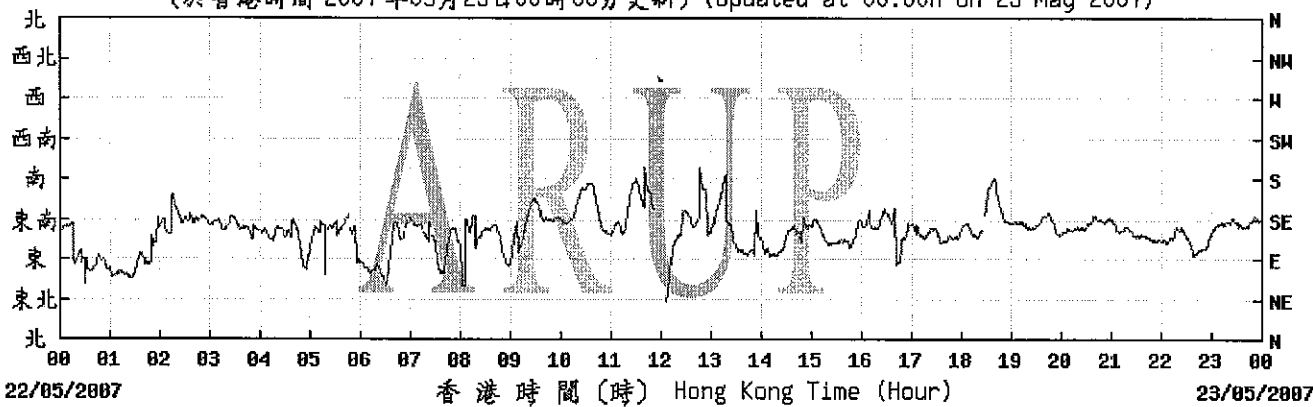
21/05/2007

香港時間 (時) Hong Kong Time (Hour)

22/05/2007

© 香港天文台 Hong Kong Observatory

(於香港時間 2007 年 05 月 23 日 00 時 00 分更新) (Updated at 00:00H on 23 May 2007)



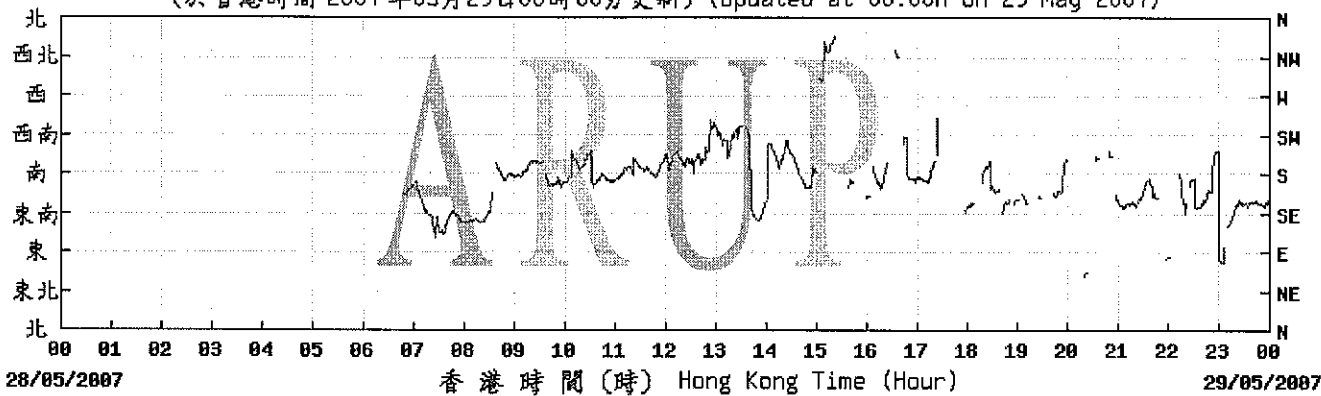
22/05/2007

香港時間 (時) Hong Kong Time (Hour)

23/05/2007

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(於香港時間 2007 年 05 月 29 日 00 時 00 分更新) (Updated at 00:00H on 29 May 2007)



