

Maeda Corporation

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**Castle Peak Road  
Improvement Between  
Sham Tseng and Ka  
Loon Tsuen,  
Tsuen Wan  
West Contract No.  
HY/99/18**

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Monthly Environmental  
Monitoring and Audit  
Report  
February 2005

**Second Issue**

Maeda Corporation

**West Contract No. HY/99/18  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan**

Environmental Monitoring and Audit

Monthly Environmental Monitoring and Audit Report – February 2005

March 2005

**Ove Arup & Partners Hong Kong Ltd**

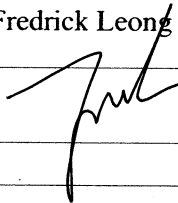
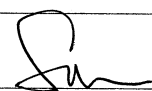

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11 March 2005

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Our  
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For attention of: Mr. Sam Tsoi

Dear Mr. Tsoi

**Contract HY/99/18 West Contract  
Castle Peak Road Improvement between Sham Tseng and Ka Loon Tsuen, Tsuen Wan  
Monthly EM&A Report (February 2005)**

We refer to the electronic version of the captioned report submitted by your Mr. Angus Choi via e-mail on 8 March 2005 and the subsequent revised report on 10 March 2005. We do not have comment and endorsed the report.

Yours sincerely

**Coleman Ng  
Independent Checker (Environmental)  
HYDER CONSULTING LIMITED**

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**ABBREVIATIONS AND ACTONYMS**

A/L	Action or Limit Levels
AQO	Air Quality Objectives
Arup	Ove Arup & Partners Hong Kong Limited
ASR	Area Sensitive Rating
BOD	Biochemical Oxygen Demand
B&K	Brüel & Kjær
CFM	Cubic Feet per Minute
CNP	Construction Noise Permit
CT	Contractor
C&D	Construction & Demolition
DO	Dissolved Oxygen
DGPS	Differential Global Positioning System
EA	Environmental Auditor
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EP	Environmental Permit
EPD	Environmental Protection Department
ER	Engineer / Engineer's Representative
ET	Environmental Team
HKPSG	Hong Kong Planning Standards and Guidelines
HKSAR	Hong Kong Special Administrative Region
HOKLAS	The Hong Kong Laboratory accreditation Scheme
HVS	High Volume Sampler
IC(E)	Independent Checker (Environment)
IEC	International Electrotechnical Commission Publications
K	Degrees Kelvin
MC	Maeda Corporation
MHJV	Mouchel Halcrow Joint Venture
NAMAS	National Measurement accreditation Service
NTU	Nephelometric Turbidity Unit
NSR	Noise Sensitive Receiver
SCFM	Standard Cubic Feet per Minute
SS	Suspended Solids
TSP	Total Suspended Particulates
Tby	Turbidity

## EXECUTIVE SUMMARY

This is the thirty-seventh monthly environmental monitoring and audit (EM&A) report presenting the progress of environmental monitoring and audit works for the period between 1 February 2005 and 28 February 2005. Monitoring works included air quality monitoring and noise monitoring. Air quality was recorded in terms of 1-hour Total Suspended Particulates (TSP) and 24-hour TSP. Noise was measured in terms of  $L_{eq(30min)}$  with  $L_{10}$  and  $L_{90}$  measurements as references. Audit works included the weekly environmental audit and the bi-weekly landscape and visual monitoring and audit.

### Air Quality

A total of 4 sets of 3 consecutive 1-hour TSP measurements had been taken during the reporting month. The highest 1-hour TSP level was  $273.0\mu\text{g}/\text{m}^3$  recorded at G/F, Block 4, Hong Kong Garden (WA5) on 4 February 2005 while the lowest 1-hour TSP level was  $126.0\mu\text{g}/\text{m}^3$  recorded at Podium, Block 12, Phase 4, Sea Crest Villa (WA7) on 23 February 2005. There was no exceedance of the Action and Limit (A/L) Levels during the monitoring period.

A total of 5 sets of 24-hours TSP measurement had been taken during the reporting month. The highest 24-hour TSP level was  $177.5\mu\text{g}/\text{m}^3$  recorded at Block 4, Hong Kong Garden (WA5) on 24 February 2005 while the lowest 24-hour TSP level was  $55.0\mu\text{g}/\text{m}^3$  recorded at Podium, Block 12, Phase 4, Sea Crest Villa (WA7) on 7 February 2005. There was no exceedance of the A/L Levels during the monitoring period.

### Noise

A total of 3 sets of daytime (0700 – 1900 hours) noise monitoring had been taken during the reporting month. The highest noise level was 72dB(A) recorded at House No.3 Ka Loon Tsuen (WN1) on 16 February 2005 while the lowest noise level was 59dB(A) recorded at Tsing Lung Tau Village No 60-64 (WN10) on 8 February 2005. There was no exceedance of the A/L Levels during the monitoring period.

### Marine Water Quality

No marine water quality was conducted in February 2005.

### Environmental Auditing

A total of 4 environmental site audits had been carried out on a weekly basis in February 2005. The major environmental concerns included the following issues:

- **Water quality:** cleaning of open channels, mud trails, implement wheel wash and stagnant water.
- **Air quality:** watering earth moving operations and stockpiles covering.
- **Construction Noise:** no non-compliance was found.
- **Handling of waste and chemicals:** cleaning up oil stain and empty oil drums.

## **Landscape and Visual**

A total of 2 landscape and visual monitoring and audits had been carried out on a biweekly basis in February 2005. The Registered Landscape Architect had recommended as follows:

- The Contractor was reminded to urgently carry out root pruning and proper tree protection to ensure existing trees retained are not damaged.
- The Contractor was reminded to clear away all scattered litter, garbage, etc. as found on site, and keep the site in a tidy condition at all times.
- The Contractor was reminded to carry out more frequent watering of the site during dry periods to prevent dust nuisance.

## **Waste Disposal**

A total of 32 loads of Construction & Demolition (C&D) waste materials and a total of 1414 loads of C&D fill materials (Public Fill) had been disposed of at WENT Landfills and at Public Filling Area in Tuen Mun respectively in February 2005. No chemical waste was disposed of in February 2005.

## **Complaint Records**

There was no environmental complaints received in February 2005.

## **Non-compliances**

There were no non-compliances for TSP air quality and noise monitoring during the monitoring period in February 2005.

## **Notification of Summons and Successful Prosecution**

There was neither notification of summons nor prosecution received during the reporting month.

## **Environmental Licenses**

There was no new CNP granted in the reporting month.

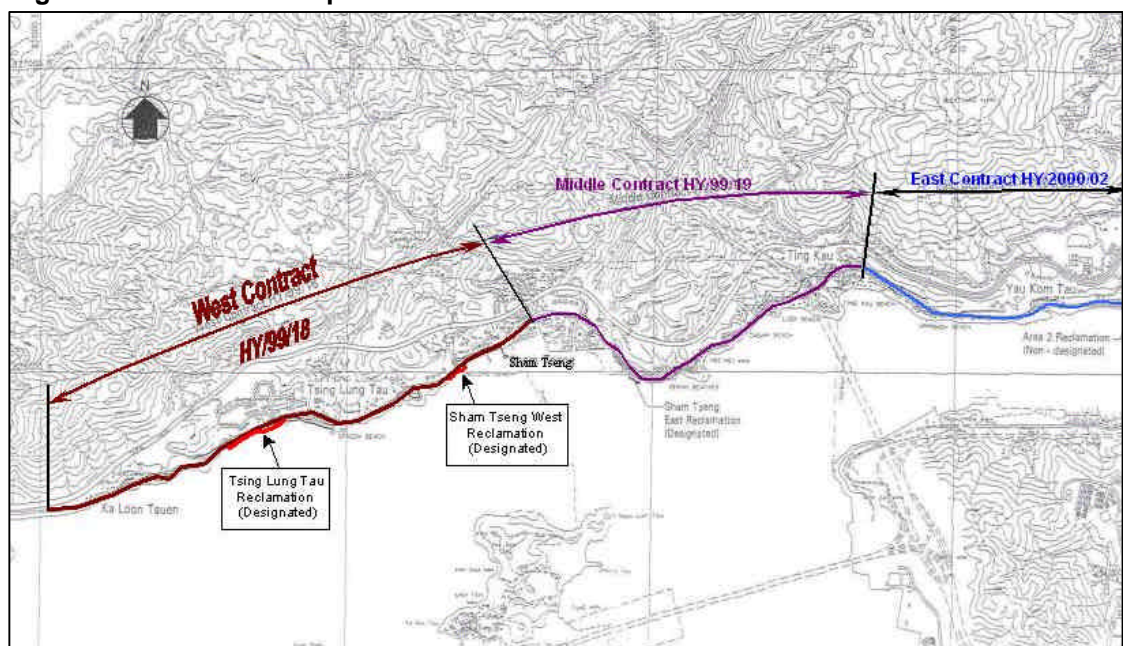
## 1. INTRODUCTION

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by the Contractor - Maeda Corporation (MC) as the Environmental Team (ET) for *Contract No. HY/99/18 Castle Peak Road Improvements between Sham Tseng and Ka Loon Tsuen, Tsuen Wan* (hereafter called the “Project”). Environmental parameters including air quality, construction noise, water quality and landscape & visual issues were selected for impact monitoring for the Project. The major construction period of the Project are anticipated as 43 months from December 2001 to June 2005.

### 1.1 Project Background

The Castle Peak Road improvements works consists of upgrading the existing Castle Peak Road to provide a dual two-lane carriageway of “Rural Road A” classification between Area 2, Tsuen Wan and Ka Loon Tsuen, and all associated utility, junction and pedestrian facilities. The Castle Peak Improvement project is divided into three contracts. This Environmental Monitoring and Audit (EM&A) exercise only concerns the West Contract No. HY/99/18 between Sham Tseng and Ka Loon Tsuen, Tsuen Wan. Figure 1-1 shows the site location plan and the detailed site layout plans are provided in Appendix A.

Figure 1-1 Site location plan



The scope of the construction work includes:

- Improvement to Castle Peak Road between Area 2 and Ka Loon Tsuen, Tsuen Wan to a dual two-lane carriageway;
- Provision of pedestrian facilities in the form of footpaths, subways, footbridges and Crossings;
- Road junction and signal design and the re-provision of access roads and connections to existing road networks;
- Construction of associated drainage and landscaping works;
- Environmental mitigation measures;
- Design and construction of watermains;
- Construction of entrusted sewerage works; and
- Dredging and reclamation (designated project – see also Section 1.2)

## **1.2 Designated Project**

The marine reclamation and the construction of the associated seawall at Tsing Lung Tau and Sham Tseng West within Contract No. HY/99/18 had been classified as designated projects under the Environmental Permits No. EP-093/2001 and EP-094/2001 respectively.

## **1.3 Impact EM&A Requirements**

The impact environmental monitoring and audit included air quality monitoring (both 1-hour and 24-hour TSP), noise, water quality, landscape and visual monitoring, and environmental audit.

## **1.4 Purpose of the Report**

The purpose of the monthly EM&A report is to provide the information on monitoring methodology, monitoring results, environmental permit status, site audit findings, recommendations and conclusions.

This is the thirty-seventh monthly EM&A report prepared by Arup for the submission to Maeda Corporation summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the air quality, noise, marine water quality, and landscape and visual monitoring and audit from 1 February to 28 February 2005.

## **2. ENVIRONMENTAL STATUS**

### **2.1 Construction Programme**

The construction work was commenced in February 2002. An up-to-date construction programme is given in Appendix B.

### **2.2 Construction Activities of the Month**

The major construction activities carried out by the Contractor (CT) in February 2005 included:

- Construction of footbridges FB01, FB02, FB12;
- Construction of noise barriers NM01, NM02, NM03 and NM04;
- Construction of culverts and outfalls;
- Construction of retaining wall RW01 and
- Construction of utility and water mains works.

The major sea works at level below +2.5mPD had been completed in July 2003 and sand placement activities at Seawall B completed on 13 August 2004.

### 3. SUMMARY OF EM&A REQUIREMENTS

Air quality, construction noise, marine water quality and landscape issues are significant environmental impacts identified for the construction period of the project. In accordance with the Project specific EM&A Manual<sup>[1]</sup>, air quality, noise, water quality, landscape and visual monitoring and audit shall be performed by an ET at all specified monitoring locations during the construction and operational stages. As instructed by the Contractor, the marine monitoring was suspended since 10 October 2003 as the major sea works at level below +2.5mPD had been completed in July 2003. Marine monitoring was resumed in August from 2 August to 27 August 2004 during and after beach reinstatement activity took place in August 2004.

The monitoring schedule for February 2005 and the tentative schedule for March 2005 are attached in Appendix C.

#### 3.1 Air Quality Monitoring

##### 3.1.1 Monitoring Parameters

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

##### 3.1.2 Monitoring Frequency

24-hour TSP and 1-hour TSP levels were monitored during the course of construction in accordance with the EM&A Manual. The monitoring parameters and frequency are specified in Table 3-1.

**Table 3-1 TSP monitoring parameters and frequency**

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

##### 3.1.3 Monitoring Locations

A total of eleven locations had been specified for the air quality monitoring and they are given in Table 3-2 and presented in Figures 3-1a to 3-1d.

**Table 3-2 Air quality monitoring locations**

Air Monitoring Station No.	Location	Location description
<del>WA1</del>	Bayside Villas	G/F, Bayside Villas (Temporary Suspended)
<del>WA2</del>	Grand Bay Villas	G/F, Grand Bay Villas (Temporary Suspended)
WA3	Hong Kong Garden	G/F, Hong Kong Garden (Regent Heights)
WA4	Hong Kong Garden	G/F, Hong Kong Garden (Between Blk 1 & 2)

Air Monitoring Station No.	Location	Location description
WA5	Hong Kong Garden	G/F, Hong Kong Garden (Block 4)
WA6	Tsing Lung Tau Tin Hau Temple	G/F, Tsing Lung Tau Tin Hau Temple
WA7	Sea Crest Villa	Podium, Sea Crest Villa (Phase 4 Block 12)
WA8	Sea Crest Villa	Podium, Sea Crest Villa (Phase 3 Block 8)
WA9	Sea Crest Villa	Car Park (L3), Sea Crest Villa (Phase 2 Block 6)
WA10	Sea Crest Villa	Podium, Sea Crest Villa (Phase 1 Block 1)
WA11	Lido Garden	G/F, Carpark, Lido Garden Tower 1

**Note:** Bayside Villas (WA1) and Grand Bay Villas (WA2) are no longer the air sensitive receivers as all residents of Bayside Villas and Grand Bay Villas were moved out since September 2002. Therefore, the air quality monitoring at Bayside Villas and Grand Bay Villas were temporary suspended since October 2002 after approval from IC(E) and EPD.

### 3.1.4 Wind Monitoring

Wind monitoring data, which included the wind speed and wind directions are extracted from Hong Kong Observatory – Tsing Yi Wind Monitoring Station.

## 3.2 Construction Noise Monitoring

### 3.2.1 Monitoring Parameters

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

### 3.2.2 Monitoring Frequency

Construction noise measurements were required to be taken on a weekly basis in accordance with the EM&A Manual. The monitoring time periods, monitoring parameters and frequency are specified in Table 3-3.

**Table 3-3 Construction noise monitoring parameters and frequency**

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

**Remarks:** \* 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.



### 3.2.3 Monitoring Locations

A total of sixteen noise monitoring locations had been specified. They are given in Table 3-4 and presented in Figures 3-1a to 3-1d. The measurements were taken at a position 1m from the exterior of building façade and at a position of 1.2m above ground.

**Table 3-4 Construction noise monitoring locations**

Noise Monitoring Station No.	Location	Monitoring Point
WN1	Ka Loon Tsuen	House No.3, Ka Loon Tsuen
WN2	Ka Loon Tsuen	House No.15, Ka Loon Tsuen
WN3	Bayside Villas	Upper G/F, Bayside Villas (Temporary Suspended)
WN4	Bayside Villas	Lower G/F, Bayside Villas (Temporary Suspended)
WN5	Grand Bay Villas	G/F, Grand Bay Villas (Temporary Suspended)
WN6	Hong Kong Garden	G/F, Hong Kong Garden (Regent Heights)
WN7	Hong Kong Garden	G/F, Hong Kong Garden (Between Blk 1 & 2)
WN8	Hong Kong Garden	G/F, Hong Kong Garden (Block 4)
WN9	Tsing Lung Tau Village	House 1, Tsing Lung Tau Village
WN10	Tsing Lung Tau Village	House 60-64, Tsing Lung Tau Village
WN11	Villa Alfavista	G/F, Villa Alfavista
WN12	Sea Crest Villa	Podium, Sea Crest Villa (Phase 4 Block 12)
WN13	Sea Crest Villa	Podium, Sea Crest Villa (Phase 3 Block 8)
WN14	Sea Crest Villa	Car Park (L3), Sea Crest Villa (Phase 2 Block 6)
WN15	Sea Crest Villa	Podium, Sea Crest Villa (Phase 1 Block 1)
WN16	Lido Garden	G/F, Carpark, Lido Garden Tower 1

**Note:** Bayside Villas (WN3 and WN4) and Grand Bay Villas (WN5) are no longer the noise sensitive receivers as all residents of Bayside Villas and Grand Bay Villas were moved out since September 2002. Therefore, the noise monitoring at Bayside Villas and Grand Bay Villas were temporary suspended since October 2002 after approval from IC(E) and EPD.

## 3.3 Water Quality (Designated Project)

### 3.3.1 Monitoring Parameters

Water quality monitoring includes 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 including any special phenomena, work underway at the construction site, etc.

### **3.3.2 Monitoring Frequency**

Water quality monitoring during the impact stage was conducted three times per week, during mid-flood and mid-ebb tides and at sixteen designated sampling. The interval between two sets of monitoring will not be less than 36 hours except where exceedances above the Action Level or Limit Level were detected (see also Section 3.5). In these cases, the monitoring frequency will be increased.

### **3.3.3 Monitoring Locations**

A total of sixteen locations, 9 for impact and 7 for control were originally selected for marine water quality monitoring and the locations are given in Table 3-5a and presented in Figure 3-1b to 3-1e.

The new marine water quality monitoring programme, was commenced on 12 February 2003 and suspended on 10 October 2003, as agreed by the IC(E) and EPD. A total of twelve locations, 8 for impact and 4 for control were selected for the new marine water quality monitoring programme and the locations are given in Table 3-5b and presented in Figure 3-1b to Figure 3-1e.

**Table 3-5a Water quality monitoring locations (Original)**

Water Monitoring Station No.		Location	
		Eastings	Northings
Tsing Lung Tau	WW1 (Impact Station)	822260	824491
	WR1 (Control Station)	822278	824459
Tsing Lung Tau	WW2 (Impact Station)	822352	824538
	WR2 (Control Station)	822363	824505
Tsing Lung Tau	WW3 (Impact Station)	822506	824609
	WR3 (Control Station)	822518	824578
Tsing Lung Tau	WW4 (Impact Station)	822820	824640
	WR4 (Control Station)	822800	824603
Angler's Beach: Sham Tseung	WW5 (Impact Station)	823697	824937
	WR5 (Control Station)	823700	824905
Angler's Beach: Sham Tseung	WW6 (Impact Station)	823775	824991
	WW7 (Impact Station)	823797	825042
	WR6/WR7 (Control Station)	823797	824964
Angler's Beach	WW8 (Impact station)	823994	825141
	WR8 (Control Station)	824006	825107
Ma Wan Fish Culture Zone	FCZ1 (Impact Station)	823500	823870

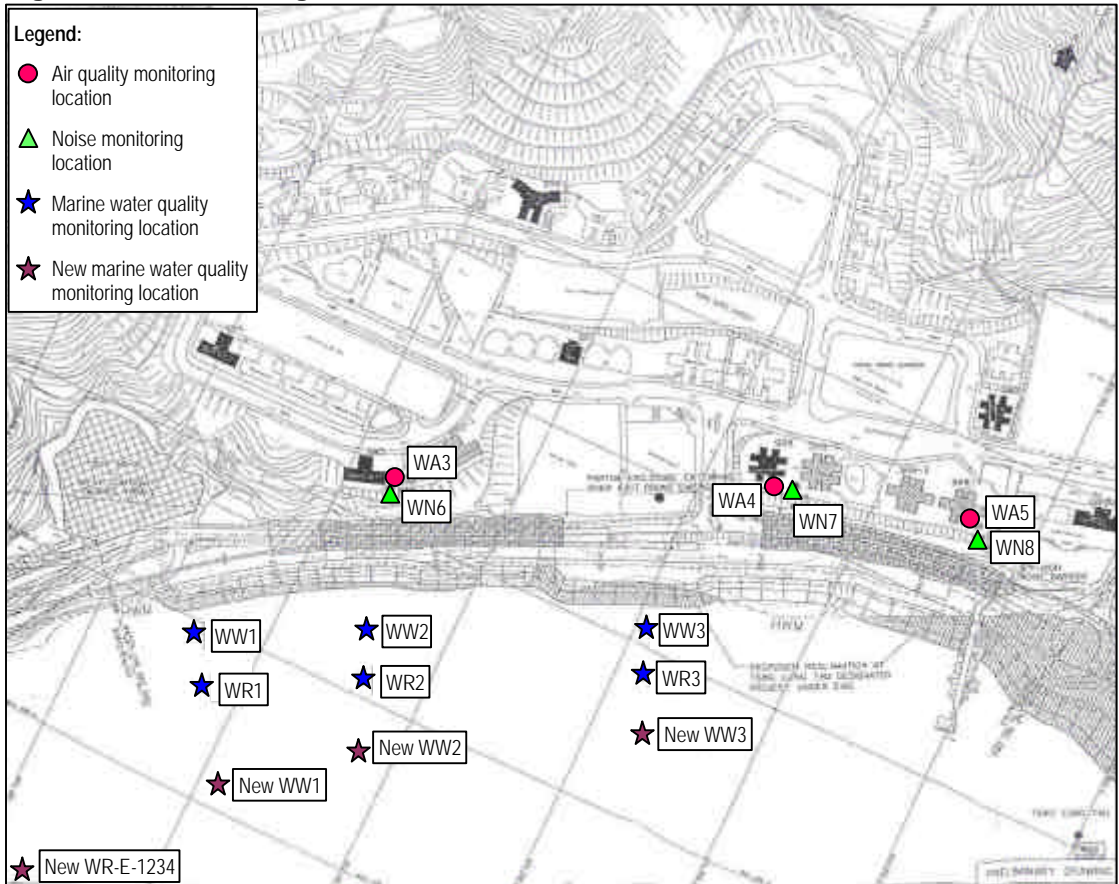
**Table 3-5b Water quality monitoring locations (New)**

Water Monitoring Station No.		Location	
		Eastings	Northings
Tsing Lung Tau	WW1 (Impact Station)	822306	824405
	WW2 (Impact Station)	822377	824462
	WW3 (Impact Station)	822529	824500
	WW4 (Impact Station)	822775	824560
	WR-E-1234 (Control Station for Mid-Ebb Tide)	822204	824312
	WR-F-1234 (Control Station for Mid-Flood Tide)	822850	824519
Angler's Beach: Sham Tseung West	WW5 (Impact Station)	823700	824905
	WW6/7 (Impact Station)	823797	824964
	WW8 (Impact Station)	823900	825023
	WR-E-5678 (Control Station for Mid-Ebb Tide)	823590	824830
	WR-F-5678 (Control Station for Mid-Flood Tide)	823994	825034
Ma Wan Fish Culture Zone	FCZ1 (Impact Station)	823500	823870

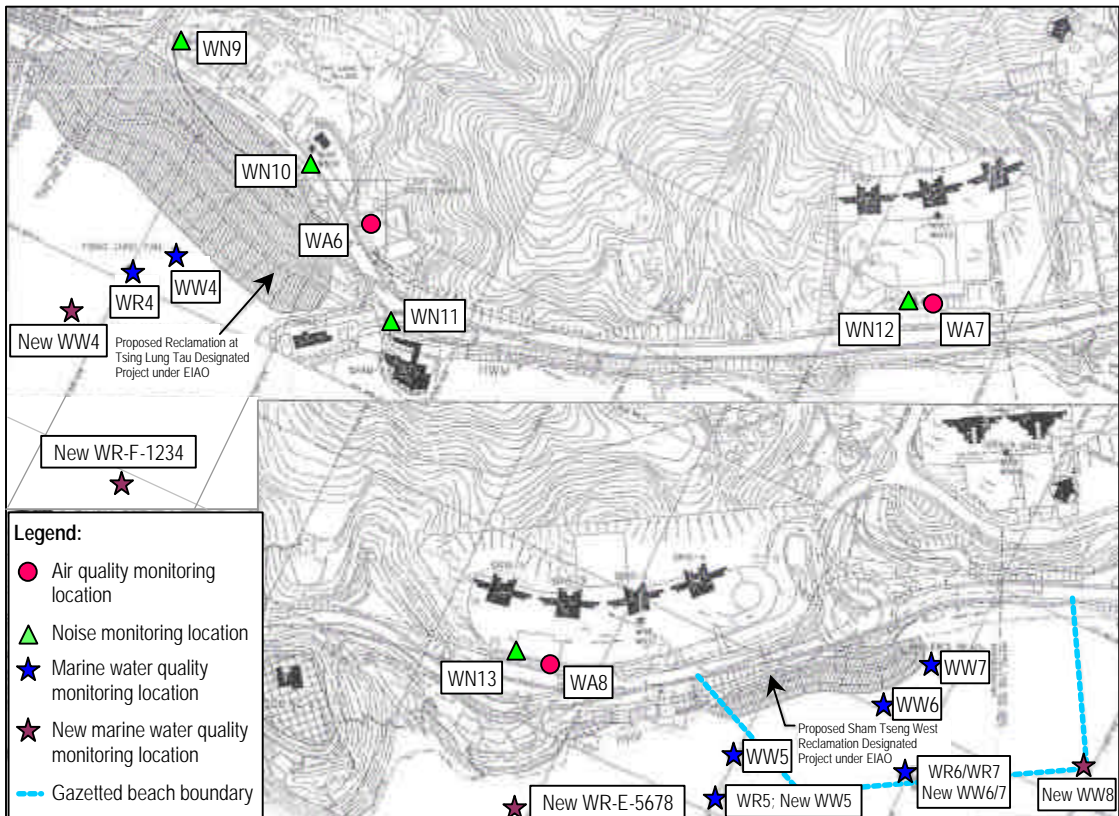
**Figure 3-1a Monitoring locations**



**Figure 3-1b Monitoring locations**

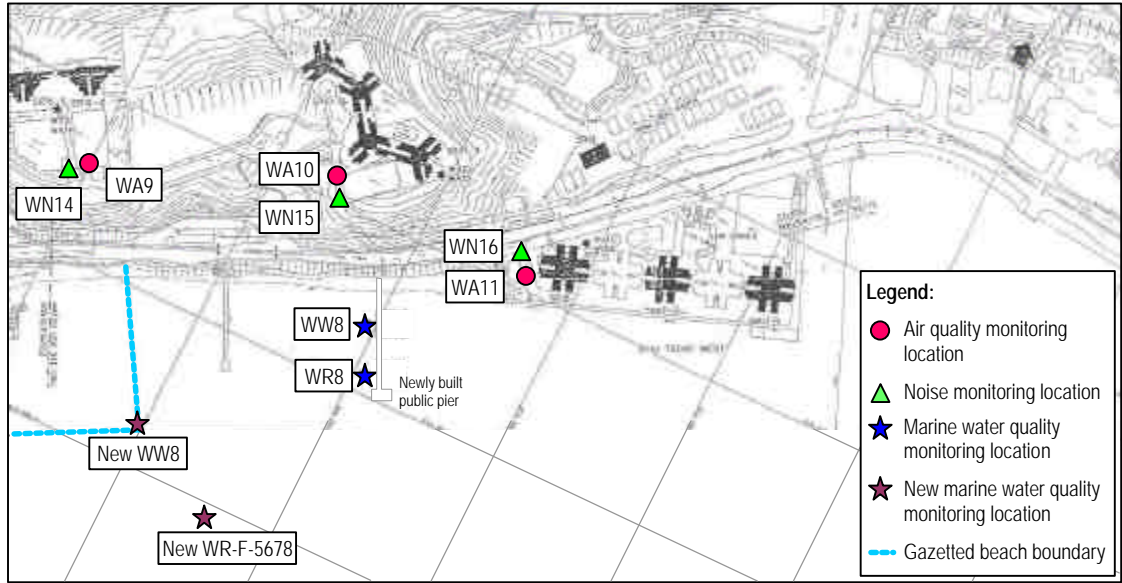


**Figure 3-1c Monitoring locations**

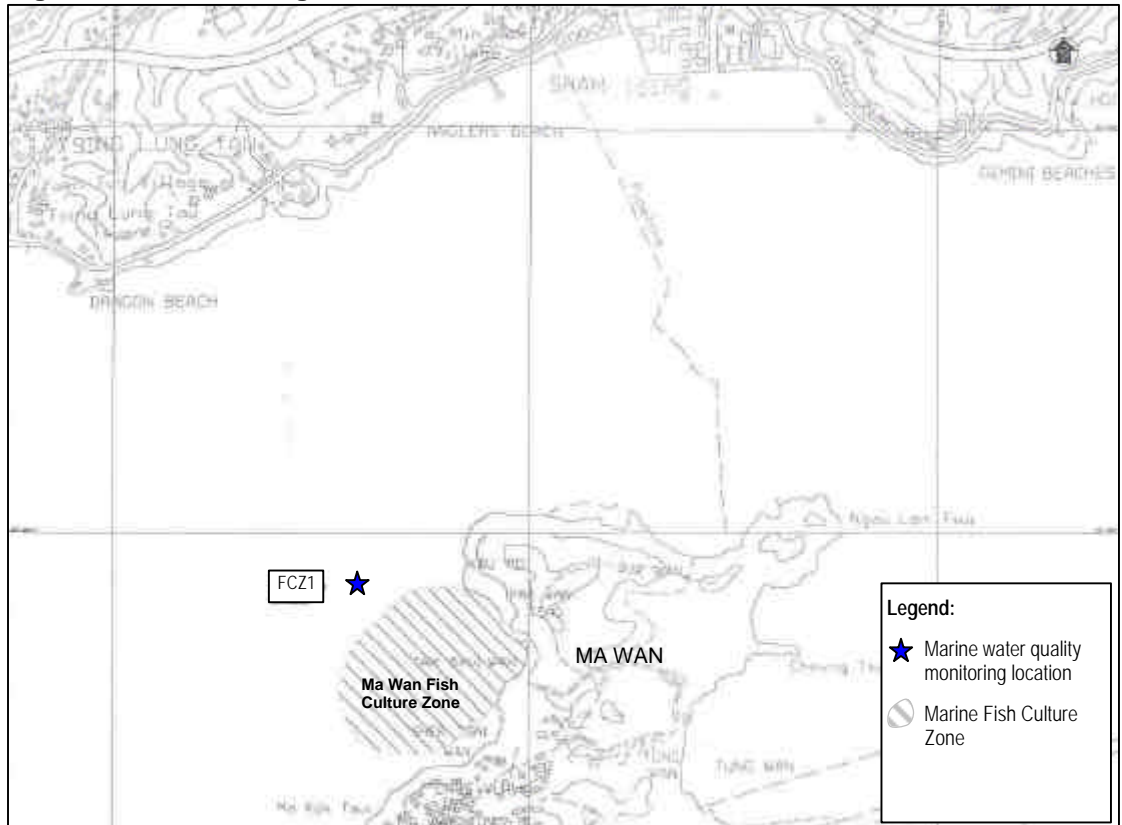




**Figure 3-1d Monitoring locations**



**Figure 3-1e Monitoring locations**



## 3.4 Landscape and Visual Monitoring and Audit

### 3.4.1 Audit Parameters

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

### 3.4.2 Audit Frequency

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

### 3.4.3 Audit Location

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

## 3.5 Performance Limits and Event-Action Plans

The monitoring results shall 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. ET, ER, IC(E), and CT will take corresponding actions in accordance with the Event-Action Plans if the monitoring results exceed the performance limits.

### 3.5.1 Air Quality

The action and limit levels for air quality have been established during the baseline monitoring and are provided in Table 3-6.

**Table 3-6 Action and Limit Level for air quality**

Air Monitoring Station No.	1-hour TSP Level in $\mu\text{g}/\text{m}^3$		24-hour TSP Level in $\mu\text{g}/\text{m}^3$	
	Action Level	Limit Level	Action Level	Limit Level
WA1	350	500	187	260
WA2	362		192	
WA3	353		190	
WA4	362		187	
WA5	346		185	
WA6	362		204	
WA7	351		187	
WA8	347		188	
WA9	345		182	
WA10	352		183	
WA11	357		195	

Table 3-7 details the actions required to be carried out by different parties in case of an exceedance of performance limits being detected.



**Table 3-7 Event/Action plan for air quality**

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

### 3.5.2 Construction Noise Impact

The action and limit levels for the construction noise extracted from the Baseline Monitoring Report<sup>[2]</sup> are tabulated in Table 3-8.

**Table 3-8 Action and Limit Levels for construction noise**

Time Period	Action	Limit
0700 – 1900 hours on any day not being a Sunday or public holiday	When one documented complaint is received	75dB(A) <sup>(1)</sup>
19:00 – 23:00 hours on all days and 07:00 – 23:00 on general holidays (including Sundays)		55 <sup>(2)</sup> / 70 <sup>(3)</sup>
23:00 – 07:00 hours on all days		40 <sup>(2)</sup> / 55 <sup>(3)</sup>

**Remarks:**

- (1) For educational establishments the limit level shall be 70dB(A) and reduced to 65dB(A) during examination periods.
- (2) Refers to the types of Plant regulated under the Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM).
- (3) Refers to the types of Plant regulated under the Technical Memorandum on Noise Other than Percussive Piling (GW-TM).
- (4) Owing to the high background noise level recorded at WN5, WN9, and WN10, the noise impact monitoring results at these 3 locations will be corrected by its background using the following background correction equation:  $L_{eq(30min)} = 10 \log (10^{m/10} - 10^{b/10})$  as  $m = \text{Measured } L_{eq(30min)}$ ,  $b = \text{Average Baseline } L_{eq(30min)}$ . Only up to the maximum of 3dB(A) is allowed to be deducted after the background correction.

Table 3-9 details the actions required to be carried out by different parties in the case of an exceedance of performance limits being detected.

**Table 3-9 Event/Action plan for construction noise**

Event	Action			
	ET Leader	IC(E)	ER	Contractor
<b>Action Level</b>	<ol style="list-style-type: none"> <li>1. Notify the IC(E) and the Contractor.</li> <li>2. Carry out investigation.</li> <li>3. Report the results of investigation to the IC(E) and the Contractor.</li> <li>4. Discuss with the Contractor and formulate remedial measures.</li> <li>5. Increase monitoring frequency to check mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review with analysed results submitted by the ET.</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly.</li> <li>3. Supervise the implement of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor 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 IC(E).</li> <li>2. Implement noise mitigation proposals.</li> </ol>
<b>Limit Level</b>	<ol style="list-style-type: none"> <li>1. Notify the IC(E), the ER, the EPD and the Contractor.</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 Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Inform the IC(E), the ER, and the EPD the causes &amp; actions taken for the exceedances.</li> <li>7. Assess effectiveness of the contractor's remedial actions and keep the IC(E), the EPD 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 Contractor on the potential remedial actions.</li> <li>2. Review the Contractor'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 failure in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor 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 Contractor 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 IC(E) 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>

### 3.5.3 Water Quality (Designated Project)

The action and limit levels for the water quality have been established in accordance with the EM&A Manual and approved by EPD on 15 October 2002. EPD and IC(E) had agreed on 10 April 2003 to apply the “Direct Comparison” method for evaluation of the marine water quality exceedance. The A/L levels had been revised in April 2003 and are presented in Table 3-10.

**Table 3-10 Action and Limit Levels of water quality**

Parameters		Monitoring Location			
		WW1 to WW8		FCZ1	
		Action Level	Limit Level	Action Level	Limit Level
<b>Mid-Ebb</b>					
DO (mg/L)	Surface & Middle	4.9	4.8	4.7	4.6
	Bottom	4.8	4.8	4.0	4.0
SS (mg/L) (Depth-averaged)		17.0	23.4	For EPD: 12.9 For AFCD: 12.9 and 120% of upstream control station's SS at the same tide of the same day	For EPD: 14.0 For AFCD: 14.0 and 130% of upstream control station's SS at the same tide of the same day
Tby (NTU) (Depth-averaged)		12.0	13.6	For EPD: 9.1 For AFCD: 9.1 and 120% of upstream control station's Tby at the same tide of the same day	For EPD: 10.3 For AFCD: 10.3 and 130% of upstream control station's Tby at the same tide of the same day.
<b>Mid-Flood</b>					
DO (mg/L)	Surface & Middle	4.3	4.2	4.5	4.4
	Bottom	4.3	4.1	4.1	4.1
SS (mg/L) (Depth-averaged)		25.3	28.7	For EPD: 23.3 For AFCD: 23.3 and 120% of upstream control station's SS at the same tide of the same day	For EPD: 25.9 For AFCD: 25.9 and 130% of upstream control station's SS at the same tide of the same day
Tby (NTU) (Depth-averaged)		25.2	31.5	For EPD: 18.7 For AFCD: 18.7 and 120% of upstream control station's Tby at the same tide of the same day	For EPD: 22.3 For AFCD: 22.3 and 130% of upstream control station's Tby at the same tide of the same day.

**Notes:** “Depth-averaged” is calculated by taking the arithmetic means of reading of all three depths.  
For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

In order to better differentiate between exceedance caused by the contract works and elevated readings arising from causes unrelated to contract works, all parties had agreed to introduce a term “Reaching of Trigger Value” to represent the scenario where the A/L levels were exceeded by the “Direct Comparison” evaluation method. Upon the detection of “Reaching of Trigger Value”, an initial analysis would be

carried out to determine whether it was caused by contract works. Exceedance and non-compliance should only be recorded in case where the “Reaching of Trigger Value” was caused by the contract works.

Table 3-11 details the actions required to be carried out by different parties in the case of water quality exceedance of performance limits being detected. The revised Event/Action Plan for water quality has been endorsed by IC(E) in May 2003, and will be finalised subject to agreement with EPD.

**Table 3-11 Event/Action plan for water quality**

Event	Action			
	ET Leader	IC(E)	ER	Contractor
<b>Trigger Value</b>				
1. Trigger Value being surpassed for one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings.</li> <li>Conduct investigation to identify the source(s) of impact.</li> <li>Check monitoring data, all plant, equipment, mitigation measures and the Contractor's working methods.</li> <li>Inform the IC(E), ER, EPD, HyD, Contractor and AFCD (if required) the investigation results.</li> <li>If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level"</li> </ol>	<ol style="list-style-type: none"> <li>If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level"</li> </ol>	<ol style="list-style-type: none"> <li>If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level"</li> </ol>	<ol style="list-style-type: none"> <li>If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level"</li> </ol>
<b>Action Level</b>				
1. Action level being exceeded by one sampling day and is caused by the construction works	<ol style="list-style-type: none"> <li>Discuss the current mitigation measures with the IC(E) and the Contractor.</li> <li>Pay attention on the monitoring results collected on the subsequent scheduled monitoring date to see if an exceedance, caused by the same or related construction works, is recurring.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the Contractor on the current mitigation measures.</li> <li>Assess the effectiveness of the current mitigation measures and advised the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the IC(E) on the current mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the exceedance 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 IC(E) on the current mitigation measures.</li> </ol>
2. Action level being exceeded by more than one consecutive days and is cause by the construction works	<ol style="list-style-type: none"> <li>Discuss mitigation measures with the IC(E) and the Contractor.</li> <li>Ensure the proposed mitigation measures are implemented.</li> <li>Further evaluation of the monitoring results on the next scheduled monitoring day and report to all concerned parties, if the affected monitoring stations are still being affected (or are no longer affected) by the construction works.</li> <li>Prepare to increase the monitoring frequency to daily, if the Limit Level is exceeded as below.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the Contractor on the proposed mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the Contractor 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 IC(E), the ET Leader and the Contractor on the proposed mitigation measures.</li> <li>Make agreement on the proposed 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 consecutive exceedance 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 IC(E) and propose mitigation measures to the IC(E) and the ER within 3 working day.</li> <li>Implement the agreed mitigation measures.</li> </ol>
<b>Limit Level</b>				
1. Limit level being exceeded by one sampling day and is cause by the construction works	<ol style="list-style-type: none"> <li>Discuss mitigation measures with the IC(E), the ER and the Contractor.</li> <li>Ensure the proposed mitigation measures are implemented.</li> <li>Prepare to increase the monitoring frequency to daily if further exceedances of the Limit Level are detected on the next sampling day.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with the ET Leader and the Contractor on the proposed mitigation measures.</li> <li>Review proposals on mitigation measures submitted by the Contractor 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 IC(E), the ET Leader and the Contractor on the proposed mitigation measures.</li> <li>Request the Contractor to Critically review the working methods.</li> <li>Make agreement on the proposed 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 exceedance 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 IC(E) and the ER, and propose mitigation measures to the IC(E) and the ER within 3 working days.</li> <li>Implement the agreed mitigation measures.</li> </ol>

Event	Action			
	ET Leader	IC(E)	ER	Contractor
2. Limit level being exceeded by more than one consecutive days and is cause by the construction works	<ol style="list-style-type: none"> <li>1. Discuss further mitigation measures with the IC(E), the ER and the Contractor.</li> <li>2. Ensure the proposed further mitigation measures are implemented.</li> <li>3. Increase the monitoring frequency to daily until no exceedance of the Limit Level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with the ET Leader and the Contractor on the proposed further mitigation measures.</li> <li>2. Review proposals on further mitigation measures submitted by the Contractor and advised the ER accordingly.</li> <li>3. Assess the effectiveness of the implemented further mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IC(E), the ET Leader and the Contractor on the proposed further mitigation measures.</li> <li>2. Request the Contractor to Critically review the working methods.</li> <li>3. Make agreement on the further mitigation measures to be implemented.</li> <li>4. Assess the effectiveness of the implemented further mitigation measures.</li> <li>5. Consider and instruct, if necessary, the Contractor 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>1. Inform the ER and confirm notification of the consecutive exceedance in writing.</li> <li>2. Rectify unacceptable practice.</li> <li>3. Check all plants and equipment.</li> <li>4. Consider changes of working methods.</li> <li>5. Discuss with the ET Leader, the IC(E) and the ER, and propose further mitigation measures to the IC(E) and the ER within 3 working days.</li> <li>6. Implement the agreed further mitigation measures.</li> <li>7. As directed by the ER, slow down or stop all or part of the construction activities.</li> </ol>

### 3.5.4 Landscape and Visual

The Final Tree Survey Report<sup>[3]</sup> approved in April 2001 was adopted as the framework of the baseline landscape condition of this road section. In addition, a supplementary tree survey has been carried out in December 2001. The Supplementary Tree Survey Report (Revision A)<sup>[4]</sup> completed in March 2002 is also adopted to provide supplementary information of the baseline landscape condition of this road section.

If any non-conformity on landscape and visual issue is observed, the actions in accordance with Event/Action Plan shown in Table 3-12 shall be carried out.

**Table 3-12 Event/Action plan for landscape and visual impact**

Event	Action			
	ET Leader	IC(E)	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Identify Source(s).</li> <li>2. Inform the IC(E) and the ER.</li> <li>3. Discuss mitigation actions with the IC(E), the ER and the Contractor.</li> <li>4. Monitor remedial actions until rectification has been completed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check report.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ET Leader and the Contractor on possible remedial measures.</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> <li>5. Check implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor.</li> <li>2. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Amend working method.</li> <li>2. Rectify damage and undertaken any necessary replacement.</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify Source(s).</li> <li>2. Inform the IC(E) and the ER.</li> <li>3. Increase monitoring frequency</li> <li>4. Discuss mitigation actions with the IC(E), the ER and the Contractor.</li> <li>5. Monitor remedial actions until rectification has been completed.</li> <li>6. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET Leader and the Contractor on possible remedial measures.</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor.</li> <li>2. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Amend working method.</li> <li>2. Rectify damage and undertaken any necessary replacement.</li> </ol>



## 3.6 Site Inspection and Environmental Complaint Handling

### 3.6.1 Site Inspection Frequency and Areas Covered

Regular site inspections shall 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. Site inspection for landscape and visual impact shall be carried out on a bi-weekly basis.

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

### 3.6.2 Site Inspection Procedures

- a) The CT and/or ER will advise the Environmental Auditor (EA) for all information on any environmental related aspects.
- b) The EA will conduct discussion 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 the wheel washing facilities located at the site exits, water spraying truck, temporary noise barrier, and the 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 of 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 the 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 actions in accordance with the agreed procedures, reporting systems and time frame.

### 3.6.3 Environmental Complaints

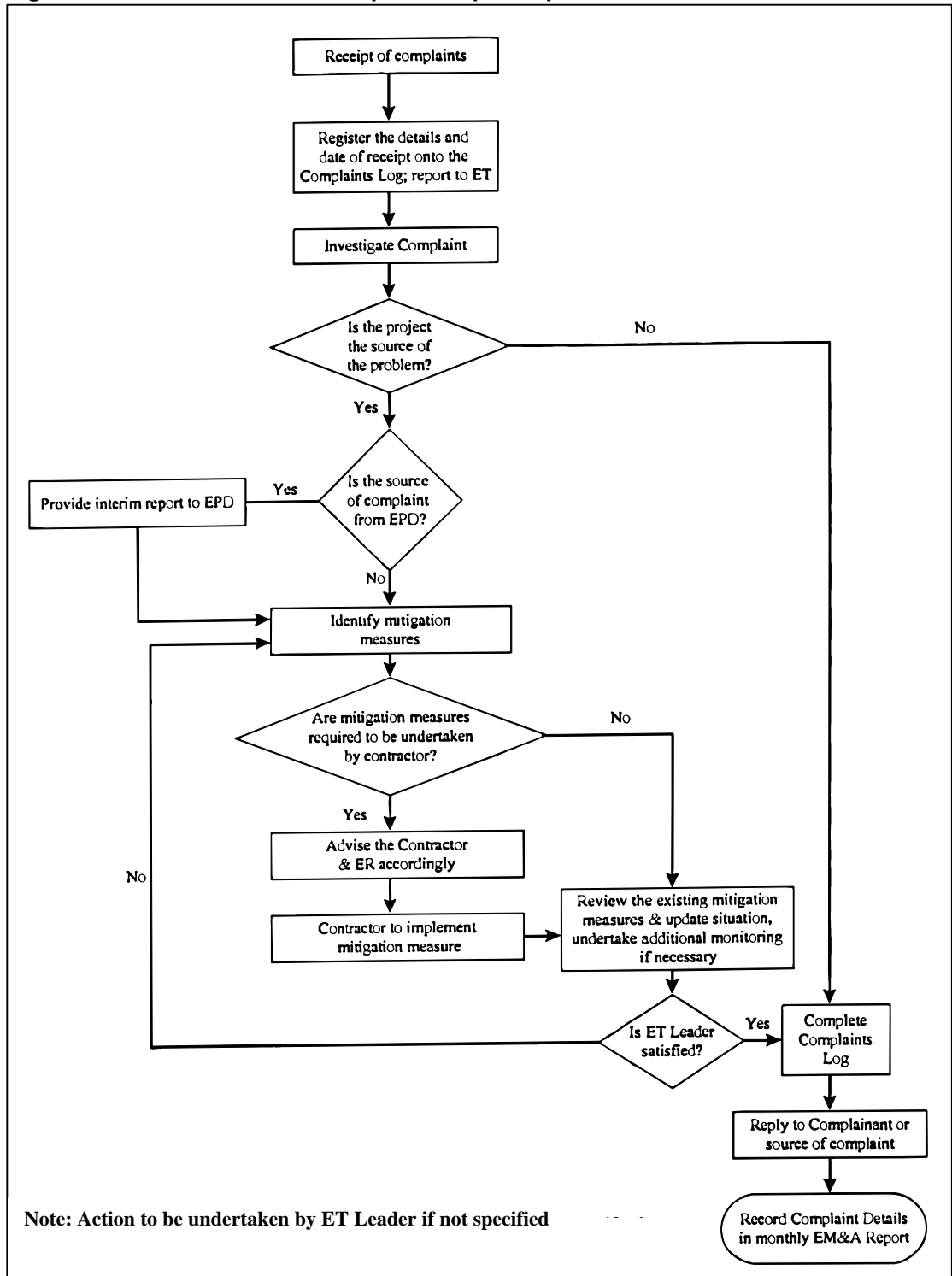
In accordance with the EM&A Manual, environmental complaints will be referred to the ET for initiation of the complaint investigation procedures. The ET will undertake the following procedures upon receipt of the complaints:

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

During the complaint investigation work undertaken by the ET, the CT and ER shall 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 shall promptly carry out the required mitigation to the satisfaction of ET. The ER shall ensure that the CT has carried out such identified measures.

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

**Figure 3-2 Flow chart of the complaint response procedure**



## 4. AIR QUALITY

### 4.1 Monitoring Parameters and Equipment

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

**Table 4-1 Equipment list for air quality monitoring**

Equipment	Manufacturer & Model No.	Measurement Parameter	Qty.
High Volume Sampler	GS-2310105 & TE-5170	24-hour TSP	11
Fibreglass Filter	G810		--
HVS Calibration Kit	GMW-2535		1
Photometric Aerosol Monitor	MIE <i>persona</i> /DataRAM	1-hour TSP	10
Hand Held Barometer	Cole-Parmer EB833	Pa, Temperature	2

### 4.2 Methodology

#### 4.2.1 1-hour TSP Monitoring

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

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

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

- i. data logging function: on
- ii. log period: 5 minutes
- iii. tag number: storage
- iv. analogue output: 0-4.000mg/m<sup>3</sup>
- v. calibration factor: 1.0
- vi. averaging time: 10s
- vii. battery charge: ≥50%
- viii. remaining memory: ≥10%

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

The monitoring was stopped by pressing EXIT and ENTER buttons.