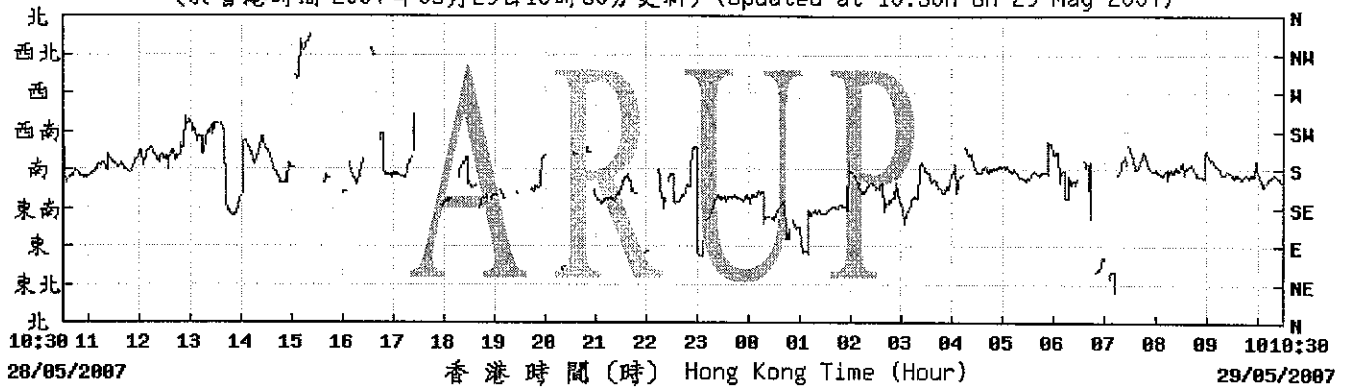
28/05/2007

香港時間 (時) Hong Kong Time (Hour)

29/05/2007

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(於香港時間 2007 年 05 月 29 日 10 時 30 分更新) (Updated at 10:30H on 29 May 2007)



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Appendix H

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**Calibration certificates  
of noise monitoring  
equipment**

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

AAC Certificate No. 2006005

Fax: +852 2268 3950

Tel: +852 2268 3216


**CERTIFICATE OF CONFORMITY**

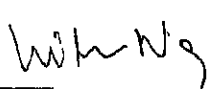
<u>Description of Test Instrument</u>	<u>Type No</u>	<u>Serial No</u>
Brüel & Kjær Sound Level Meter Kit	2238	2320707
Brüel & Kjær 1/2" Microphone Kit	4188	2179479

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.

Appendix I  

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**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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	
8-May-07	WN6	11:00	11:30	Sunny	1.9	67.7	69.5	62.5	Normal operation
17-May-07	WN6	15:10	15:40	Fine	1.7	66.4	68.0	65.0	Normal operation
22-May-07	WN6	15:30	16:00	Cloudy	2.2	64.2	65.5	63.0	Normal operation
29-May-07	WN6	9:00	9:30	Sunny	1.2	63.5	66.0	59.0	Normal operation

Appendix J

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**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. 15**

**(May 2007)**

Prepared by

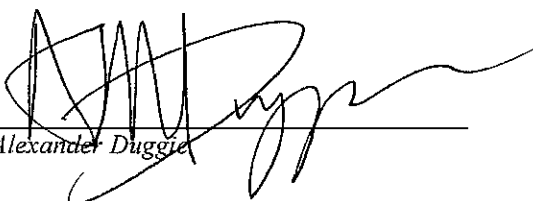
URBIS LIMITED

Prepared by :

  
\_\_\_\_\_  
*Tran Tuan Huy*

\_\_\_\_\_  
4<sup>th</sup> June 2007

Approved by :

  
\_\_\_\_\_  
*Alexander Duggie*

\_\_\_\_\_  
4<sup>th</sup> June 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 – 9<sup>th</sup> May 2007**

##### **3.1.1 Matters Arising from Previous Inspections**

- The Contractor had cleared away the scattered construction waste and garbage piles previously found outside of Maeda site office. However, a new construction waste pile was observed and the Contractor was requested to clear it away as soon as possible.
- Clearance of scattered construction waste piles at the base of RW-02 and top of RW-03 was outstanding. The Contractor was reminded to clear it away as soon as possible.
- Dry surface condition was observed at some parts 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**

- Scattered construction waste and garbage pile was observed within the central median planter in front of Maeda site office. The Contractor was requested to clear it away as soon as possible.
- Scrap wood pile was observed near Seawall 'B' area. The Contractor was requested to clear it away as soon as possible.

##### **3.1.3 Tree Felling and Transplanting Works**

- All trees to be felled and transplanted were completed.

##### **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 recommended to carry out watering of the site to prevent dust nuisance during dry periods.



**Contract No. HY/2005/06**  
**Castle Peak Road Improvements – West of Tsing Lung Tau**  
**Landscape & Visual Audit and Monitoring**

---

**3.2 Summary of Inspection – 23<sup>rd</sup> May 2007**

**3.2.1 Matters Arising from Previous Inspections**

- The Contractor had cleared away the scattered construction waste piles at the base of RW-02 and top of RW-03.
- The Contractor had cleared away the scattered construction waste and garbage piles previously observed within the central median planter and the area in front Maeda site office.
- The Contractor had cleared away the scrap wood pile previously observed near Seawall 'B' area.

**3.2.2 Site Clearance and Formation Works**

- Several tree identification tags for the existing trees to be retained were found to be faded out. The Contractor was requested to rectify the tags as soon as possible.

**3.2.3 Tree Felling and Transplanting Works**

- All trees to be felled and transplanted were completed.

**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.

**4.0 AUDIT SCHEULE**

**4.1 Audit Schedule for June 2007**

The next audits are scheduled to be conduct on 8<sup>th</sup> and 20<sup>th</sup> June 2007.