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

#### 4.2.2 24-hour TSP Monitoring

24-hour TSP by using a High Volume Sampler (HVS). The HVS should be in compliance with the following specifications:

- 0.6 – 1.7 m<sup>3</sup>/min (20 – 60SCFM);
- equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- installed with elapsed time meter with +/- 2 minutes accuracy for 24 hours operation;
- capable of providing a minimum exposed area of 406 cm<sup>2</sup>(63in<sup>2</sup>);
- flow control accuracy: +/-2.5% deviation over 24-hr sampling period;
- equipped with a shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;
- equipped with a flow recorder for continuous monitoring;
- provided with a peaked roof inlet;
- incorporated with a manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easy to change the filter; and
- capable of operating continuously for a 24-hour period.

#### 4.2.3 Maintenance and Calibration

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

The HVS are calibrated at 2-month intervals using GMW-2535 Calibration Kit. The calibration kit will be re-calibrated by the manufacturer after one year of use. The calibration certificates of the HVS and the calibration kit are provided in Appendix D. The next calibration will be conducted on or before 1 April 2005 for the HVS and 10 February 2006 for the GMW-2535.

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

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

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

1-hour TPS monitoring equipment	Serial number	Last calibration date	Next calibration date (on or before)
MIE Data-RAM Portable Real Time Aerosol Monitor	4496	25-Sep-03	25-Sep-05
	4715	21-Nov-03	21-Nov-05
	4615	15-Jan-04	15-Jan-06
	4705	15-Jan-04	15-Jan-06
	4492	27-Jul-04	27-Jul-06
	4736	27-Jul-04	27-Jul-06
	3809	06-Oct-04	06-Oct-06
	3893	06-Oct-04	06-Oct-06
	4243	06-Oct-04	06-Oct-06

### 4.3 Results and Observations

#### 4.3.1 Weather conditions and other factors

The weather condition varied from fine to cloudy during the air quality monitoring period in February 2005.

The construction site had been under normal operation during the air quality monitoring period and no unusual operation or dust from other source was observed.

#### 4.3.2 Summary Results

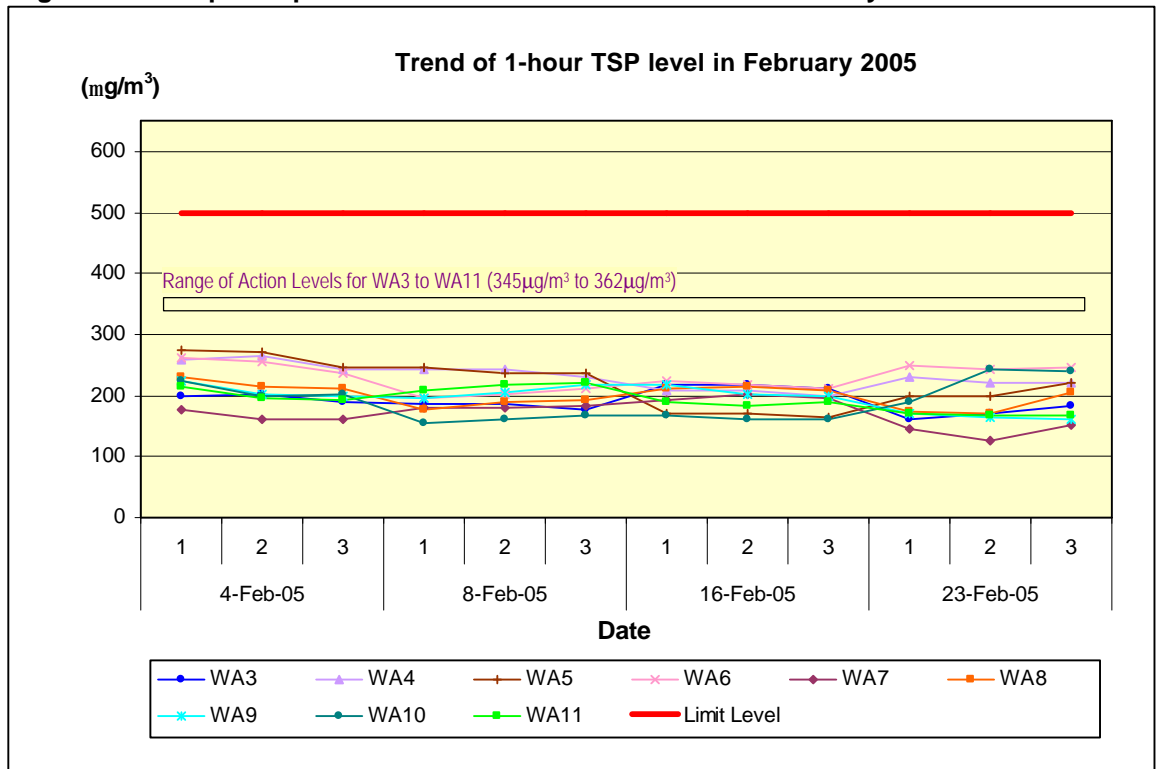
##### 1-hour TSP

A total of 4 sets of 3 consecutive 1-hour TSP measurements had been taken on 4, 8, 16 and 23 February 2005.

The highest 1-hour TSP level was 273.0 $\mu\text{g}/\text{m}^3$  recorded at G/F, Block 4, Hong Kong Garden (WA5) on 4 February 2005 while the lowest 1-hour TSP level was 126.0 $\mu\text{g}/\text{m}^3$  recorded at Podium, Block 12, Phase 4, Sea Crest Villa (WA7) on 23 February 2005. There was no exceedance of the Action and Limit (A/L) Levels during the monitoring period. There was no exceedance of the A/L Levels during the monitoring period.

The detailed monitoring results of 1-hour TSP are given in Appendix F and the 1-hour TSP level at each monitoring location are plotted and presented in Figure 4-1.

Figure 4-1 Graphical presentation of 1-hour TSP levels for February 2005



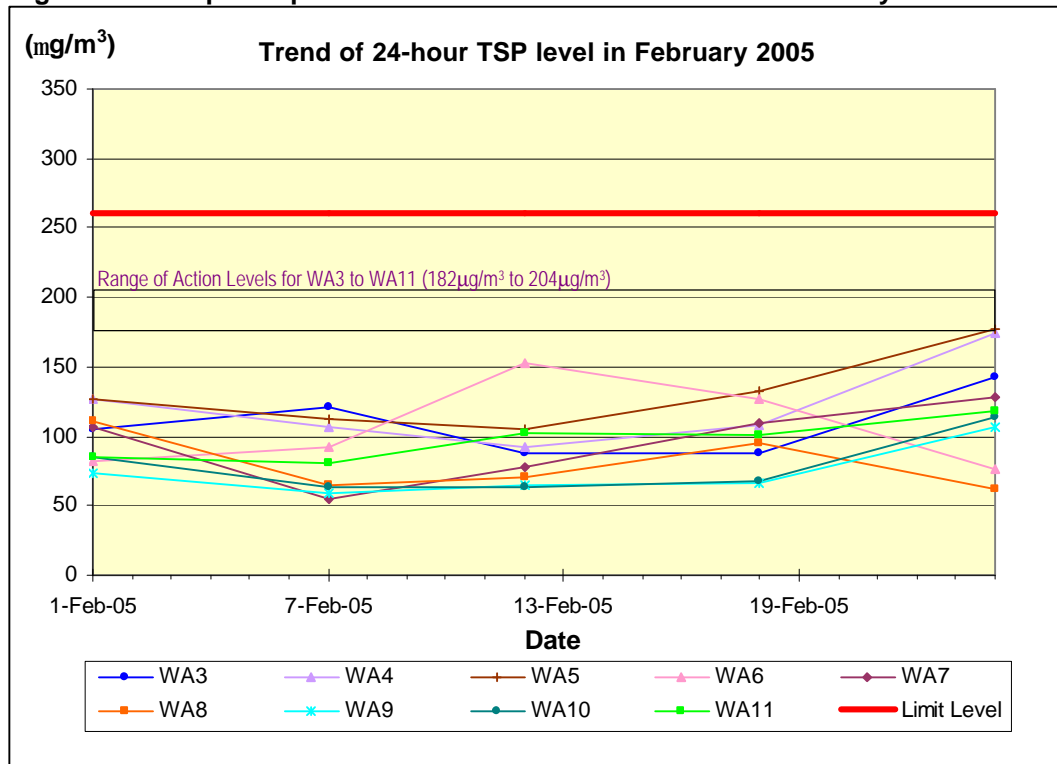
**24-hour TSP**

A total of 5 sets of 24-hour TSP measurement had been taken on 1, 7, 12, 18 and 24 February 2005.

The highest 24-hour TSP level was 177.5µg/m<sup>3</sup> recorded at Block 4, Hong Kong Garden (WA5) on 24 February 2005 while the lowest 24-hour TSP level was 55.0µg/m<sup>3</sup> recorded at Podium, Block 12, Phase 4, Sea Crest Villa (WA7) on 7 February 2005. There was no exceedance of the A/L Levels during the monitoring period.

The detailed monitoring results of 24-hour TSP are given in Appendix G and the 24-hour TSP level at each monitoring location are plotted and presented in Figure 4-2.

**Figure 4-2 Graphical presentation of 24-hour TSP levels for February 2005**



**4.3.3 Wind Monitoring Data**

The detailed wind monitoring data for the air quality monitoring period in February 2005 extracted from Hong Kong Observatory – Tsing Yi Wind Monitoring Station is attached in Appendix H.



## 5. NOISE

### 5.1 Monitoring Equipment

An integrating sound level meter was used for the noise monitoring. The sound level meter equipment are listed in Table 5-1.

**Table 5-1 Equipment list for construction noise monitoring**

Equipment	Manufacturer & Model No.	Precision Grade	Qty.
Integrating sound level meter	Brüel & Kjær 2231	IEC 651 Type 1 IEC 804 Type 1	2
Integrating sound level meter	Brüel & Kjær 2238		3
Windshield	Brüel & Kjær UA0237		6
Acoustical calibrator	Brüel & Kjær 4230	IEC 942 Type 1	2
Acoustical calibrator	Brüel & Kjær 4226		1
LCD wind speed indicator	Kestrel Vane Anemometer	--	2

### 5.2 Methodology

#### 5.2.1 Field Measurement

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

#### 5.2.2 Equipment Maintenance and Calibration

The sound level meter complies with the standards of IEC 651 (Fast, Slow, Impulse rms detector tests) and IEC 804 ( $L_{eq}$  functions). The acoustical calibrator model no. 4230 is in compliance with IEC 942. Both equipment are calibrated annually in-house using Brüel & Kjær (B&K) calibrator model no. 4226.

The National Physical Laboratory in Teddington, London, which is accredited by National Measurement accreditation Service (NAMAS), annually calibrates the B&K calibrator model no. 4226. All in-house calibrations that are undertaken can be traced back to the National Physical Laboratory. The calibration certificates of the noise monitoring equipment are given Appendix I. The next calibration will be conducted on or before 15 July 2005 for the sound level meters and the acoustical calibrators.

### 5.3 Results and Observations

#### 5.3.1 Weather Conditions and Other Factors

The weather condition varied from fine to cloudy during the noise monitoring period in February 2005.

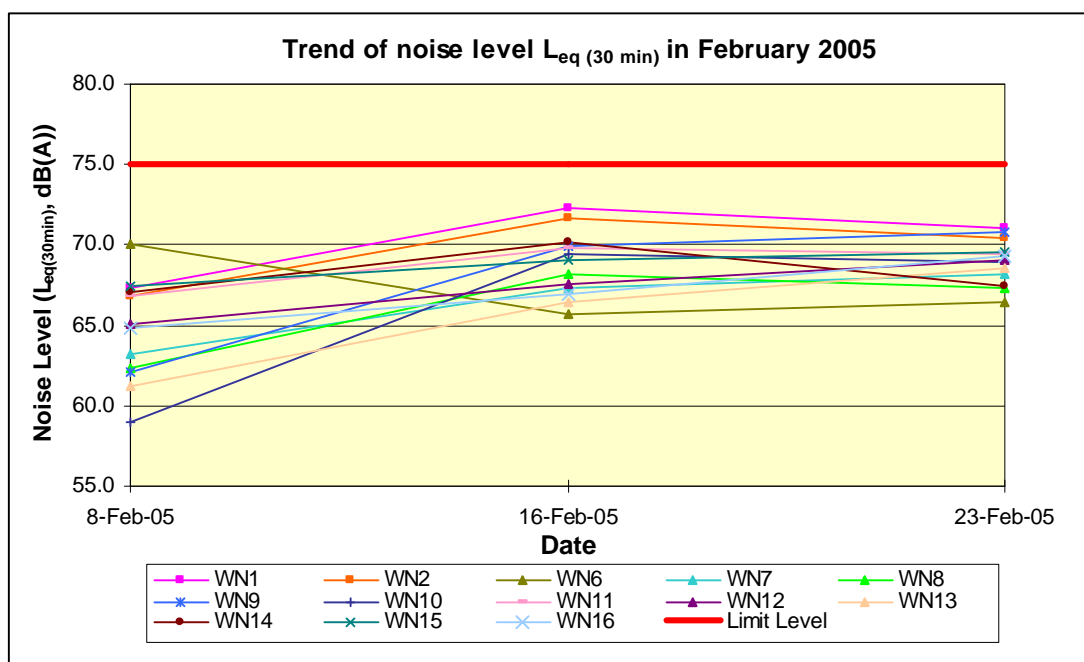
The construction site had been under normal operation during the noise monitoring period and no unusual operation was observed. Traffic noise had been noticed at some noise monitoring locations during the noise monitoring period.

#### 5.3.2 Summary Results

A total of 3 set of noise measurement had been conducted between 0700-1900 hours on 8, 16 and 23 February 2005. The detailed construction noise monitoring results are given in Appendix J.

The highest noise level was 72dB(A) recorded at House No.3 Ka Loon Tsuen (WN1) on 16 February 2005 while the lowest noise level was 59dB(A) recorded at Tsing Lung Tau Village No 60-64 (WN10) on 8 February 2005. There was no exceedance of the A/L Levels during the monitoring period. The noise levels at each monitoring location are plotted and presented in Figure 5-1.

Figure 5-1 Graphical presentation of daytime noise levels for February 2005



## 6. WATER QUALITY (DESGINATED PROJECT)

### 6.1 Water Quality Equipment

Monitoring of Turbidity (Tby) in NTU, Dissolved Oxygen (DO) in mg/L and Suspended Solids (SS) in mg/L were carried out by the ET to ensure that any deteriorating water quality could be readily detected and timely action be taken to rectify the situation. The Tby and DO were measured in-situ while the SS was determined in the laboratory. A summary of the water quality monitoring equipment is provided in Table 6-1.

**Table 6-1 Water quality monitoring equipment**

Equipment	Manufacturer & Model No.	Qty
Handheld Salinity, Conductivity & Temperature System	YSI Model 30	1
Dissolved Oxygen Meter	YSI Model 52	1
pH meter	Hanna	1
Turbidimeter	HACH 2100P	1
Nephelometer	Analite Model 156	1

### 6.2 Methodology

#### *Dissolved Oxygen and Temperature Measuring Equipment*

The equipment to measure DO and temperature complies with the following:

- i. The instrument shall be a portable, weatherproof dissolved oxygen measuring instrument complete with cable and use a DC power source. It shall be capable of measuring:
  - A dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
  - A temperature of 0-45°C.
- ii. It shall have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables shall be available for replacement where necessary (e.g. YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).
- iii. Should salinity compensation not be integrated in the DO equipment, in-situ salinity shall be measured to calibrate the DO equipment prior to each DO measurement.

#### *Turbidity Measurement Instrument*

The instrument is a portable, weatherproof turbidity-measuring instrument complete with comprehensive operations manual. The equipment shall use a DC power source. It shall have a photoelectric sensor capable of measuring turbidity between 0-1000

NTU and be completed with a cable (e.g. Hach model 2100P or an approved similar instrument).

### ***Suspended Solids***

The following equipment is required to monitor the SS:

- i. A water sampler comprising 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 shall have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (e.g. Kahlsico Water Sampler or an approved similar instrument).
- ii. Water samples for SS measurement of both the marine and freshwater environment shall be 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.

### ***Water Depth Detector***

A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring. This unit can either be handheld or affixed to the bottom of the monitoring boat, if the same vessel is to be used throughout the monitoring programme.

### ***Salinity***

A portable salinometer capable of measuring salinity in the range of 0-40 ppt shall be provided for measuring salinity of the water at each monitoring location and setting salinity compensation on the DO Meter.

### ***Location of the Monitoring Site***

A hand-held or boat-fixed type Differential Global Positioning System (DGPS) or other equivalent instrument of similar accuracy shall be provided and used during monitoring to ensure the monitoring vessel is at the correct location before taking measurements. For the monitoring locations in the water courses a hand-held DGPS, together with a suitably scaled map shall be used.

#### **6.2.1 Calibration and Accuracy of Instrumentation**

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.

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" shall be followed.

### 6.3 Marine Monitoring

As reported by the Contractor, major sea works at level below +2.5mPD had been completed in July 2003. The proposal on suspension of marine monitoring was submitted to IC(E), HyD, EPD and AFCD for comments on 25 September 2003. It was confirmed with IC(E) and AFCD that suspension of marine monitoring was acceptable if there is no “active” marine work being carried out. In future, if there is any marine work on or below +2.5mPD, the Contractor shall notify the relevant parties one month in advance and resume the marine monitoring. Subsequently, as instructed by the Contractor/ HyD, the marine monitoring was suspended since during the period from October 2003 to 31 July 2004. However, as instructed by the Contractor, the planned sand placement activities were conducted at Seawall B. Marine impact monitoring near Seawall B (i.e. WW1, WW2, WW3, WW4, WR-E-1234, WR-F-1234 and FCZ1) was resumed from 2 August to 27 August 2004. Since sand placement activities at Seawall B were ceased in August 2004, marine water monitoring was again suspended since September 2004.

## **7. LANDSCAPE AND VISUAL MONITORING AND AUDIT**

The landscape and visual monitoring and audits were carried out on 3 and 17 February 2005 by a Registered Landscape Architect.

The audit findings and recommendations are summarised in the following paragraphs.

### **7.1 Summary of Inspection – 3 February 2005**

#### **7.1.1 Matters Arising from Previous Inspections**

- The Contractor had cleared away the scattered construction waste piles found at RW-01 area. However, new scrap-wood and garbage piles were found and the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the garbage piles found at footbridge FB-02 area. However, the waste container bin was found to be full, and the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the scattered empty cement bags were found at BPRW14 area.
- The Contractor had emptied the waste container bin at Seawall 'C' area.
- The Contractor had cleared away the construction waste pile found opposite Lido Garden area.
- Tree protection to existing tree at Slope 6SW-D/C186 was still outstanding. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler's Beach was still outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently, including tree stability.

#### **7.1.2 Site Clearance and Formation Works**

- Construction waste piles was found at NM-02 area. The Contractor was requested to clear it away as soon as possible.
- The 'drum' litter bin was found to be full at RW13 area. The Contractor was requested to clear it away as soon as possible.

#### **7.1.3 Tree Felling and Transplanting Works**

- No tree transplanting work was carried out during the inspection period.

#### **7.1.4 Recommendations**

- The Contractor was reminded to urgently carry out root pruning and proper tree protection of existing trees on site.

- The Contractor was reminded to clear away all scattered litter, garbage, etc. as found on site, and keep the site in a tidy condition at all times.

## **7.2 Summary of Inspection – 17 February 2005**

### **7.2.1 Matters Arising from Previous Inspections**

- The Contractor had emptied the ‘drum’ litter bin at retaining wall RW-13 area.
- The Contractor had cleared away the construction waste piles found at NM-02 area.
- The Contractor had cleared away the scrap-wood and garbage piles found at RW-01 area. However, new construction waste piles was found and the Contractor was requested to clear it away as soon as possible.
- The Contractor had emptied the waste container bin found at footbridge FB-02 area. However, the bins were again found to be full, and the Contractor was requested to clear it away as soon as possible.
- Tree protection to existing tree at Slope 6SW-D/C186 was outstanding. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- The Contractor had backfilled the root area of the retained tree (T44) at Angler’s Beach with concrete. However, the Contractor was reminded to carry out proper assessment of the stability of the tree to ensure the tree is stable.
- Dry surface conditions were observed at RW-01 and Seawall ‘C’ areas. The Contractor was reminded to carry out more frequent watering of the site to prevent dust nuisance.

### **7.2.2 Site Clearance and Formation Works**

- A large garbage pile was found at Portion 6 area. The Contractor was requested to clear it away as soon as possible.

### **7.2.3 Tree Felling and Transplanting Works**

- No tree transplanting work was carried out during the inspection period.

### **7.2.4 Recommendations**

- The Contractor was reminded to urgently carry out root pruning and proper tree protection to ensure existing trees retained are not damaged.
- The Contractor was reminded to clear away all scattered litter, garbage, etc. as found on site, and keep the site in a tidy condition at all times.
- The Contractor was reminded to carry out more frequent watering of the site during dry periods to prevent dust nuisance.

## **7.3 Tree Transplanting Survival Rate**

### **7.3.1 Tree Transplanting Survival Rate**

- The tree transplanting survival rate as reported by the Contractor for the period up to the end of February is 100%.

## **7.4 Audit Schedule**

### **7.4.1 Audit Schedule for March 2005**

- The next audits are schedule to be conducted on 3<sup>rd</sup>, 17<sup>th</sup> and 24<sup>th</sup> March 2005.

The Landscape and Visual Monitoring & Audit Report for February 2005 prepared by the Registered Landscape Architect is attached in Appendix K.



## 8. SITE INSPECTION, WASTE DISPOSAL, ENVIRONMENTAL COMPLAINTS, ENVIRONMENTAL LICENSES AND NON-COMPLIANCE RECORDS

### 8.1 Site Audit Results

Weekly environmental site audits were carried out on 3, 7, 17 and 24 February 2005. The environmental concerns identified in the site audits are summarised in Table 8-1.

**Table 8-1 Summary of environmental concerns identified in site audits in February 2005**

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
<b>Water Quality</b>				
03-02-2005	Water from wheel washing at FB01 was not diverted into appropriate cut-off drain.	To re-divert effluent into appropriate drain.	Contractor implement wheel wash behind the cut-off drain.	07-02-2005
03-02-2005	Vehicles were not wheel washed at site entrance W23.	To implement wheel wash.	Contractor implement wheel wash afterwards.	07-02-2005
03-02-2005	Mud trails were found at site entrance W23.	To clean up the road.	Contractor clean up the road afterwards.	07-02-2005
07-02-2005	Open channel at Outfall I was blocked by waste.	To clean up the channel.	Contractor cleaned up the channel immediately.	17-02-2005
17-02-2005	Mud trail was found at site entrance W23.	To clean up the road.	Contractor clean up the road afterwards.	24-02-2005
24-02-2005	Open channel at Outfall I was blocked by waste.	To clean up the channel.	Contractor cleaned up the channel immediately.	04-03-2005
24-02-2005	Stagnant water was found at trench of RW-C.	To drain the stagnant water.	Contractor drain off all the stagnant water.	04-03-2005
24-02-2005	Mud trails were found on public road of site entrance W11.	To clean up the road.	Contractor clean up the road afterwards.	04-03-2005
<b>Air Quality</b>				
03-02-2005	Earth loading and unloading at RW-C was not sprayed with water.	To spray water during earth moving operation.	Contractor watered the earth during operation.	07-02-2005
24-02-2005	Cement at RERW14 was uncovered.	To cover the cement with tarpaulin sheet.	Contractor covered the cement stockpile.	04-03-2005
<b>Construction Noise</b>				
No non-compliance was found.				
<b>Handling of Wastes and Chemicals</b>				
03-02-2005	Waste accumulated at Slope 6.	To remove the waste.	Contractor removed the waste.	07-02-2005
03-02-2005	Oil Stains were found near an air compressor at area opposite to Dragon Garden.	To remove the oil stains.	Contractor removed the oil stains with sands.	07-02-2005
17-02-2005	Empty oil drums were found at Slope 8.	To remove empty oil drums.	Contractor removed the empty oil drums.	24-02-2005

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
24-02-2005	Waste accumulated at RW01.	To remove the waste.	Contractor removed the waste.	04-03-2005

## 8.2 Waste Disposal

The Contractor had properly disposed of the waste material in the reporting month, and the disposal quantity in the reporting month is summarised in Table 8-2.

**Table 8-2 Waste disposal quantity in February 2005**

Type of waste or material	Disposal at	No. of loads or quantities	Remarks
C&D waste	WENT Landfill	32 loads	--
C&D material	Public Filling Area in Tuen Mun	1414 loads	--
Grease trap waste	Interim Grease Trap Waste Treatment Facility at WENT Landfill	0	--
Chemical waste	Spent lube oil Collected by licensed collector	0	--

## 8.3 Complaint Record

There were two environmental complaints received in February 2005. A log record on the environmental complaints is given in Appendix L and a cumulative statistics on environmental complaints is given in Table 8-3.

**Table 8-3 Cumulative statistics on environmental complaints**

No. of complaints received in the reporting month	No. of outstanding complaints	Cumulative no. of complaints received since the commencement of project
0	0	35

## 8.4 Non-compliances

There were no non-compliances for both the air quality and noise monitoring during the reporting period.

## 8.5 Notification of Summons and Successful Prosecution

There was neither notification of summons nor prosecution received during the reporting month.

## 8.6 Environmental Licenses

There was no new environmental license granted during the reporting period.

## 9. REFERENCES

- [1] Mouchel Halcrow Joint Venture. 2001. Castle Peak Road Improvement between Area 2 and Ka Loon Tsuen, Tsuen Wan West Contract No. HY/99/18, Environmental Monitoring & Audit Manual.
- [2] Ove Arup & Partners Hong Kong Limited. July 2002. Contract No. HY/99/18 Castle Peak Road Improvement between Shem Tseng and Ka Lung Tsuen, Tsuen Wan, Environmental Baseline Monitoring Report (Second Issue).
- [3] Mouchel Halcrow Joint Venture. 2001. D&C Consultancy Agreement No. CE 1/96 Castle Peak Road Improvement between Area 2 and Ka Loon Tsuen, Tsuen Wan, Tree Survey Report & Tree Felling Application Revision D.
- [4] Mouchel Halcrow Joint Venture. Contract No. HY/99/18 March 2002. D&C Consultancy Agreement No. CE 1/96 Castle Peak Road Improvement between Area 2 and Ka Loon Tsuen, Tsuen Wan, Supplementary Tree Survey Report & Tree Felling Application Revision A.



**APPENDIX A**  
**Detailed site layout**  
**plans**

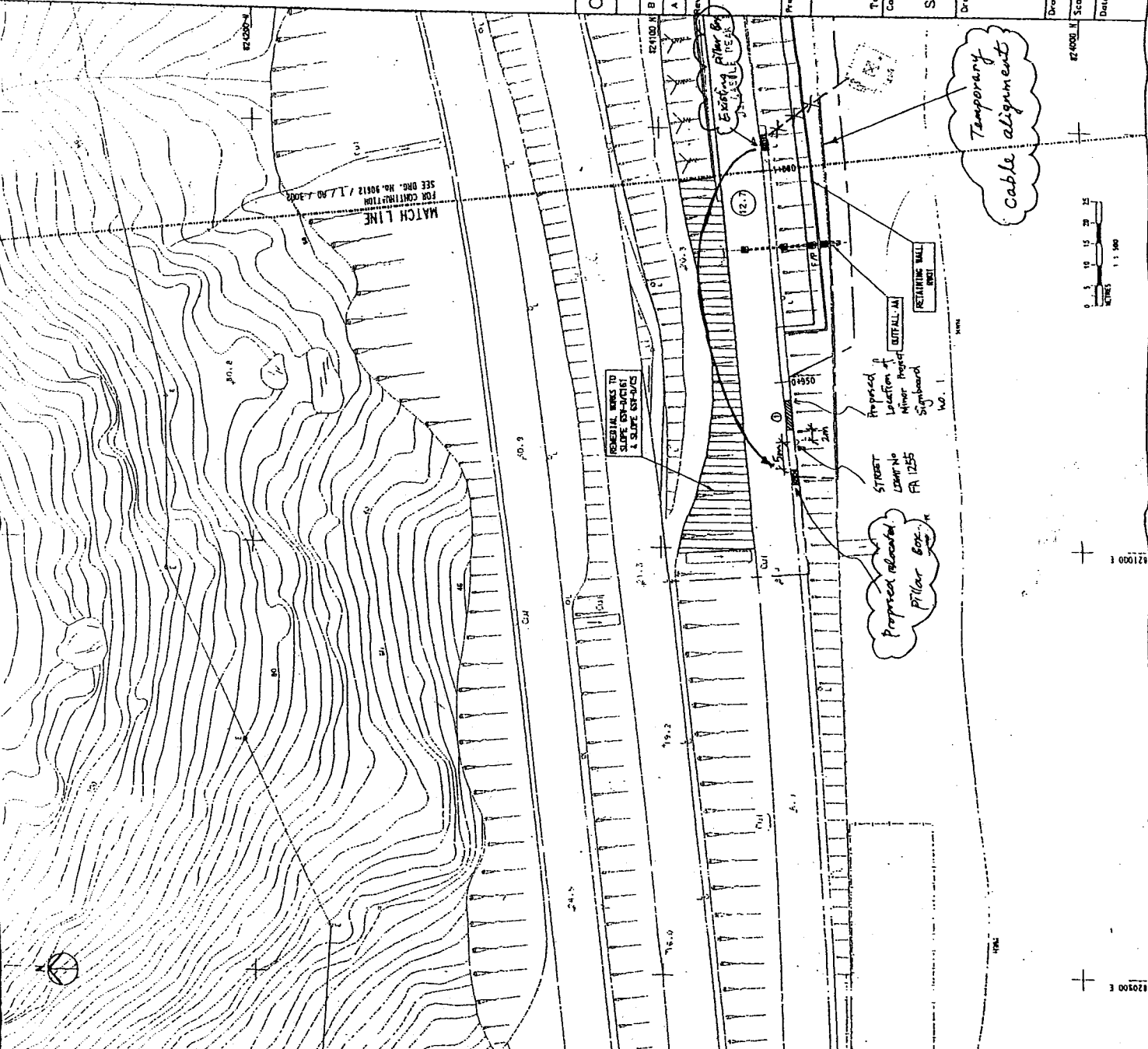
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NOTES:  
 1. ALL COORDINATES ARE IN ACCORDANCE WITH THE 1980 HONG KONG METRIC GRID SYSTEM.  
 2. ALL LEVELS ARE IN METRES ABOVE THE PRINCIPAL DATUM (MPD) AND RELATE TO THE SETTING OUT LINES.

Legend:

Minor Sign board  
 (Size: 7.2m (L) X 1.5m (width))



LEGEND

	DENOTES PRINCIPAL SETTING OUT LINE
	DENOTES FOOTPATH
	DENOTES EDGE OF CARRIAGEWAY
	DENOTES NEW SOIL CUT SLOPE
	DENOTES NEW ROCK CUT SLOPE
	DENOTES NEW SOIL OR ROCK FILL SLOPE
	DENOTES SLOPE MAINTENANCE STAIRWAY OR ACCESS STAIRWAY TO REACH
	DENOTES RETAINING WALL
	DENOTES BORED PILE RETAINING WALL
	DENOTES BENCH LIMIT
	DENOTES PROPOSED CARRIAGEWAY LEVEL (MPD)
	DENOTES SLOPE TO BE STABILIZED
	DENOTES ROAD BRIDGE
	DENOTES VIADUCT
	DENOTES NOISE ENCLOSURE
	DENOTES 5m HIGH NOISE BARRIER
	DENOTES 1.5m HIGH NOISE BARRIER
	DENOTES DRAINAGE GUTTER ACCOMMODATION MARK

CONTRACT DRAWING

2nd Issue	Contract Issue	SP	RD	1/2	1/1
1st Issue	Tender Issue	SP	DC	PS	JUN 01
Issue	Amendment	By	Chk	Appr	Date
Sheet					

Major Works Project Management Office,  
 Highways Department,  
 Hong Kong

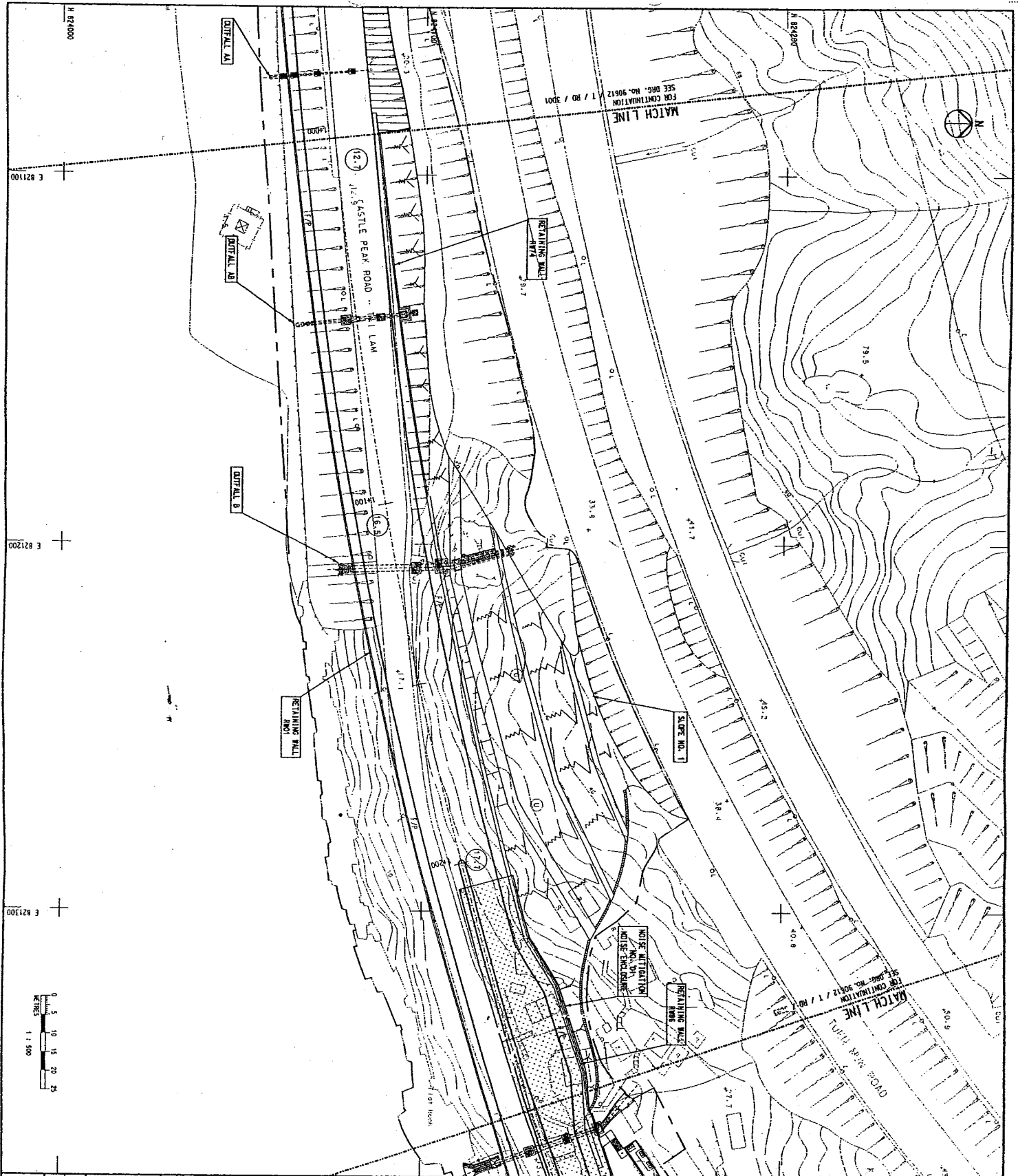
Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow JV**  
 Sub-Consultants  
 ACL Asia, MVA Asia Ltd.  
 Townland Consultants Ltd, Chesterton, Petty Ltd.

Contract Title  
 Castle Peak Road Improvement Between  
 Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title  
 SCHEME GENERAL ARRANGEMENT  
 CHAINAGE 960 TO 1000

Drawn	NOB	Checked	JWT/L	Approved	PS
Scale	1:1000	CAO File No.	R0300L08H	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3001	Rev.	B



NOTES:  
 1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / 1 / RD / 3001.

**CONTRACT DRAWING**

B	2nd Contract Issue	SP	DC	PS	LHM	01
A	Final Tender Issue	SP	DC	PS	LHM	01
Rev	Issue	Amendment	By	Cmk/ App.	Date	

**MW** Major Works Project Management Office,  
 Highways Department,  
 Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

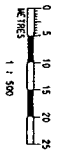
**Mouchel Halcrow . JV**

Sub-Consultants  
 ACL Asia, MVA Asia Ltd,  
 Townland Consultants Ltd, Chesterton Pelly Ltd.

Contract Title  
 Castle Peak Road Improvement Between  
 Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title  
 SCHEME GENERAL ARRANGEMENT  
 CHAINAGE 1000 TO 1270

Drawn	WDD	Checked	JMTL	Approved	PS
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Date Issued	JUNE 2001	Drawing No.	90612/1/RD/3002	Rev	B

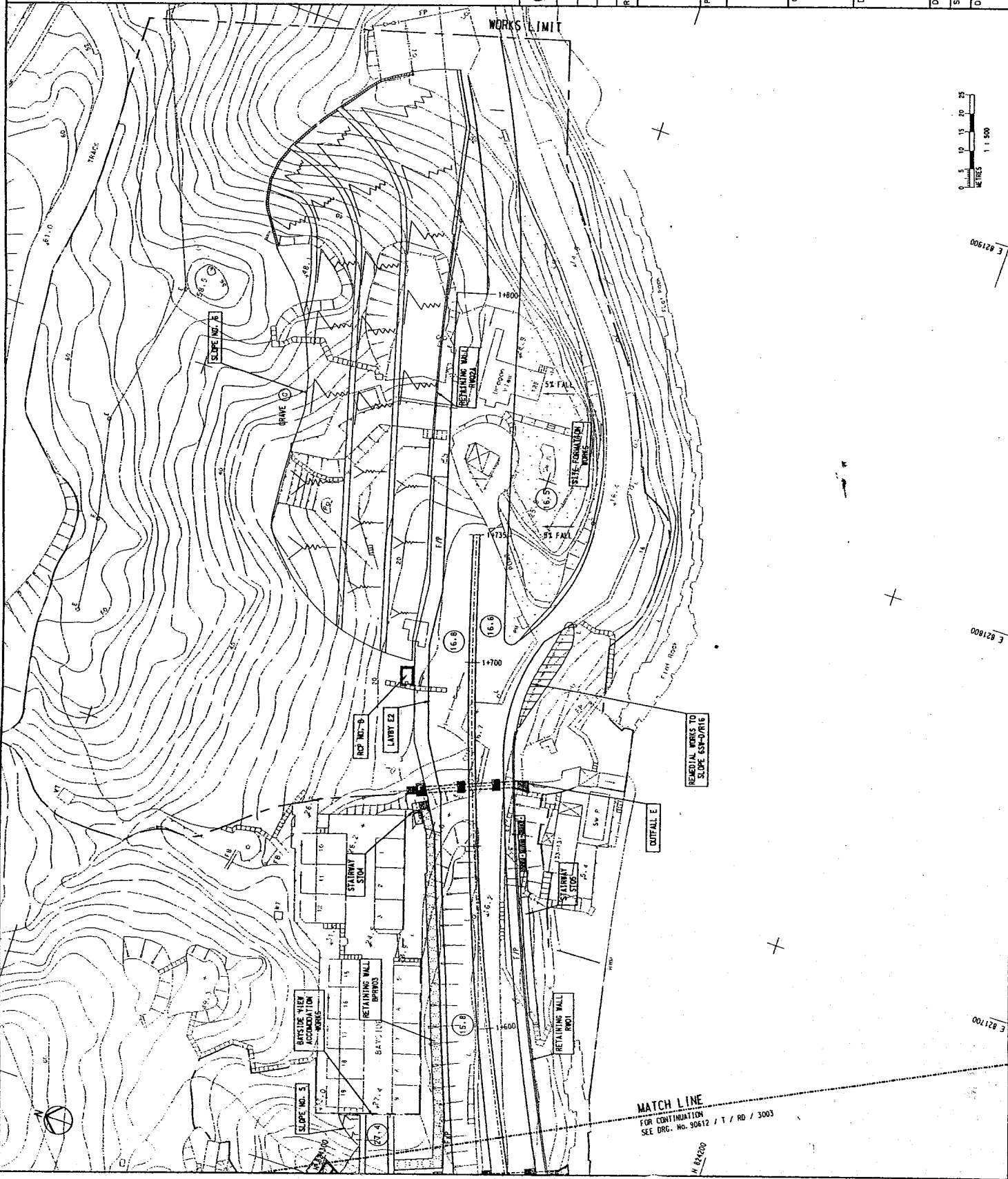






NOTES :

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING No. 90612 / T / RD / 3001.



CONTRACT DRAWING

B	2nd Issue	Contract Issue	SP	DC	PS	JUN 01
A	1st Issue	Tender Issue	SP	DC	PS	JUN 01
Rev	Status	Amendment	By	Chk.	App.	Date

Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow JV**  
Sub-consultants

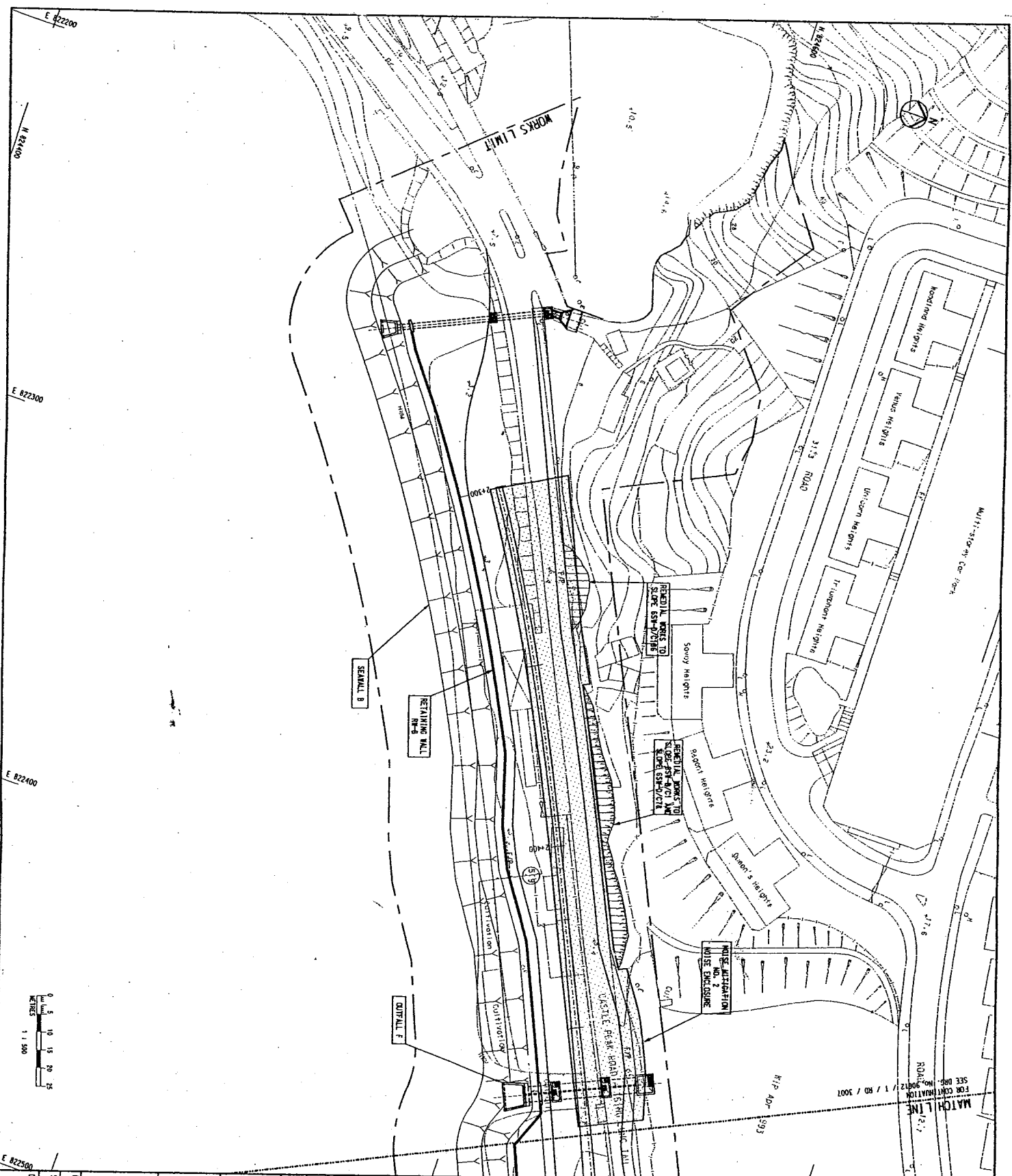
ACL Asia, MVA Asia Ltd.,  
Townland Consultants Ltd., Chesterton Petty Ltd.

Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

SCHEME GENERAL ARRANGEMENT  
CHINA RAILWAY 1570 TO 1870

Drawn	WDD	Checked	JWTL	Approved	PS
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Date issued	JUNE 2001	Drawing No.	90612/T/RD/3004	Rev.	B



NOTES  
 1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612/T/RD/3006

CONTRACT DRAWING

Rev	Issue	By	CHK/APP	Date
B	2nd Contract Issue			
A	1st Tender Issue			

**MW** Major Works Project Management Office,  
 Highways Department,  
 Hong Kong

Project No. 6553TH Contract No. HY/99/18

**Mouchel Halcrow JV**  
 Sub-Consultants  
 AGL Asia, MVA Asia Ltd.  
 Townland Consultants Ltd, Chesterton Pelly Ltd.

Contract Title  
**Castle Peak Road Improvement Between  
 Shan Tseng and Ka Loon Tsuen, Tsuen Wan**

Drawing Title  
**SCHEME GENERAL ARRANGEMENT  
 CHAINAGE 2300 TO 2480**

Drawn	WDD	Checked	JW/L	Approved	PS
Scale	1:500	CAD File No.	R03000.DGN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3006	Rev.	B

**NOTES**

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / T / RD / 3001.

**CONTRACT DRAWING**

2nd Issue	Contract Issue	Sp	DC	PS	JUN 01
A	First Tender Issue	SP	DC	PS	JUN 01
Rev. 0001	Amendment	By	Chk.	App.	Date

**MW** Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow JV**  
Sub-Consultants

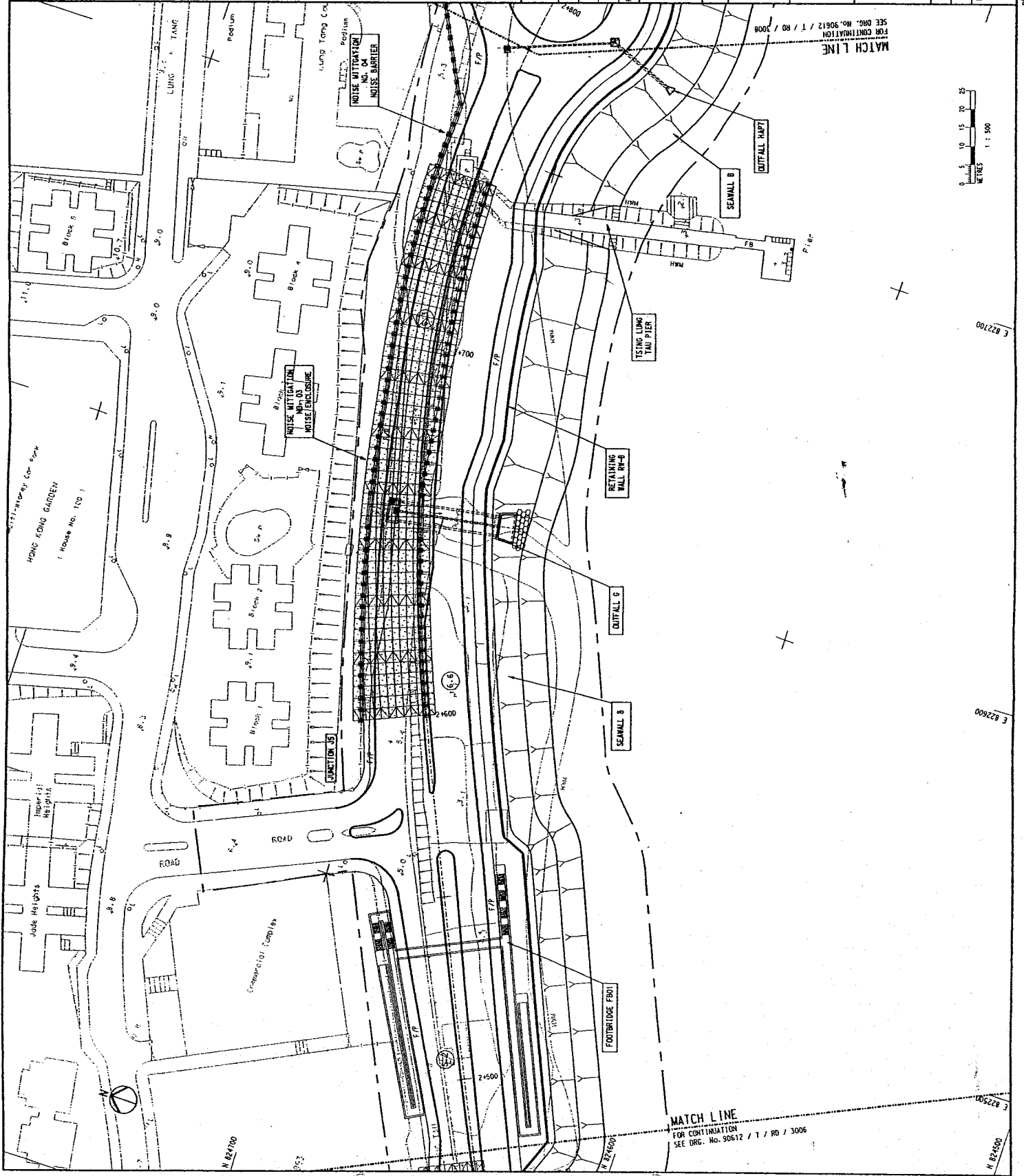
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Townland Consultants Ltd., Chesterton Petty Ltd.  
Contract Title

Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

**SCHEME GENERAL ARRANGEMENT  
CHAINAGE 2480 TO 2785**

Drawn	WOD	Checked	JMTL	Approved	PS
Scale	1:500	CAD File No.	RD3007.DGN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612 / T / RD / 3007	Rev.	B



**NOTES**

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / T / RD / 3001.