Appendix K

Records on disposal of  
C&D material by barge

Shun Tat Construction Engineering Limited  
 信達建設工程有限公司

Date日期: 17.5.07 Delivery Note No.: TLT/07/41

**BARGE DELIVERY RECORD**  
 趸船載貨記錄

Source 來源: Tsing Lung Tsau  
 Type of materials 物料類別: Bk. Co  
 Barge name 趸船名稱: S111  
 Barge registration no. 趸船登記號碼: 521670V  
 Arrival time 到達時間: 0700 12.5.07  
 Loading time 開始裝卸時間: 0730 12.5.07  
 Departure time 離開開拖時間: 1900 12.5.07

Deck level before loading 吉載 (1): 船頭 綠 3.5 m 船尾 綠 4.0 m  
 紅 3.5 m 紅 4.0 m

Deck level after loading 滿載 (2): 船頭 綠 0.9 m 船尾 綠 0.9 m  
 紅 0.8 m 紅 0.8 m

Estimated quantity (Base on Barge Information) 物料噸數: 2300.2470噸

Destination (of Materials) 目的地: 屯門 38區

Prepared by: *Wing-tai*  
 Shun Tat Const. Eng. Ltd.

Agreed by: *[Signature]*  
 Chun Wo Const. & Eng. Co. Ltd.

Shun Tat Construction Engineering Limited  
 信達建設工程有限公司

Date日期: 17.5.07 Delivery Note No.: TLT/07/02

**BARGE DELIVERY RECORD**  
 趸船載貨記錄

Source 來源: Tsing Lung Tsau  
 Type of materials 物料類別: Bk. Co  
 Barge name 趸船名稱: S112  
 Barge registration no. 趸船登記號碼: 821696V  
 Arrival time 到達時間: 16.5.07 0930  
 Loading time 開始裝卸時間: 16.5.07 0930  
 Departure time 離開開拖時間: 17.5.07 0930

Deck level before loading 吉載 (1): 船頭 綠 3.5 m 船尾 綠 4.0 m  
 紅 3.5 m 紅 4.0 m

Deck level after loading 滿載 (2): 船頭 綠 1.1 m 船尾 綠 0.8 m  
 紅 1.0 m 紅 0.8 m

Estimated quantity (Base on Barge Information) 物料噸數: 2325.832噸

Destination (of Materials) 目的地: 屯門 38區

Post-It Fax Note 7671  
 To: *[Signature]* From: *[Signature]*  
 Co./Dept: Chung Wo Co. Co. Shun Tat  
 Phone #: 24911214 Phone #:   
 Fax #: 24914182 Fax #:   
 (1) (2)

Prepared by: *[Signature]*  
 Shun Tat Const. Eng. Ltd.

Agreed by: *[Signature]*  
 Chun Wo Const. & Eng. Co. Ltd.

Shun Tat Construction Engineering Limited  
信達建設工程有限公司

Date 日期:	25.07	Delivery Note No.:	TZT/07/09
<b>BARGE DELIVERY RECORD</b> 駁船運貨記錄			
Source 來源:	Tsing Lung Tam 譚榮石		
Type of materials 物料種類:	S12		
Barge name 駁船名稱:	B21696V		
Barge registration no. 駁船登記號碼:	0800 25.07		
Arrival time 到達時間:	0930		
Unloading time 卸貨時間:	0930		
Departure time 離港時間:	0930 8.55.07		
Deck level before loading 裝載 (1):	船頭	船尾	總
	3.5 m	4.6 m	4.6 m
Deck level after loading 裝載 (2):	船頭	船尾	總
	1.0 m	0.9 m	0.9 m
Estimated quantity (Base on Barge Information) 物料數量:	2424762.02		
Destination (of Materials) 目的地:	屯門 38區		
Agreed By	 Shun Tat Construction Eng. Ltd.		
Agreed By	 Tsam Wo Construction & Eng. Co. Ltd.		

Shun Tat Construction Engineering Limited  
信達建設工程有限公司

Date 日期:	10.5.07	Delivery Note No.:	TZT/07/10
<b>BARGE DELIVERY RECORD</b> 駁船運貨記錄			
Source 來源:	Tsing Lung Tam 譚榮石		
Type of materials 物料種類:	S127		
Barge name 駁船名稱:	B21696V		
Barge registration no. 駁船登記號碼:	0800 9.5.07		
Arrival time 到達時間:	0900 9.5.07		
Unloading time 卸貨時間:	0930 10.5.07		
Departure time 離港時間:	0930 10.5.07		
Deck level before loading 裝載 (1):	船頭	船尾	總
	3.5 m	3.8 m	3.8 m
Deck level after loading 裝載 (2):	船頭	船尾	總
	1.0 m	0.9 m	0.9 m
Estimated quantity (Base on Barge Information) 物料數量:	2325-233.02		
Destination (of Materials) 目的地:	屯門 38區		
Agreed By	 Shun Tat Construction Eng. Ltd.		
Agreed By	 Tsam Wo Construction & Eng. Co. Ltd.		