**CONTRACT DRAWING**

B	2nd Issue	Contract Issue	SP/DC	1/2/01
A	First Issue	Tender Issue	SP	DC
	Rev. Status	Amendment	By	Chk. App. Date

Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow JV**

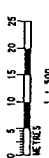
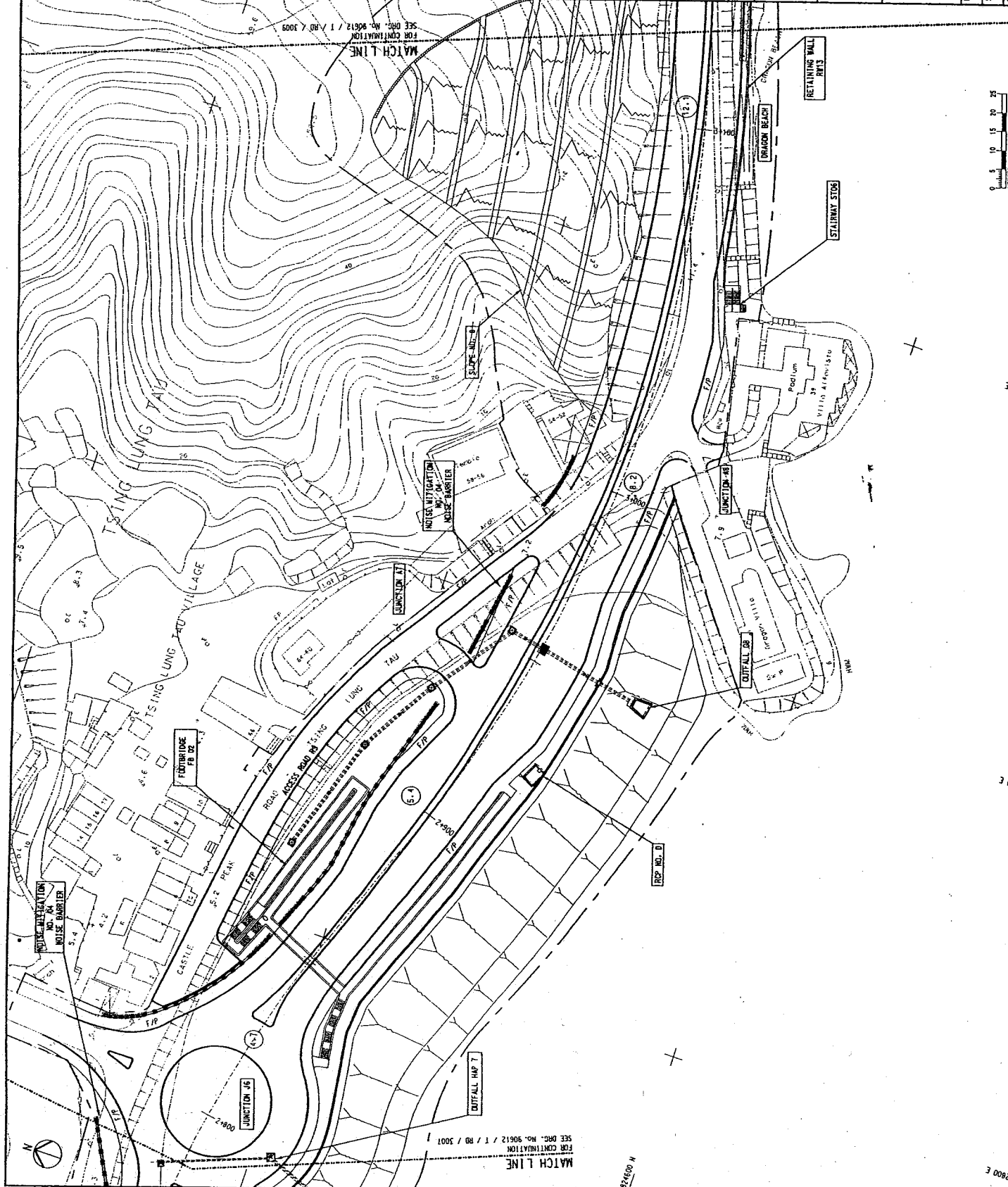
Sub-Consultants  
ACL Asia, MYA Asia Ltd.,  
Townland Consultants Ltd., Chesterton Petty Ltd.

Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

**SCHEME GENERAL ARRANGEMENT  
CHANGE 2785 TO 3130**

Drawn	WDD	Checked	JWTL	Approved	PS
Scale	1:1,500	CAD File No.	RD3006LDRN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612 / T / RD / 3008	Rev.	B



823000 E

823000 E

MATCH LINE  
SEE DRG. NO. 90612 / T / RD / 3001  
FOR CONTINUATION

MATCH LINE  
SEE DRG. NO. 90612 / T / RD / 3009  
FOR CONTINUATION

NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / T / RD / 3001.

CONTRACT DRAWING

B	2nd Issue	SP	PC	2/VAL
A	1st Issue	SP	DC	PS JUN 01
Rev	Issue	By	Chk.	Date
	Amendment			

**MW** Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow - JV**

Sub-Consultants  
ACL Asia, MVA Asia Ltd.,  
Townland Consultants Ltd., Chesterton Petty Ltd.

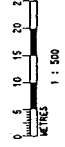
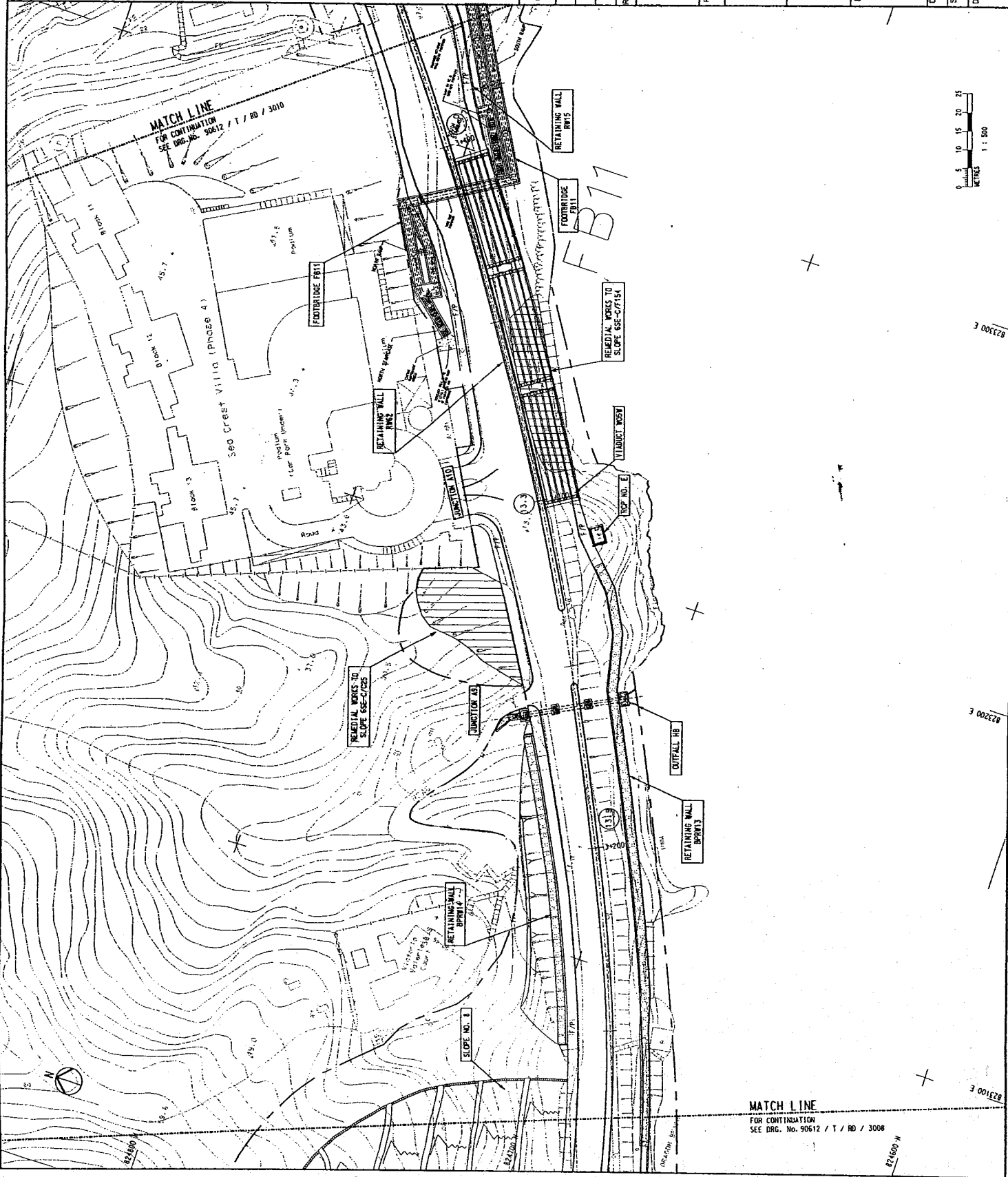
Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

SCHEME GENERAL ARRANGEMENT  
CHAINAGE 3130 TO 3430

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Scale	1:500	CAD File No.	RD3009.DGN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612 / T / RD / 3009	Rev.	B

06 NOV 2001



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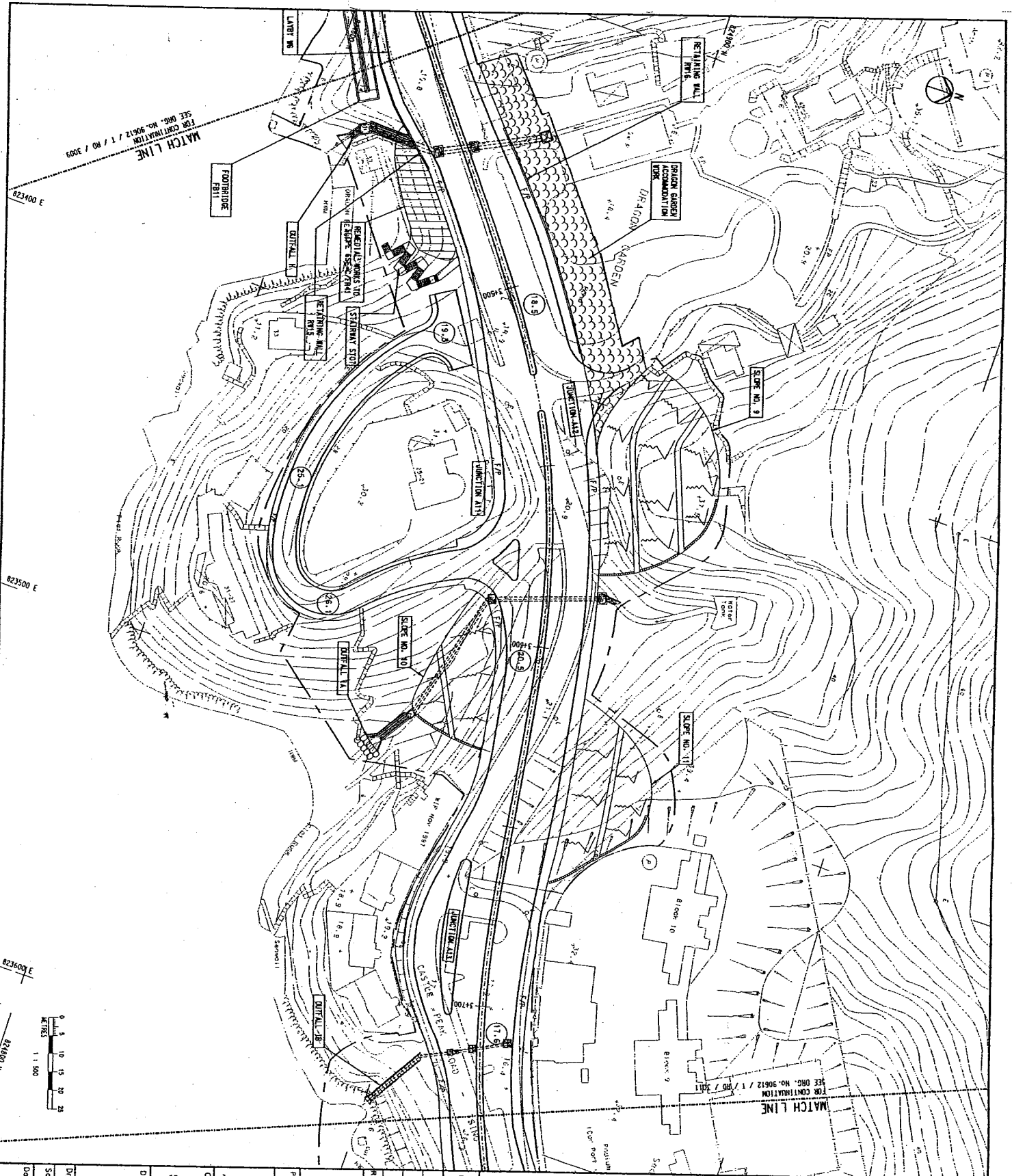
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82300 E

MATCH LINE  
FOR CONTINUATION  
SEE DRG. No. 90612 / T / RD / 3008

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NOTES  
 1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612/T/1/RD/3001.



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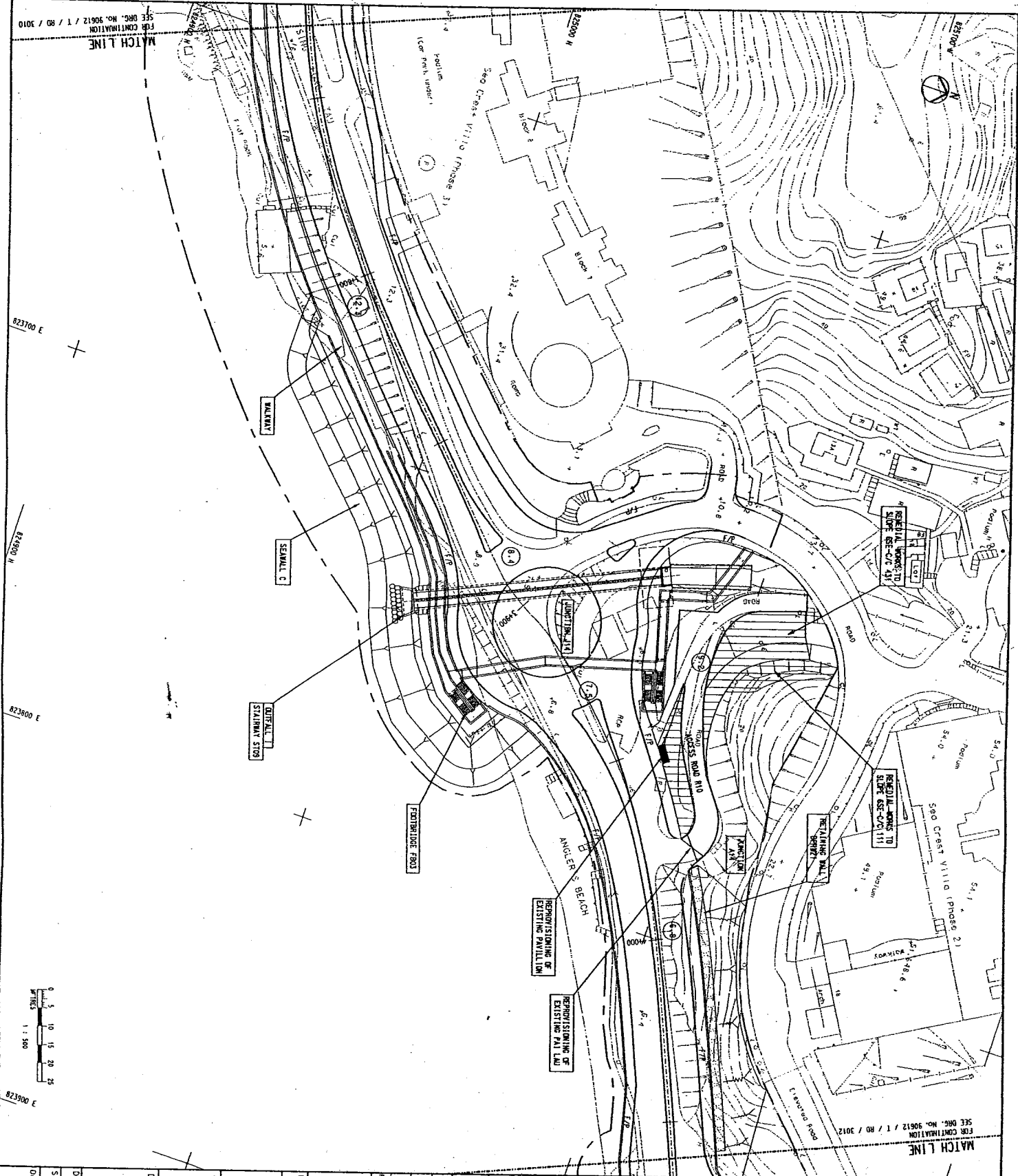
Project No.	6553TH	Contract No.	HY / 99 / 18
<p><b>Mouchel Halcrow JV</b>          Sub-consultants          ACL Asia, WVA Asia Ltd.,          Townland Consultants Ltd., Chesterion Pelly Ltd.</p>			
<p>Contract Title  <b>Castle Peak Road Improvement Between          Sham Tseng and Ka Loon Tsuen, Tsuen Wan</b></p>			
<p>Drawing Title  <b>SCHEME GENERAL ARRANGEMENT          CHAINAGE 3430 TO 3730</b></p>			
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Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3010
Rev.			

Rev	Issue	Amendment	By	Chk/Iss Date
B	2nd Issue	Contract Issue	SP	24/6/01
A	1st Issue	Tender Issue	SP	10/5/01

Major Works Project Management Office,  
 Highways Department,  
 Hong Kong

DN111941  
 21 OCT 2001





MATCH LINE  
SEE DRG. NO. 9612 / T / RD / 3012

MATCH LINE  
SEE DRG. NO. 9612 / T / RD / 3010

NOTES  
1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 9612 / T / RD / 3001.

**CONTRACT DRAWING**

B	2nd Issue	Contract Issue	S.P.	P.C.	A.	5/11/01
A	1st Issue	Tender Issue	SP	DC	PS	JUN 01
Rev	Issue	Amendment	By	CHK	APP	Date
	Issue					

**MW** Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow JV**

Sub-Consultants  
ACL Asia, MVA Asia Ltd.  
Townland Consultants Ltd, Chesterton Pelly Ltd.

Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

**SCHEME GENERAL ARRANGEMENT  
CHANAGE 3730 TO 4060**

Drawn	WOD	Checked	JWTL	Approved	PS
Scale	1:500	CAD File No.	RD3010CON	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3011	Rev	B





NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / T / RD / 3001.

CONTRACT DRAWING

B	2nd Issue	Contract Issue	SP	DC	PS	JUN 01
A	1st Issue	Tender Issue	SP	DC	PS	JUN 01
Rev	Status	Amendment	By	Chk.	App.	Date

Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 1B

Mouchel Halcrow JV

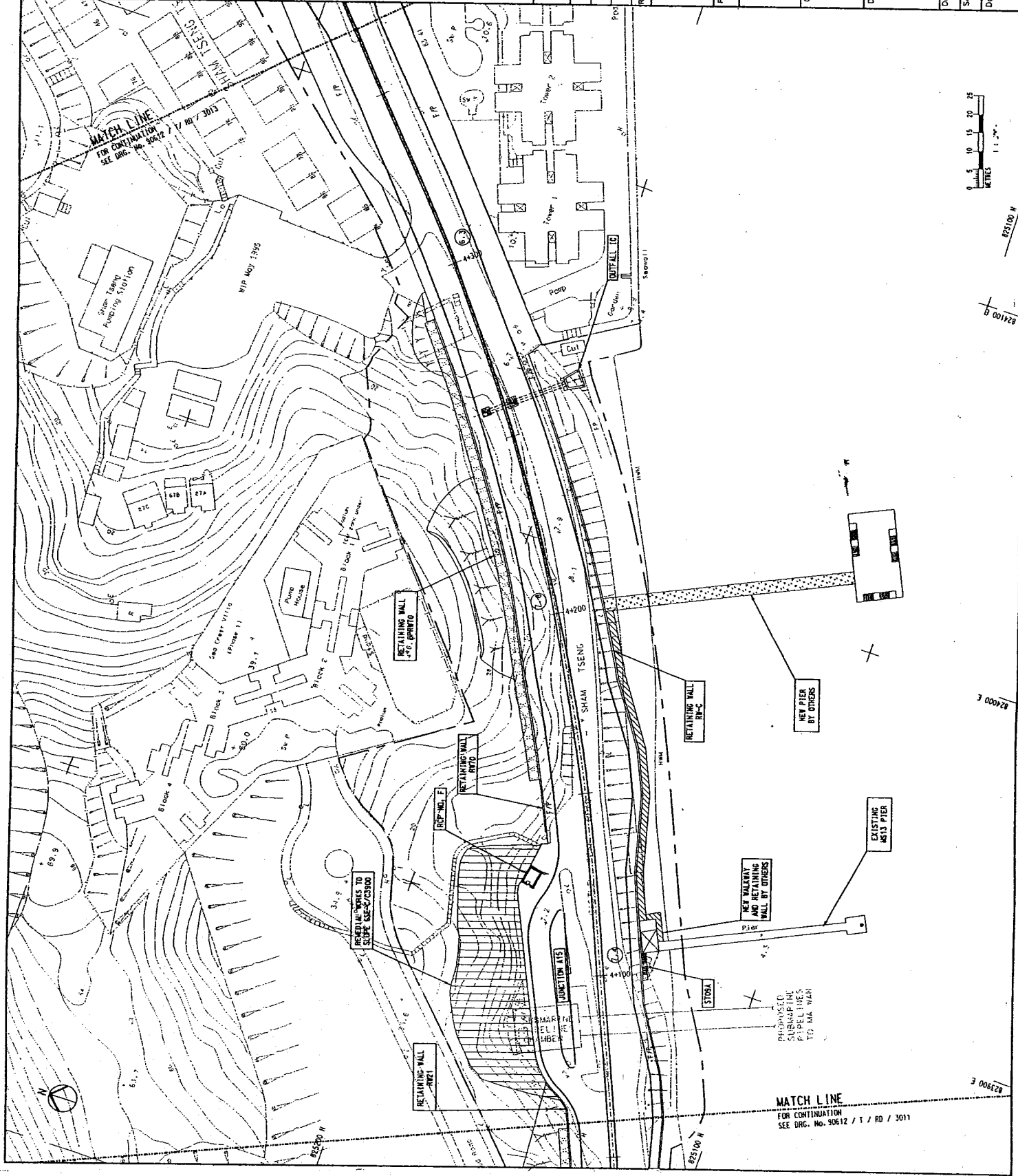
Sub-Consultants  
ACL Asia, MVA Asia Ltd.,  
Townland Consultants Ltd., Chesterton Petty Ltd.

Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

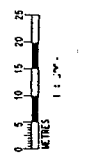
Drawing Title

SCHEME GENERAL ARRANGEMENT  
CHAINAGE 4060 TO 4370

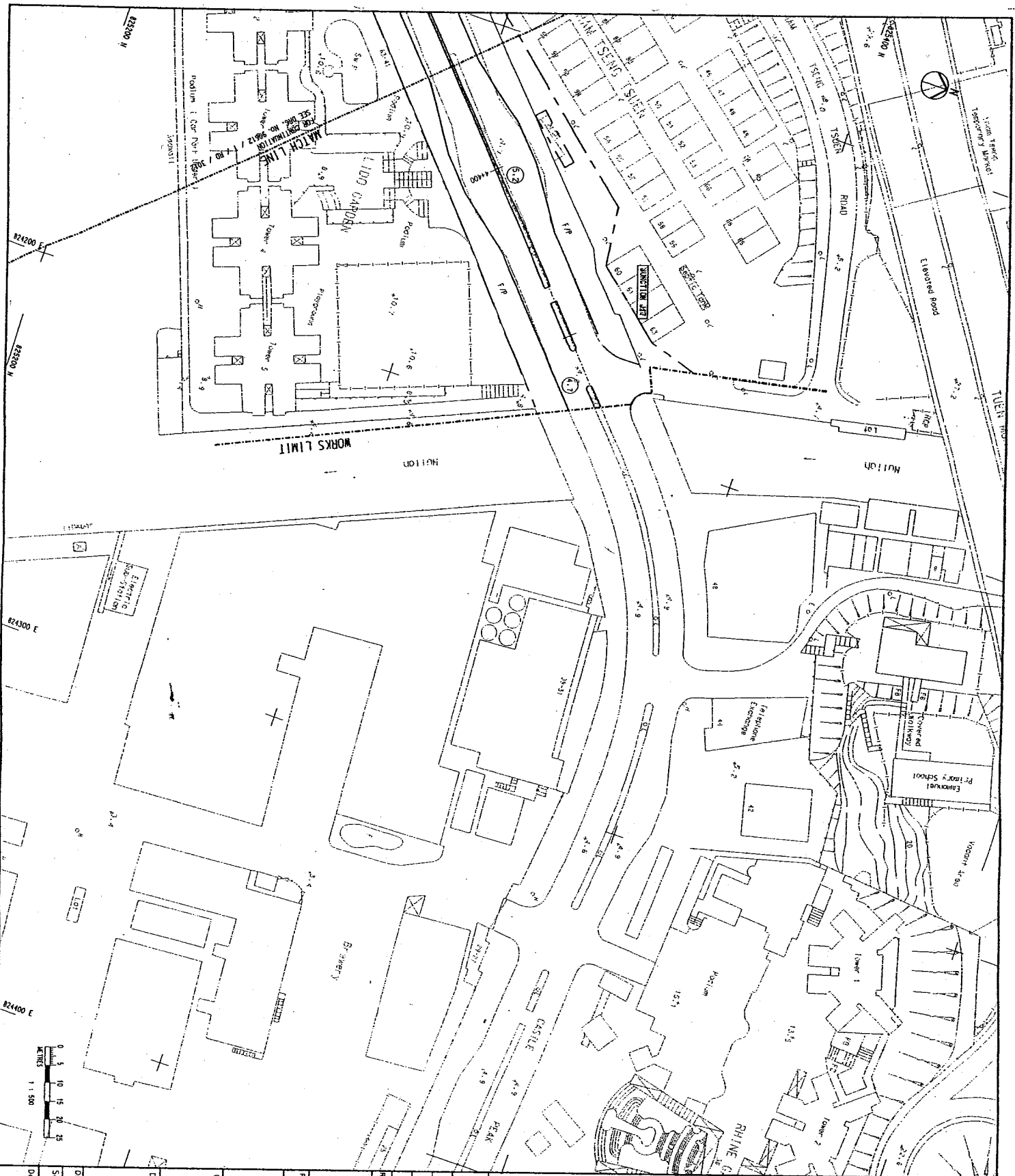
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Date Issued	JUNE 2001	Drawing No.	90612 / T / RD / 3012	Rev.	B



MATCH LINE  
FOR CONTINUATION  
SEE DRG. NO. 90612 / T / RD / 3011



R23100 N  
R23100 E  
R23100 W



**NOTE**

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 90612 / T / RD / 3001.

**CONTRACT DRAWING**

B	2nd	Contract Issue	SP	PC	5/1/01
A	1st	Tender Issue	SP	DC	25 JUN 01
REV	ISSUE	AMENDMENT	BY	CHK	APP
					DATE



Major Works Project Management Office,  
Highways Department,  
Hong Kong

Project No. 6553TH Contract No. HY / 99 / 18

**Mouchel Halcrow · JV**

Sub-Consultants  
ACL Asia, MVA Asia Ltd.,  
Townland Consultants Ltd., Chesterton Pelly Ltd.

Contract Title  
Castle Peak Road Improvement Between  
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title  
SCHEME GENERAL ARRANGEMENT  
CHAINAGE 4370 TO 4470

Drawn	WDD	Checked	JMTL	Approved	PS
Scale	1:500	CAD File No.	R03013.DGN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3013	Rev	B

**APPENDIX B**  
**Construction**  
**programme**

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**CPR Improvement bet Sham Tseng & Ka Loon Tsuen**

**Important Dates**

**Key Dates**  
 00-SECV1    KDF - All Works except Landscape bet CH0900-1205    0    18FEB05\*    -176

**Portions Possession Dates**  
 00-AD0W2    Possession of Portion No. W2    0    16FEB05\*    -44

**Portions Handover Dates**  
 00-VD6    Handover Portion No. 6 to Employer    0    28FEB05\*    0  
 00-VD7    Handover Portion No. 7 to Employer    0    28FEB05\*    0  
 00-VD0W1    Handover Portion No. W1 to Employer    0    18MAR05\*    -176  
 00-VD0W3    Handover Portion No. W3 to Employer    0    18MAR05\*    -176

**1. Preliminaries**

**Planning & Programming**

01-0108    Maintain Programming & Submit Progress Reports    1,236    24NOV01A    10AUG05    0

**Waste Management**

01-1166    Implement & Monitor WMP    1,171    21DEC01A    11JUN05    0

**Maintenance of Traffic Flow**

01-1153    Maintain Traffic Flow    1,171    24NOV01A    11JUN05    0

**Environmental Monitoring & Audit**

01-11702    Implement & Maintain Impact Monitor & Audit    1,601    08MAR02A    10AUG06    0

**Interfacing and Coordination**

01-1173    Coordination/Integration with Interfacing Works    1,171    01DEC01A    11JUN05    0  
 01-1174    Provide Reasonable Access to Other Contractors    1,171    01DEC01A    11JUN05    0

**16. Site Safety**

**Safety Management System**

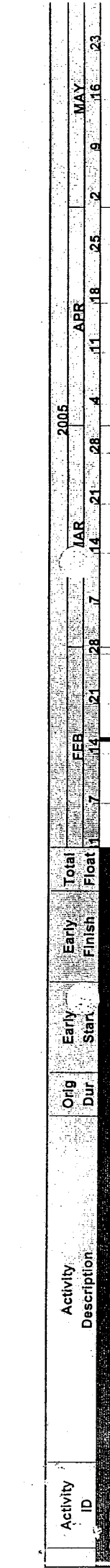
16-1612    Implement & Maintain Safety Management System    1,151    14DEC01A    11JUN05    0

**CPR from Chainage 0+900 to Chainage 1+870**

**1. Preliminaries**

**Proposed Utility Works**

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
01-120256	Proposed CATV on E/B C.way CH1800-1860	8	05AUG04A	19FEB05	90
01-12065	Proposed CLP on W/B C.way CH1075-1205	6	28DEC04A	05FEB05A	
01-1205	Proposed Gasmain on E/B C.way CH1350-1480	30	08JAN05A	03FEB05A	
01-12039	Proposed CLP on E/B C.way CH1060-1205	8	10JAN05A	05FEB05A	
01-12064	Proposed CATV on W/B C.way CH1075-1205	6	01FEB05A	17FEB05	-141
01-120712	HKT Cross Rd. Ducts at W/B CH1285	4	02APR05	07APR05	-80



Date	Revision	Checked	Approved
30JUL03	Revision 01		
17SEP03	Revision 02		
22MAR04	Revision 03		
28SEP04	Revision 04		
06JAN05	Revision 05		



Maeda Corporation

HY/99/18 - Castle Peak Road Improvement  
 3 - Month Rolling Programme

Sheet 1 of 12

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	2005																			
						JAN	FEB	MAR	APR	MAY															
<b>7. Noise Structures</b>																									
<b>Procurement of Noise Barrier</b>																									
07-7060	Fabrication of Steel Members for Noise Barrier	120	17MAY04A	07MAR05	-18																				
07-7080	Delivery of Steel Members for Noise Barrier	90	19JUL04A	17MAR05	-18																				
07-7070	Fabrication of Panels for Noise Barrier	100	16FEB05	26MAY05	-57																				
07-7090	Delivery of Panels for Noise Barrier	90	28MAR05	25JUN05	-57																				
<b>Noise Mitigation No. 01</b>																									
07-7121	Foundation of NM01 (S): CH1320-1405 (bays 23-28)	45	22JAN05A	09MAR05	-73																				
07-7111	Foundation of NM01 (N): CH1300-1350 (bays 8-10)	40	11MAY05	28JUN05	-83																				
<b>8. Culverts and Outfalls</b>																									
<b>Culvert-Outfall CA</b>																									
28-83024	1.2m Concrete & DI pipes with concrete surround	10	03JAN05A	03FEB05A																					
28-83028	1.2m DI pipe/Catchpit/Cascade: Outside RW01	12	12APR05	25APR05	-80																				
<b>Culvert-Outfall C</b>																									
28-84028	Rock breaking for Step Channel: Outside RW01	10	19JAN05A	22FEB05	-41																				
28-84029	1.5m DI pipe/Step Channel: Outside RW01	10	23FEB05	05MAR05	-41																				
28-8403	Excavate Culvert-Outfall C (within Exist CPR)	6	11MAY05	18MAY05	-62																				
<b>Culvert-Outfall CB</b>																									
28-81603	Exc. Culvert-Outfall CB (Middle Portion )	6	10JAN05A	18FEB05	-71																				
28-816032	Const. Culvert-Outfall CB (Middle Portion )	12	11JAN05A	23FEB05	-71																				
28-816022	Const. Culvert-Outfall CB (South of RW01)	21	01FEB05A	22FEB05	-51																				
28-81601	Exc. Culvert-Outfall CB (North of Exist CPR)	6	11MAY05	18MAY05	-62																				
<b>Culvert-Outfall D</b>																									
28-8503	Exc. Culvert-Outfall D (South)	6	08APR05	14APR05	-74																				
28-85032	Const. 2 Manholes & 1.5m Conc. Pipe (South)	16	15APR05	03MAY05	-74																				
28-85033	Const. 1.5m Stepped Channel & Outlet (South)	12	11MAY05	25MAY05	-67																				
<b>Culvert-Outfall E</b>																									
28-8602	Exc. Culvert-Outfall E (South)	6	11MAR05	17MAR05	-56																				
28-86022	Const. 1 Manhole & 1.5m Conc. Pipe (South)	12	18MAR05	04APR05	-56																				
28-8603	Exc. Culvert-Outfall E (SMHE1-Inlet)	6	23MAR05	01APR05	-40																				
28-86032	Const. Culvert-Outfall E (SMHE1-Inlet)	35	02APR05	13MAY05	-40																				
<b>0. Geotechnical &amp; Slope Works</b>																									
<b>Existing Slope Works</b>																									
0-102112	Remedial Works to Slope No. D/R16 (skin wall)	30	09MAR05	16APR05	-70																				
<b>2. Entrusted Watermains</b>																									
<b>Entrusted Water Mains</b>																									
2-1202	DN1000FW/Associated Wks (W/B C'way	44	05JAN05A	01APR05	-80																				
2-1205	DN1000FW/Associated Wks (W/B C'way	30	25APR05	30MAY05	-90																				
<b>3. Reprovisioning of LCS&amp;D &amp; FEHD Facilities</b>																									
<b>FEHD Facilities</b>																									
3-1340	Reprovision of Sitting Out Area at Ka Loon Tsuen	75	13SEP03A	04MAR05	79																				

1	7	14	21	28	4	11	18	25	2	9	16	23
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**Pipe Works (Local Supply Watermains)**

03-3236	Pipe Works on at Access Road R9 at West	12 08APR05	21APR05	-82
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**Road Works**

03-3160	Formation/ sub-base, kerbs; Access Rd R9 at West	12 22APR05	05MAY05	-82
03-31602	Construct rd pave & fip; Access Rd R9 at West	8 06MAY05	14MAY05	-82

**Junction J5 (adjacent to Hong Kong Garden)**

J5-02	Close western lane of slip road to HK Garden	1 07MAR05*	07MAR05	-58
J5-04	Expose existing UUs at western lane of slip rd	12 08MAR05	21MAR05	-58
J5-06	Const. drainage within western lane of slip rd	18 15MAR05	08APR05	-58
J5-08	Lav UU cross rd	12 09APR05	22APR05	-58
J5-10	Const. western lane of slip rd	12 23APR05	06MAY05	-58
J5-12	Close eastern lane of slip road to HK Garden	1 07MAY05	07MAY05	-58
J5-14	Expose existing UUs at eastern lane of slip rd	12 09MAY05	23MAY05	-58

**Junction J6 (at Lung Yu Road)**

J6-02	Close eastern lane of Lung Yuen Rd	1 16FEB05	16FEB05	-42
J6-04	Expose existing UUs at eastern lane	12 17FEB05	02MAR05	-42
J6-06	Const. drainage both storm & sewer at east lane	18 24FEB05	16MAR05	-42
J6-08	Lav UU cross rd	12 17MAR05	02APR05	-42
J6-10	Const. eastern lane of Lung Yuen Rd	12 04APR05	18APR05	-42
J6-12	Close western lane of Lung Yuen Rd	1 19APR05	19APR05	-42
J6-14	Expose existing UUs at western lane	12 20APR05	03MAY05	-42
J6-16	Const. drainage both storm & sewer at west lane	18 27APR05	18MAY05	-42

**5. Footbridges**

**Footbridge FB01**

05-51112	Piling Works at North Supports for FB01; 12 Nos.	72 03SEP04A	01MAR05	-71
05-51506	Erect Steelwork & Roofing for FB01 (South)	30 22NOV04A	26FEB05	39
05-51113	Demobilize Piling Rig & Pile Test; FB01 (N)	18 28JAN05A	04MAR05	-71
05-5130	North Pile caps for FB01; 5 Nos.	25 05MAR05	07APR05	-71
05-51302	North Columns & Column head for FB01; 9 Nos.	35 08APR05	19MAY05	-71
05-5140	Const./Erect Deck of Main Span for FB01	45 02MAY05	24JUN05	-71

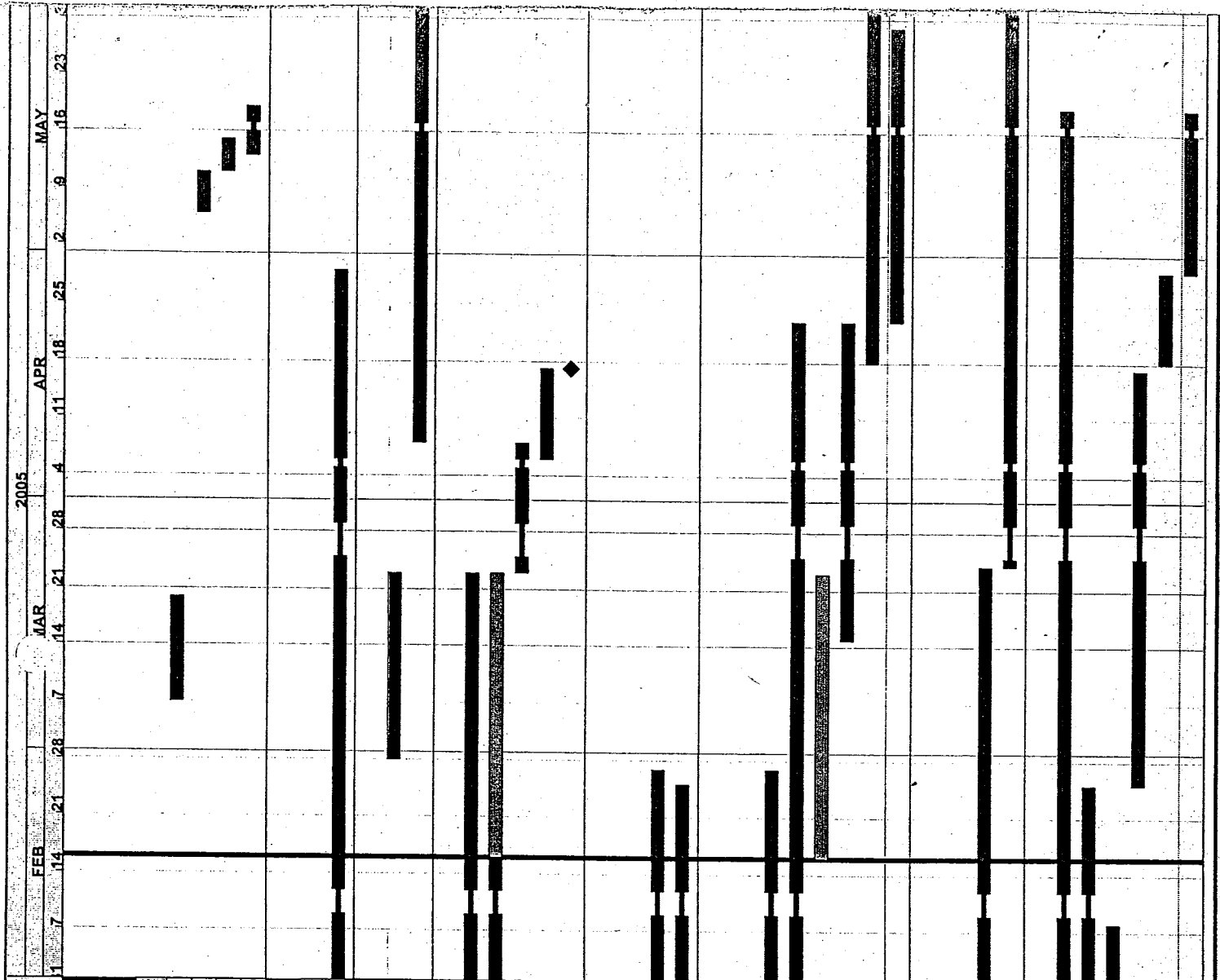
**Footbridge FB02**

05-52706	Erect Steelwork & Roofing for FB02 (North)	30 14JUL04A	22FEB05	87
05-52606	Erect Steelwork & Roofing for FB02 (South)	30 21SEP04A	22FEB05	87
05-52502	Erect Steelwork & Roofing of Main Span for FB02	30 25SEP04A	22FEB05	87
05-5280	E&M and Finishing Works for Footbridge FB02	30 06DEC04A	23FEB05	87

**7. Noise Structures**

**Noise Mitigation No. 02**

07-7221	Foundation of NM02 (North)	76* 19JAN05A	25APR05	-45
07-72211	Excavation/formation for NM02 (Bays 25-26)	24 19JAN05A	26FEB05	-34
07-72212	Excavation/formation for NM02 (14-24)	30 07FEB05A	19MAR05	-45
07-72213	Construct base for NM02 (Bays 25-26)	24 18FEB05	17MAR05	-34
07-72214	Construct base for NM02 (Bays 14-24)	30 24FEB05	02APR05	-45
07-72215	Construct wall stem for NM02 (Bays 25-26)	24 04MAR05	04APR05	-34
07-72216	Construct wall stem for NM02 (Bays 14-24)	30 12MAR05	20APR05	-45



**CPR from Chainage 3+010 to Chainage 3+730**

**1. Preliminaries**

**Proposed Utility Works**

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
01-1243	Gasmain on E/B CH3300-3460 incl. Cross Rd. Ducts	12	07MAR05	19MAR05	-70
01-125522	CATV Cross Rd. Ducts at W/B CH3325	4	06MAY05	10MAY05	-26
01-125544	HKT Cross Rd. Ducts at W/B CH3470	4	11MAY05	14MAY05	-26
01-121264	HKT Cross Rd. Ducts at E/B CH2995	4	13MAY05	18MAY05	-30

**3. Roadworks**

**Earthworks**

03-3242	Earthworks at W/B C'way CH3400-3530	213*	09AUG04A	28APR05	-74
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**Drainage Works**

03-33202	Drainage Works on W/B C'way bet CH3300-3400	20	28FEB05	22MAR05	-84
03-3323	Drainage Works on E/B C'way bet CH3000-3130	50	08APR05	06JUN05	-84

**Road Works**

03-3340	Dragon Garden Accommodation	872*	12APR02A	22MAR05	-98
03-334008	Remove Temporary Hoarding & Reinstatement	35	28APR04A	22MAR05	64
03-33145	Lay sub-base, kerbs & edgings; W/B CH3300-3400	10	23MAR05	07APR05	-84
03-33146	Construct rd pave & f/p; W/B CH3300-3400	10	06APR05	16APR05	-84
03-33161	Divert Traffic on W/B Perma C'way CH3300-3400	0		16APR05	-84

**RE: Wall REV05**

**Reinforced Earth Wall REV05**

REV014	L-shaped wall & Plinth	40	03JAN05A	26FEB05	-84
REV016	P1 Parapets	30	03JAN05A	24FEB05	-82

**Footbridges**

**Footbridge FB11**

05-55202	South Columns & column head for FB11; 9 Nos.	40	09DEC03A	26FEB05	-21
05-5550	Construct Ramp for FB11 (South)	60	01FEB05A	22APR05	-19
05-55606	Erect Steelwork & Roofing for FB11 (North)	30	16FEB05	22MAR05	34
05-55504	Construct Stairway for FB11 (South)	30	15MAR05	22APR05	-19
05-5540	Const./Erect Deck of Main Span for FB11	45	18APR05	09JUN05	-59
05-55506	Erect Steelwork & Roofing for FB11 (South)	30	23APR05	28MAY05	-19

**Retaining Walls**

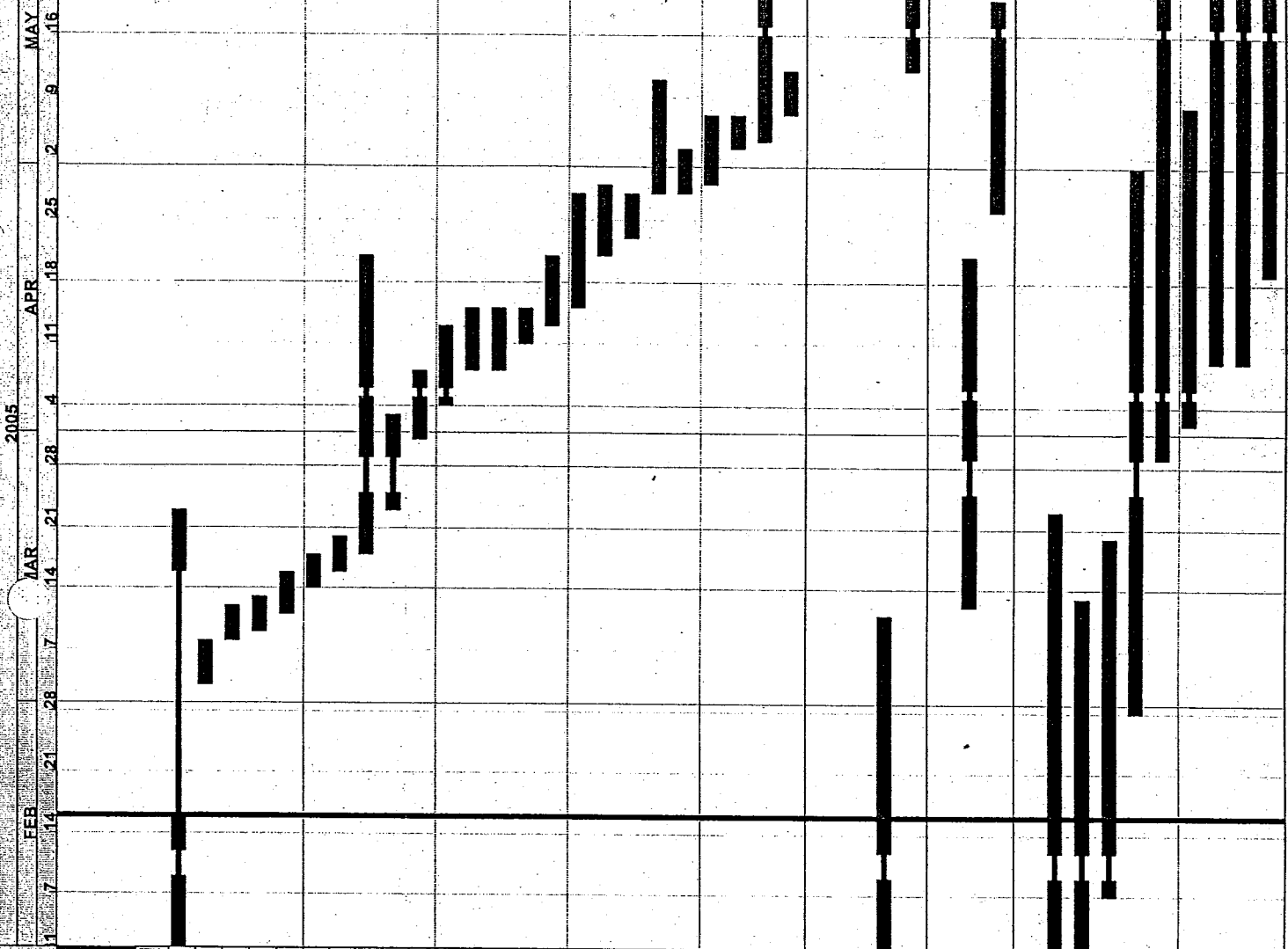
**Reinforced Earth Wall 14**

RE1410	Excavation/Temp. soil nail/Cleaning the base	85	01DEC04A	23MAR05	-91
RE1412	Mass conc./Install panel & mesh/Backfill/ coping	60	24MAR05	07JUN05	-91

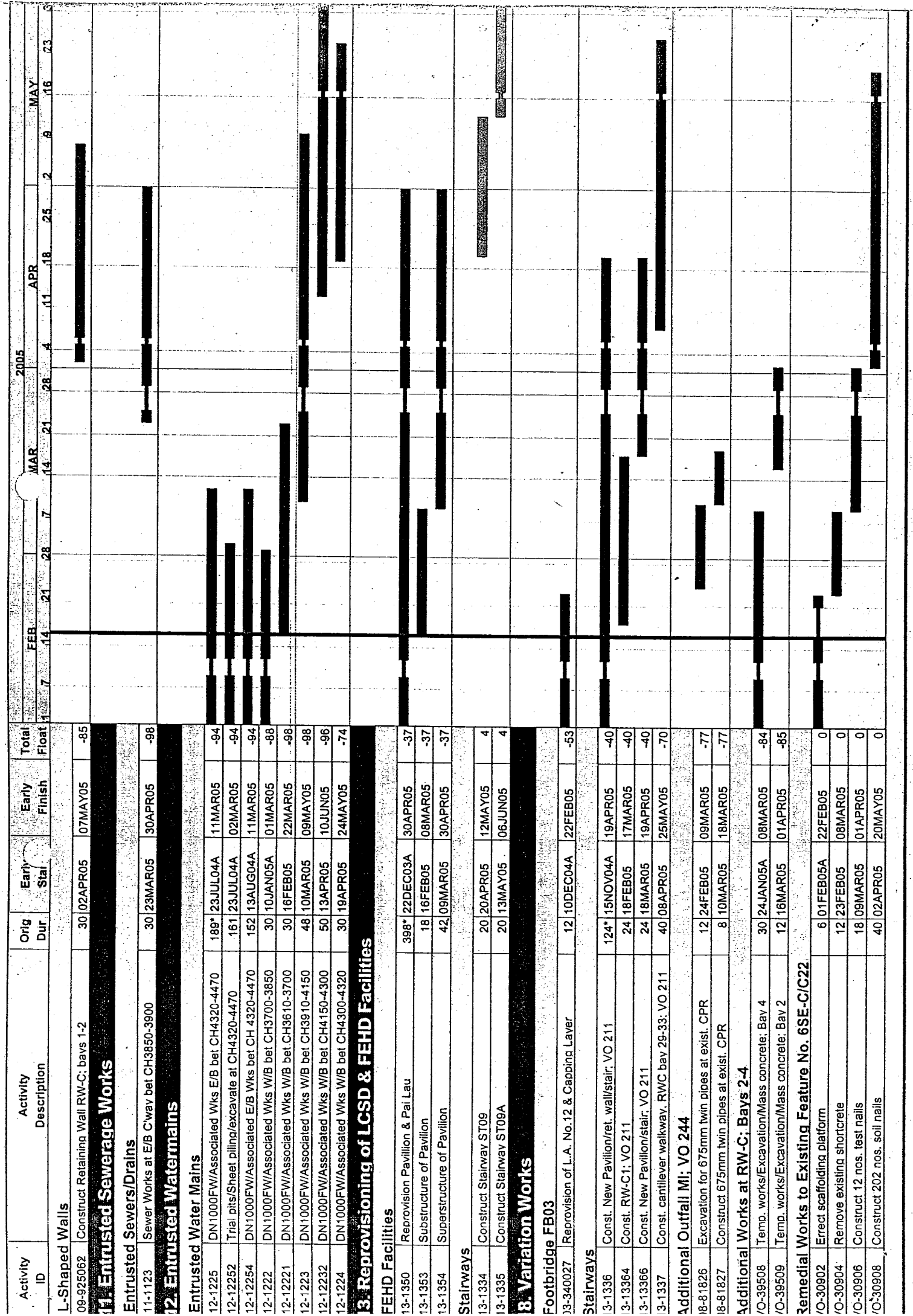
**Shaped Walls**

06-6580	Construct Retaining Wall RW15	229*	09AUG04A	18MAY05	-74
06-65805	Excavation for RW15; bays 4-6	18	14JAN05A	24FEB05	-74
06-65804	Plinth for RW15; bays 1-3	12	01FEB05A	07FEB05A	
06-65806	Base/wall for RW15; bays 4-6	40	25FEB05	16APR05	-74
06-65807	Backfill for RW15; bays 4-6	10	18APR05	28APR05	-74
06-65808	Plinth for RW15; bays 4-6	16	29APR05	18MAY05	-74





Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
<b>1. Preliminaries</b>					
<b>Proposed Utility Works</b>					
01-12471	Additional Gasmain on E/B C.way CH4330-4470	21	07DEC04A	22MAR05	-92
01-124554	HKT Cross Rd. Ducts at W/B CH3670	4	03MAR05	07MAR05	-98
01-124441	CLP Cross Rd. Ducts at W/B CH3810	4	08MAR05	11MAR05	-98
01-124842	HKT Cross Rd. Ducts at E/B Slow Lane CH4363	4	09MAR05	12MAR05	-92
01-1247352	HT Cross Rd. Ducts at E/B Slow Lane CH4361	4	11MAR05	15MAR05	-92
01-1247381	CATV Cross Rd. Ducts at Slow Lane E/B CH4374	4	14MAR05	17MAR05	-92
01-1247383	CLP C. Rd. Ducts at E/B Slow Lane CH4320	4	16MAR05	19MAR05	-92
01-1244	Proposed Gasmain on W/B C.way CH3670-3850	25	18MAR05	20APR05	-98
01-124733	Proposed CATV on E/B C.way CH4330-4470	7	23MAR05	02APR05	-13
01-124442	Proposed CLP on W/B C.way CH3850-3910	6	31MAR05	07APR05	-97
01-124734	Proposed NMT on E/B C.way CH4450	7	04APR05	12APR05	-13
01-124432	Proposed HKT on W/B C.way CH3850-3910	6	08APR05	14APR05	-97
01-124434	Proposed HKBN on W/B C.way CH3850-3910	6	08APR05	14APR05	-97
01-124431	HKBN Cross Rd. Ducts at W/B CH3870	4	11APR05	14APR05	-97
01-124735	Proposed CLP on E/B C.way CH4330-4470	7	13APR05	20APR05	-13
01-12444	Proposed CLP on W/B C.way CH3630-3850	11	15APR05	27APR05	-97
01-124736	Proposed HKT on E/B C.way CH4363-4470	7	21APR05	28APR05	-13
01-124631	CLP Cross Rd. Ducts at W/B CH3970	4	23APR05	27APR05	-90
01-12443	Proposed HKT on W/B C.way CH3630-3850	11	28APR05	10MAY05	-97
01-124633	CLP Cross Rd. Ducts at W/B CH4100	4	28APR05	02MAY05	-90
01-124738	Proposed CLP on E/B C.way CH4330-4470	7	29APR05	06MAY05	-13
01-124621	HKT Cross Rd. Ducts at W/B CH4133	4	03MAY05	06MAY05	-90
01-1257	Proposed Gasmain on E/B C.way CH3850-3900	20	04MAY05	27MAY05	-98
01-124964	HKT Cross Rd. Ducts at W/B CH3970	4	07MAY05	11MAY05	-90
<b>3. Roadworks</b>					
<b>Utility Diversion</b>					
03-34506	Expose/protect UUs at E/B CH 3850-3900	30	01FEB05A	10MAR05	-98
03-34505	Expose/protect UUs at E/B CH 3630-3850	30	12MAY05	17JUN05	-98
<b>Earthworks</b>					
03-3401	Road formation at W/B C'way CH3630-3850	30	12MAR05	20APR05	-98
03-3402	Road Formation at W/B CH3950-4150	20	26APR05	19MAY05	-90
<b>Drainage Works</b>					
03-3465	Construct drainage/backfill at E/B CH4300-4470	148	25AUG04A	22MAR05	-94
03-34201	Drainage Works at W/B C'way CH3610-3700	30	24JAN05A	12MAR05	-98
03-3420	Drainage Works at W/B C'way CH3700-3850	30	07FEB05A	19MAR05	-88
03-3421	Drainage Works at W/B C'way CH3950-4150	50	28FEB05	30APR05	-98
03-34212	Drainage Works at W/B C'way CH4150-4330	50	29MAR05	27MAY05	-96
03-3423	Drainage Works at E/B C'way CH3850-3900	30	02APR05	07MAY05	-98
03-3425	Drainage Works at W/B C'way CH4330-4470	58	09APR05	17JUN05	-94
03-34252	Trial pits/Shot piling/excavate for drainage	50	09APR05	07JUN05	-94
03-34254	Construct drainage/backfill at W/B CH4330-4470	50	19APR05	17JUN05	-94



**APPENDIX C**  
**Monitoring schedule for**  
**February 2005 and**  
**March 2005**



### Environmental Monitoring and Audit Schedule - February 2005

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

Feb-2005						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 L30 3 x 1-hour TSP	2 24-hour TSP	3 Site Inspection + L&V	4 3 x 1-hour TSP	5	
6	7 24-hour TSP Site Inspection	8 L30 3 x 1-hour TSP	9 x	10	11	12 24-hour TSP
13	14 x	15	16 L30 3 x 1-hour TSP	17 Site Inspection + L&V	18 24-hour TSP	19
20	21 x	22	23 L30 3 x 1-hour TSP	24 24-hour TSP Site Inspection	25	26 x
27	28					



### Tentative Environmental Monitoring and Audit Schedule - March 2005

- Note 1: L30 denotes L<sub>eq(30 min)</sub> monitoring
- Note 2: TSP denotes Total Suspended Particulate monitoring
- Note 3: MW denotes Marine Water Quality monitoring
- Note 4: L&V denotes Landscape and Visual audit and monitoring

Mar-2005						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 L30 3 x 1-hour TSP	2 24-hour TSP	3 Site Inspection + L&V	4	5
6	7	8 L30 3 x 1-hour TSP 24-hour TSP	9	10 Site Inspection	11	12
13	14 L30 3 x 1-hour TSP 24-hour TSP	15	16	17 Site Inspection + L&V	18 3 x 1-hour TSP	19 24-hour TSP
20	21	22	23 24-hour TSP	24 L30 3 x 1-hour TSP Site Inspection	25	26
27	28	29 L30 3 x 1-hour TSP	30 24-hour TSP	31 Site Inspection + L&V		





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





TISCH ENVIRONMENTAL, INC.  
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 877.263.7610 TOLL FREE  
 513.467.9009 FAX  
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 10, 2005 Roots-meter S/N 9833620 Ta (K) - 292  
 Operator Tisch Orifice I.D. - 1378 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4010	3.2	2.00
2	NA	NA	1.00	0.9870	6.3	4.00
3	NA	NA	1.00	0.8840	7.8	5.00
4	NA	NA	1.00	0.8420	8.7	5.50
5	NA	NA	1.00	0.6960	12.5	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0087	0.7200	1.4234	0.9957	0.7107	0.8799
1.0045	1.0178	2.0130	0.9917	1.0047	1.2443
1.0024	1.1340	2.2506	0.9896	1.1194	1.3912
1.0013	1.1892	2.3604	0.9884	1.1739	1.4591
0.9961	1.4313	2.8468	0.9834	1.4129	1.7597
Qstd slope (m) = 2.00216		Qa slope (m) = 1.25372		intercept (b) = -0.01269	
intercept (b) = -0.02053		intercept (b) = -0.01269		coefficient (r) = 0.99997	
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

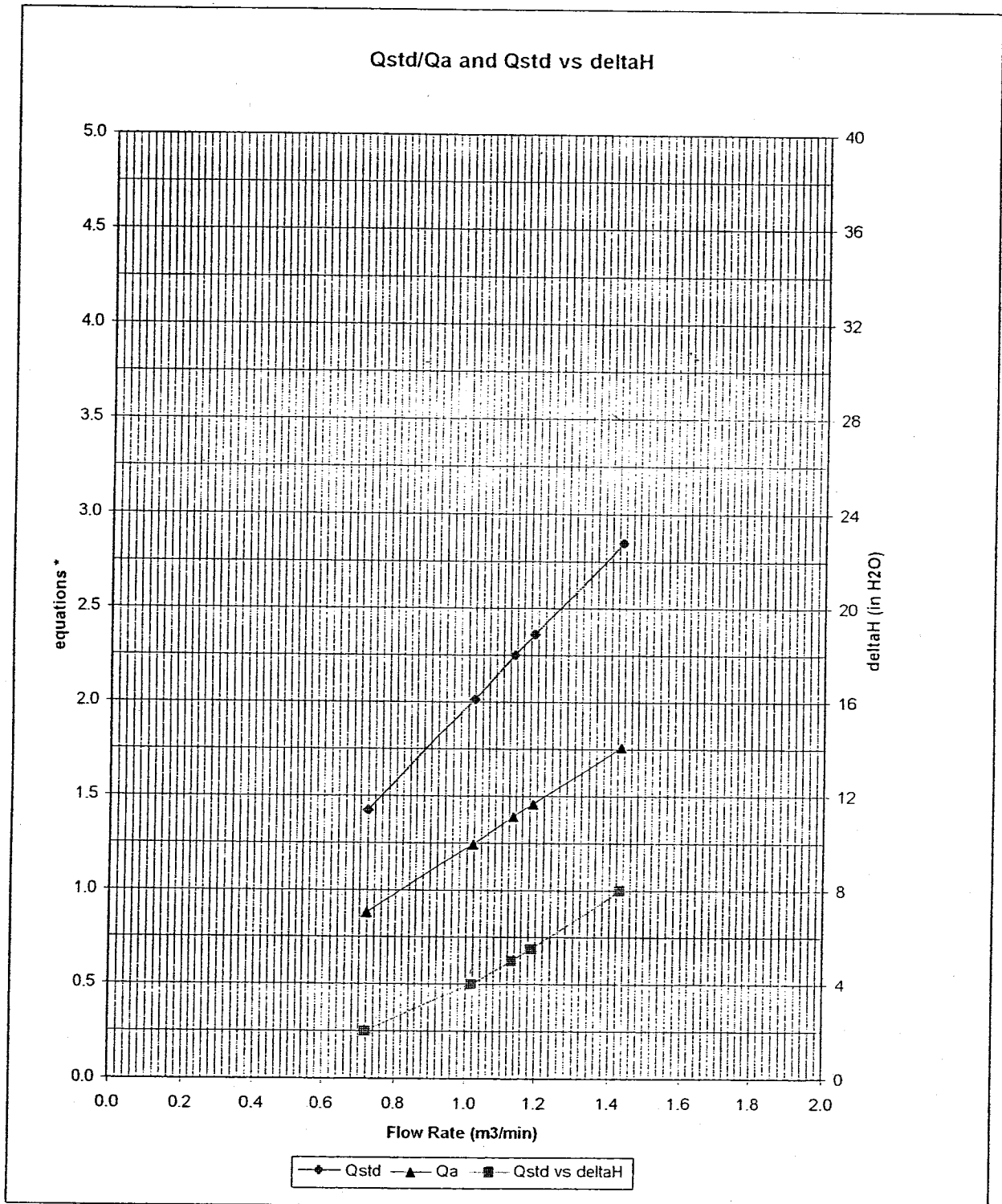
For subsequent flow rate calculations:

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



\* y-axis equations:

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

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

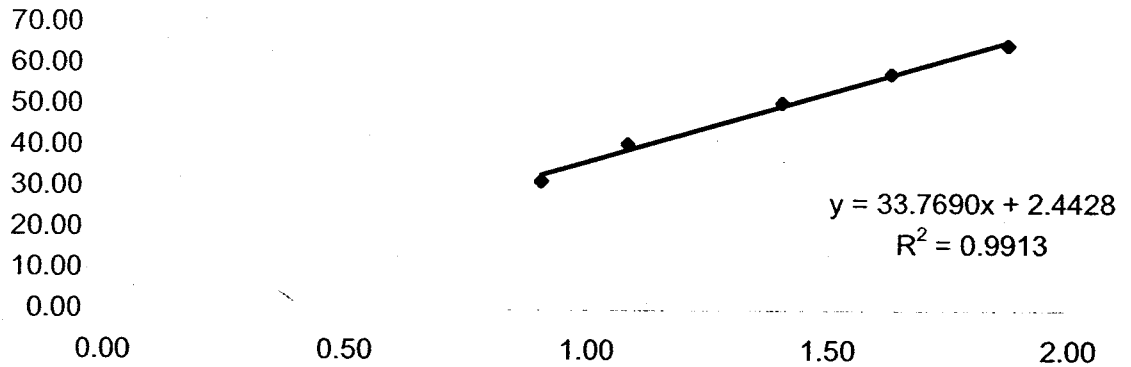
# 1378

**Ove Arup Partners (Hong Kong) Limited**  
**High Volume Air Sampler Calibration Worksheet**

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA3 - Hong Kong Garden (Regent Heights)	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0505	T <sub>std</sub>	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m <sub>s</sub>	1.93285		
Intercept of the standard curve, b <sub>s</sub>	0.00398		

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	3.00	31.00	0.91	31.41
7	4.30	40.00	1.09	40.53
10	7.20	50.00	1.40	50.66
13	9.70	57.00	1.63	57.76
18	12.80	64.00	1.87	64.85

**Calibration Curve**



**Linear Regression**

Sampler slope (m): **33.7690**  
Sampler intercept (b): **2.4428**  
Correlation coefficient ( $R^2$ ): **0.9913**

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

Performed by: 

Date: 31-1-05

Checked by: 

Date: 1-2-05

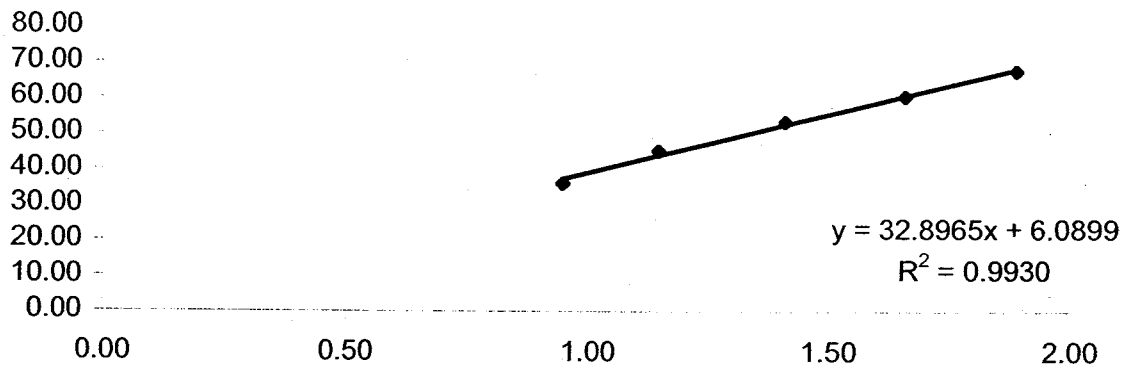
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	29-Dec-04	Barometric pressure	766.5 mm Hg
Calibration due date	27-Feb-05	Temperature (°C)	13 °C
Sampler location	WA4 - Hong Kong Garden (Between Blk1 & Blk2)	Temperature (K)	286 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0512	T <sub>std</sub>	298 K
Calibrator model		GMW-2535	
Calibrator serial number		1201	
Slope of the standard curve, m <sub>s</sub>		1.93285	
Intercept of the standard curve, b <sub>s</sub>		0.00398	

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	3.20	35.00	0.95	35.88
7	4.70	44.00	1.15	45.11
10	7.10	52.00	1.41	53.31
13	9.80	59.00	1.66	60.48
18	12.70	66.00	1.89	67.66

**Calibration Curve**



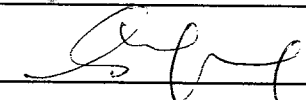
**Linear Regression**

Sampler slope (m) : **32.8965**  
 Sampler intercept (b) : **6.0899**  
 Correlation coefficient (R<sup>2</sup>) : **0.9930**

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

Performed by: 

Date: 29-12-04

Checked by: 

Date: 30-12-04

# Ove Arup Partners (Hong Kong) Limited

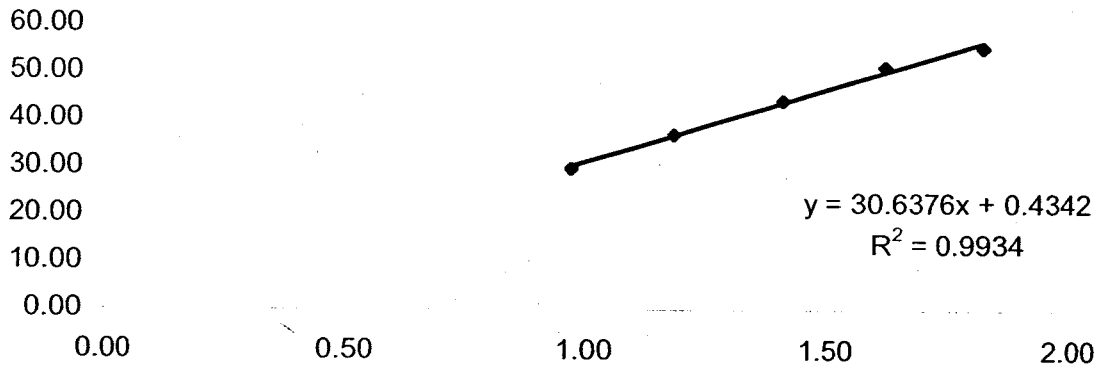
## High Volume Air Sampler Calibration Worksheet

Calibration date	29-Dec-04	Barometric pressure	766.5 mm Hg
Calibration due date	27-Feb-05	Temperature (°C)	14 °C
Sampler location	WA5 - Hong Kong Garden (Blk4)	Temperature (K)	287 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0511	T <sub>std</sub>	298 K

Calibrator model	GMW-2535
Calibrator serial number	1201
Slope of the standard curve, m <sub>s</sub>	1.93285
Intercept of the standard curve, b <sub>s</sub>	0.00398

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	29.00	0.97	29.68
7	5.00	36.00	1.18	36.84
10	7.10	43.00	1.41	44.00
13	9.40	50.00	1.62	51.17
18	11.90	54.00	1.82	55.26

**Calibration Curve**



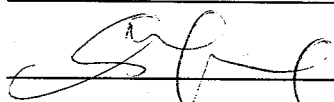
**Linear Regression**

Sampler slope (m) : **30.6376**  
 Sampler intercept (b) : **0.4342**  
 Correlation coefficient (R<sup>2</sup>) : **0.9934**

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

Performed by: 

Date: 27-12-04

Checked by: 

Date: 30-12-04

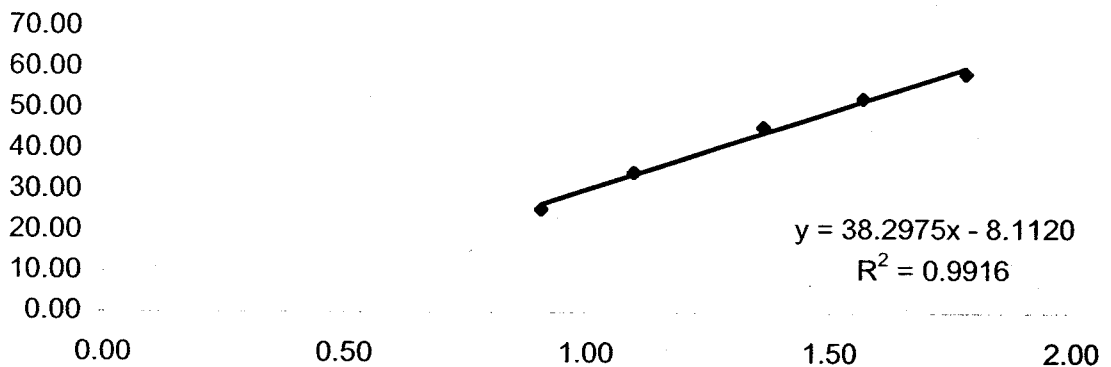
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA6 - Tsing Lung Tau Temple	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0529	T <sub>std</sub>	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m <sub>s</sub>	1.93285		
Intercept of the standard curve, b <sub>s</sub>	0.00398		

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	3.00	25.00	0.91	25.33
7	4.40	34.00	1.10	34.45
10	6.80	45.00	1.37	45.60
13	9.00	52.00	1.57	52.69
18	11.58	58.00	1.78	58.77

**Calibration Curve**



**Linear Regression**

Sampler slope (m) : **38.2975**  
 Sampler intercept (b) : **-8.1120**  
 Correlation coefficient (R<sup>2</sup>) : **0.9916**

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

Performed by:                     *AP*                    

Date:                     31-1-05                    

Checked by:                     *SP*                    

Date:                     1-2-05



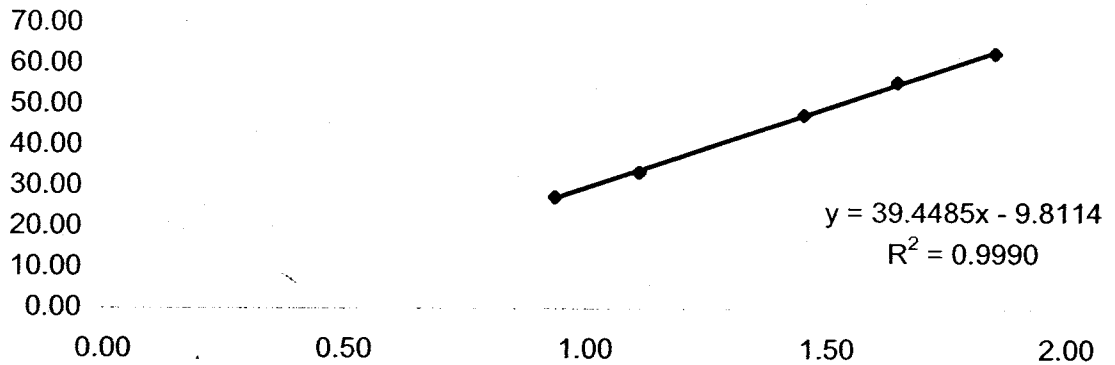
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA7 - Sea Crest Villa (Phase 4 Blk 12)	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0517	T <sub>std</sub>	298 K
Calibrator model	GMW-2541		
Calibrator serial number	1201		
Slope of the standard curve, m <sub>s</sub>	1.93285		
Intercept of the standard curve, b <sub>s</sub>	0.00398		

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	3.20	27.00	0.94	27.36
7	4.50	33.00	1.11	33.44
10	7.70	47.00	1.45	47.62
13	9.90	55.00	1.65	55.73
18	12.50	62.00	1.85	62.82

**Calibration Curve**



**Linear Regression**

Sampler slope (m) : **39.4485**  
 Sampler intercept (b) : **-9.8114**  
 Correlation coefficient (R<sup>2</sup>) : **0.9990**

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

Performed by: \_\_\_\_\_

Date: 31-1-05

Checked by: \_\_\_\_\_

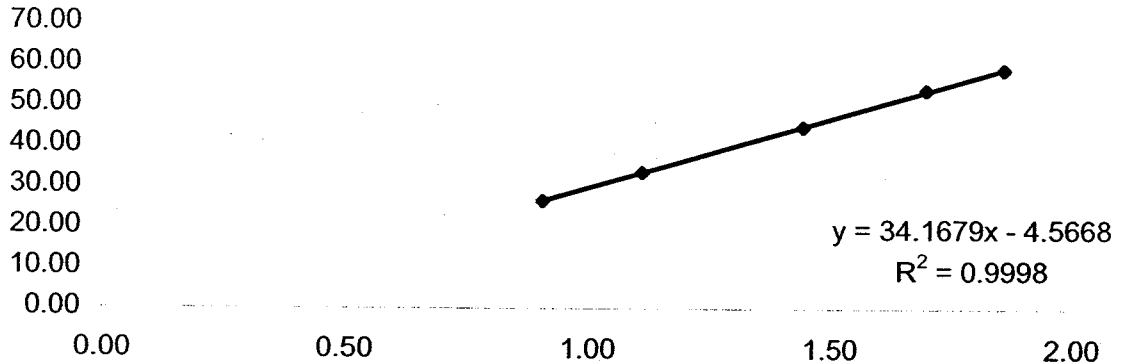
Date: 1-2-05

**Ove Arup Partners (Hong Kong) Limited**  
**High Volume Air Sampler Calibration Worksheet**

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA8 - Sea Crest Villa (Phase 3 Block 8)	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0526	T <sub>std</sub>	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m <sub>s</sub>	1.93285		
Intercept of the standard curve, b <sub>s</sub>	0.00398		

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	3.00	26.00	0.91	26.35
7	4.50	33.00	1.11	33.44
10	7.60	44.00	1.44	44.58
13	10.50	53.00	1.70	53.70
18	12.60	58.00	1.86	58.77

**Calibration Curve**



**Linear Regression**

Sampler slope (m) : **34.1679**  
 Sampler intercept (b) : **-4.5668**  
 Correlation coefficient (R<sup>2</sup>) : **0.9998**

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

Performed by: *[Signature]*

Date: 31-1-05

Checked by: *[Signature]*

Date: 1-2-05

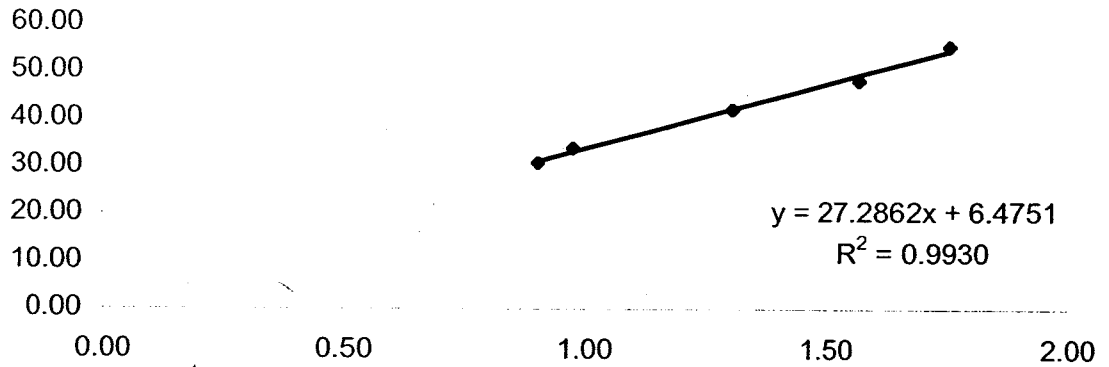
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	29-Dec-04	Barometric pressure	766.5 mm Hg
Calibration due date	27-Feb-05	Temperature (°C)	14 °C
Sampler location	WA9 - Sea Crest Villa (Phase 2 Blk 6)	Temperature (K)	287 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0523	T <sub>std</sub>	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m <sub>s</sub>	1.93285		
Intercept of the standard curve, b <sub>s</sub>	0.00398		

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	2.90	30.00	0.90	30.70
7	3.40	33.00	0.97	33.77
10	6.10	41.00	1.31	41.96
13	8.80	47.00	1.57	48.10
18	11.00	54.00	1.75	55.26

**Calibration Curve**



**Linear Regression**

Sampler slope (m) : **27.2862**  
 Sampler intercept (b) : **6.4751**  
 Correlation coefficient (R<sup>2</sup>) : **0.9930**

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

Performed by: 

Date: 29-12-04

Checked by: 

Date: 30-12-04

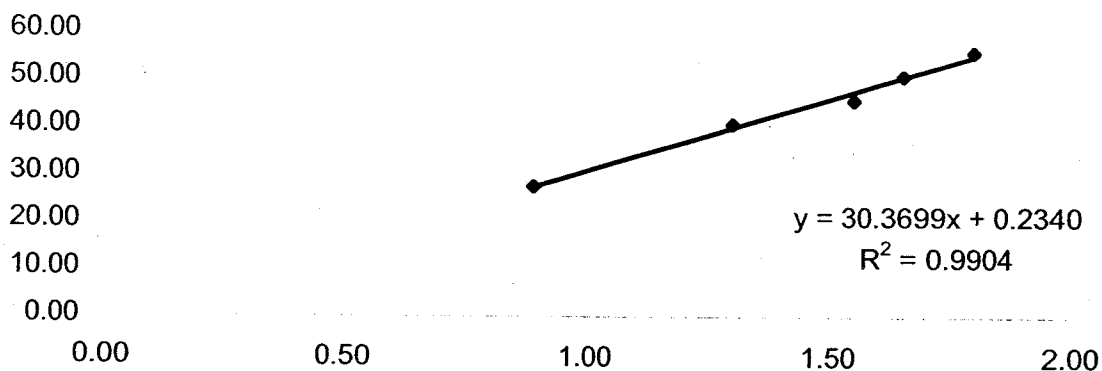
# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA10 - Sea Crest Villa (Phase 1 Blk 1)	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0507	T <sub>std</sub>	298 K
Calibrator model		GMW-2535	
Calibrator serial number		1201	
Slope of the standard curve, m <sub>s</sub>		1.93285	
Intercept of the standard curve, b <sub>s</sub>		0.00398	

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	2.90	27.00	0.89	27.36
7	6.20	40.00	1.30	40.53
10	8.80	45.00	1.55	45.60
13	10.00	50.00	1.66	50.66
18	11.80	55.00	1.80	55.73

**Calibration Curve**



**Linear Regression**

Sampler slope (m) :           **30.3699**  
 Sampler intercept (b) :       **0.2340**  
 Correlation coefficient (R<sup>2</sup>) : **0.9904**

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

Performed by: \_\_\_\_\_ *[Signature]*

Date: 31-1-05

Checked by: \_\_\_\_\_ *[Signature]*

Date: 1-2-05

# Ove Arup Partners (Hong Kong) Limited

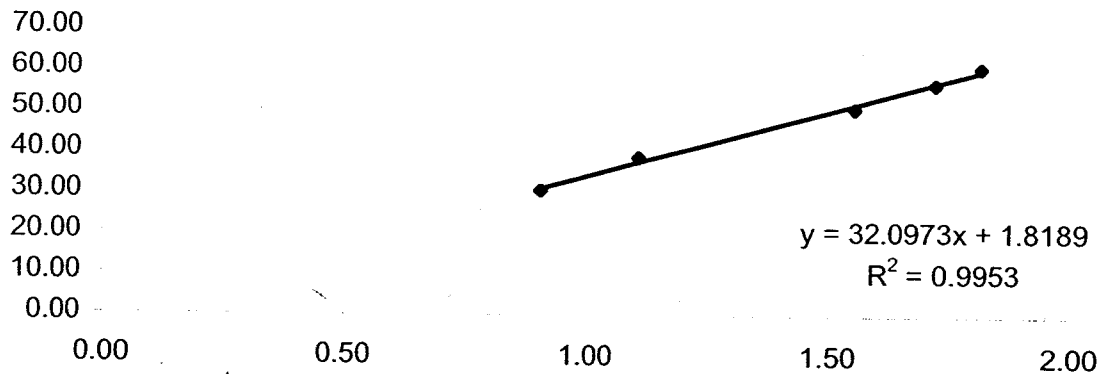
## High Volume Air Sampler Calibration Worksheet

Calibration date	31-Jan-05	Barometric pressure	762 mm Hg
Calibration due date	01-Apr-05	Temperature (°C)	18 °C
Sampler location	WA11 - Lido Garden Tower 1	Temperature (K)	291 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	0521	T <sub>std</sub>	298 K

Calibrator model	GMW-2535
Calibrator serial number	1201
Slope of the standard curve, m <sub>s</sub>	1.93285
Intercept of the standard curve, b <sub>s</sub>	0.00398

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	3.00	30.00	0.91	30.40
7	4.50	38.00	1.11	38.50
10	8.80	50.00	1.55	50.66
13	10.80	56.00	1.72	56.74
18	12.00	60.00	1.81	60.80

**Calibration Curve**



**Linear Regression**

Sampler slope (m) : **32.0973**  
 Sampler intercept (b) : **1.8189**  
 Correlation coefficient (R<sup>2</sup>) : **0.9953**

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

Performed by:           *Alim*            
 Checked by:           *Sofy*          

Date:           31-1-05            
 Date:           1-2-05



**APPENDIX E**  
**Calibration certificates**  
**of 1-hour TSP**  
**monitoring equipment**

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**Thermo Andersen**  
500 Technology Ct., Smyrna, GA 30082  
Toll-Free: 1-800-241-6898 Tel: 770-319-9999  
Fax: 770-319-0336 [www.thermoandersen.com](http://www.thermoandersen.com)

*Personal Data RAM Calibration Certificate*

Record the serial number	SN 4496
Record the calibration ratio:	0.998
Record the average pDR concentration:	1249 $\mu\text{g}/\text{m}^3$
Record the calibration Master average concentration:	1070 $\mu\text{g}/\text{m}^3$
Record the pDR background concentration:	189 $\mu\text{g}/\text{m}^3$
Temperature	75 °F
Humidity	45 %
Technician: <i>Ramon</i>	Date: 9-25-03



**Thermo Andersen**  
500 Technology Ct., Smyrna, GA 30082  
Toll-Free: 1-800-241-6898 Tel: 770-319-9999  
Fax: 770-319-0336 [www.thermoandersen.com](http://www.thermoandersen.com)

*PersonalDataRAM Calibration Certificate*

Record the serial number		
Record the calibration ratio:	S/N 4715	
Record the average pDR concentration:	0.994	
Record the calibration Master average concentration:	382	µg/m <sup>3</sup>
Record the pDR background concentration:	326	µg/m <sup>3</sup>
Temperature	124	µg/m <sup>3</sup>
Humidity	72	°F
Technician:	Ramon	Date: 11-21-03

**THERMO ELECTRON**  
27 FORGE PARKWAY  
FRANKLIN MA 02038  
TOLL-FREE: 866-282-0430  
TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

MASTER # 2026

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PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER:	<u>4615</u>
CALIBRATION RATIO:	<u>1.008</u>
AVG. PDR-1000 CONCENTRATION:	151 <u>ug/m3</u>
CALIBRATION MASTER AVG. CONCENTRATION:	140 <u>ug/m3</u>
DR BACKGROUND CONCENTRATION:	<u>123 ug/m3</u>
TEMPERATURE:	<u>69F</u>
HUMIDITY:	<u>18%</u>
TECHNICIAN: <u>H. Rochepelle</u>	DATE: <u>1/15/04</u>

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MASTER # 2026

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

---

PDR-1000 CALIBRATION CERTIFICATE

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

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SERIAL NUMBER:	<u>4705</u>
CALIBRATION RATIO:	<u>.991</u>
AVG. PDR-1000 CONCENTRATION:	176 <u>ug/m3</u>
CALIBRATION MASTER AVG. CONCENTRATION:	174 <u>ug/m3</u>
DR BACKGROUND CONCENTRATION:	<u>141 ug/m3</u>
TEMPERATURE:	<u>69F</u>
HUMIDITY:	<u>18%</u>
TECHNICIAN: <u>B. Lapelle</u>	DATE: <u>1/15/04</u>

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**THERMO ELECTRON**  
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FRANKLIN MA 02038  
TOLL-FREE: 866-282-0430  
TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

MASTER # D320

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PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER:	<u>4492</u>
CALIBRATION RATIO:	<u>1.013</u>
AVG. PDR-1000 CONCENTRATION:	3.04 <u>mg/m3</u>
CALIBRATION MASTER AVG. CONCENTRATION:	2.69 <u>mg/m3</u>
DR BACKGROUND CONCENTRATION:	<u>.291 mg/m3</u>
TEMPERATURE:	<u>75F</u>
HUMIDITY:	<u>52%</u>
TECHNICIAN <u>K. Lachapelle</u>	DATE: <u>7/27/04</u>

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MASTER # D320

**THERMO ELECTRON**  
27 FORGE PARKWAY  
FRANKLIN MA 02038  
TOLL-FREE: 866-282-0430  
TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

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PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER:	<u>4736</u>
CALIBRATION RATIO:	<u>1.004</u>
AVG. PDR-1000 CONCENTRATION:	2.75 <u>mg/m3</u>
CALIBRATION MASTER AVG. CONCENTRATION:	2.44 <u>mg/m3</u>
DR BACKGROUND CONCENTRATION:	<u>.271 mg/m3</u>
TEMPERATURE:	<u>74F</u>
HUMIDITY:	<u>44%</u>
TECHNICIAN <u>K. Lachapelle</u>	DATE: <u>7/27/04</u>

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**THERMO ELECTRON**

27 FORGE PARKWAY  
FRANKLIN MA 02038  
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TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

MASTER # D320 LAST CALIBRATED 10/1/04

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PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER: 3809  
CALIBRATION RATIO: 1.009  
AVG. PDR-1000 CONCENTRATION: 2.91 mg/m3  
CALIBRATION MASTER AVG. CONCENTRATION: 2.45 mg/m3  
DR BACKGROUND CONCENTRATION: .448 mg/m3  
TEMPERATURE: 78F  
HUMIDITY: 22%

TECHNICIAN K. Lachapelle

DATE: 10/6/04

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**THERMO ELECTRON**

27 FORGE PARKWAY  
FRANKLIN MA 02038  
TOLL-FREE: 866-282-0430  
TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

MASTER # D320 LAST CALIBRATED 10/1/04

---

PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER: 3893  
CALIBRATION RATIO: .994  
AVG. PDR-1000 CONCENTRATION: 2.74 mg/m3  
CALIBRATION MASTER AVG. CONCENTRATION: 2.42 mg/m3  
DR BACKGROUND CONCENTRATION: .262 mg/m3  
TEMPERATURE: 78F  
HUMIDITY: 22%

TECHNICIAN K. Lachapelle

DATE: 10/6/04

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**THERMO ELECTRON**

27 FORGE PARKWAY  
FRANKLIN MA 02038  
TOLL-FREE: 866-282-0430  
TEL: 508-553-6949  
FAX: 508-541-8366  
WWW.THERMO.COM

MASTER # D320 LAST CALIBRATED 10/1/04

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PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER: 4243  
CALIBRATION RATIO: .999  
AVG. PDR-1000 CONCENTRATION: 2.72 mg/m3  
CALIBRATION MASTER AVG. CONCENTRATION: 2.45 mg/m3  
DR BACKGROUND CONCENTRATION: .268 mg/m3  
TEMPERATURE: 78F  
HUMIDITY: 22%

TECHNICIAN K. Lachapelle

DATE: 10/6/04

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APPENDIX F

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**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/m³)	Remarks
			Start	Finish						
4-Feb-05	WA3	1	8:54	9:54	Cloudy	Normal Operation	20.0	762.0	200.0	
4-Feb-05	WA3	2	9:54	10:54	Cloudy	Normal Operation	20.0	762.0	201.9	
4-Feb-05	WA3	3	10:54	11:54	Cloudy	Normal Operation	20.0	762.0	188.7	
4-Feb-05	WA4	1	8:56	9:56	Cloudy	Normal Operation	20.0	762.0	258.6	
4-Feb-05	WA4	2	9:56	10:56	Cloudy	Normal Operation	20.0	762.0	265.1	
4-Feb-05	WA4	3	10:56	11:56	Cloudy	Normal Operation	20.0	762.0	241.8	
4-Feb-05	WA5	1	8:59	9:59	Cloudy	Normal Operation	20.0	762.0	273.0	
4-Feb-05	WA5	2	9:59	10:59	Cloudy	Normal Operation	20.0	762.0	270.9	
4-Feb-05	WA5	3	10:59	11:59	Cloudy	Normal Operation	20.0	762.0	244.6	
4-Feb-05	WA6	1	8:52	9:52	Cloudy	Normal Operation	20.0	762.0	262.5	
4-Feb-05	WA6	2	9:52	10:52	Cloudy	Normal Operation	20.0	762.0	256.8	
4-Feb-05	WA6	3	10:52	11:52	Cloudy	Normal Operation	20.0	762.0	236.4	
4-Feb-05	WA7	1	13:03	14:03	Cloudy	Normal Operation	20.0	762.0	175.7	
4-Feb-05	WA7	2	14:03	15:03	Cloudy	Normal Operation	20.0	762.0	161.7	
4-Feb-05	WA7	3	15:03	16:03	Cloudy	Normal Operation	20.0	762.0	162.1	
4-Feb-05	WA8	1	13:00	14:00	Cloudy	Normal Operation	20.0	762.0	230.0	
4-Feb-05	WA8	2	14:00	15:00	Cloudy	Normal Operation	20.0	762.0	214.8	
4-Feb-05	WA8	3	15:00	16:00	Cloudy	Normal Operation	20.0	762.0	210.7	
4-Feb-05	WA9	1	13:03	14:03	Cloudy	Normal Operation	20.0	762.0	223.1	
4-Feb-05	WA9	2	14:03	15:03	Cloudy	Normal Operation	20.0	762.0	202.8	
4-Feb-05	WA9	3	15:03	16:03	Cloudy	Normal Operation	20.0	762.0	199.6	
4-Feb-05	WA10	1	13:00	14:00	Cloudy	Normal Operation	20.0	762.0	222.5	
4-Feb-05	WA10	2	14:00	15:00	Cloudy	Normal Operation	20.0	762.0	198.6	
4-Feb-05	WA10	3	15:00	16:00	Cloudy	Normal Operation	20.0	762.0	201.1	
4-Feb-05	WA11	1	13:01	14:01	Cloudy	Normal Operation	20.0	762.0	215.7	
4-Feb-05	WA11	2	14:01	15:01	Cloudy	Normal Operation	20.0	762.0	195.0	
4-Feb-05	WA11	3	15:01	16:01	Cloudy	Normal Operation	20.0	762.0	191.3	
8-Feb-05	WA3	1	13:01	14:01	Fine	Normal Operation	25.0	765.0	185.2	
8-Feb-05	WA3	2	14:01	15:01	Fine	Normal Operation	25.0	765.0	187.5	
8-Feb-05	WA3	3	15:01	16:01	Fine	Normal Operation	25.0	765.0	176.0	
8-Feb-05	WA4	1	13:03	14:03	Fine	Normal Operation	25.0	765.0	243.2	
8-Feb-05	WA4	2	14:03	15:03	Fine	Normal Operation	25.0	765.0	244.1	
8-Feb-05	WA4	3	15:03	16:03	Fine	Normal Operation	25.0	765.0	231.0	
8-Feb-05	WA5	1	13:01	14:01	Fine	Normal Operation	25.0	765.0	246.8	
8-Feb-05	WA5	2	14:01	15:01	Fine	Normal Operation	25.0	765.0	236.9	
8-Feb-05	WA5	3	15:01	16:01	Fine	Normal Operation	25.0	765.0	235.3	
8-Feb-05	WA6	1	13:00	14:00	Fine	Normal Operation	25.0	765.0	196.8	
8-Feb-05	WA6	2	14:00	15:00	Fine	Normal Operation	25.0	765.0	201.4	
8-Feb-05	WA6	3	15:00	16:00	Fine	Normal Operation	25.0	765.0	211.6	
8-Feb-05	WA7	1	13:00	14:00	Fine	Normal Operation	25.0	765.0	179.3	
8-Feb-05	WA7	2	14:00	15:00	Fine	Normal Operation	25.0	765.0	181.2	
8-Feb-05	WA7	3	15:00	16:00	Fine	Normal Operation	25.0	765.0	184.1	
8-Feb-05	WA8	1	9:00	10:00	Fine	Normal Operation	25.0	765.0	176.7	
8-Feb-05	WA8	2	10:00	11:00	Fine	Normal Operation	25.0	765.0	189.7	
8-Feb-05	WA8	3	11:00	12:00	Fine	Normal Operation	25.0	765.0	193.0	
8-Feb-05	WA9	1	9:00	10:00	Fine	Normal Operation	25.0	765.0	194.9	
8-Feb-05	WA9	2	10:00	11:00	Fine	Normal Operation	25.0	765.0	204.3	
8-Feb-05	WA9	3	11:00	12:00	Fine	Normal Operation	25.0	765.0	217.0	
8-Feb-05	WA10	1	9:00	10:00	Fine	Normal Operation	25.0	765.0	155.1	
8-Feb-05	WA10	2	10:00	11:00	Fine	Normal Operation	25.0	765.0	159.8	
8-Feb-05	WA10	3	11:00	12:00	Fine	Normal Operation	25.0	765.0	165.9	
8-Feb-05	WA11	1	9:00	10:00	Fine	Normal Operation	25.0	765.0	208.1	
8-Feb-05	WA11	2	10:00	11:00	Fine	Normal Operation	25.0	765.0	216.2	
8-Feb-05	WA11	3	11:00	12:00	Fine	Normal Operation	25.0	765.0	220.6	
16-Feb-05	WA3	1	9:00	10:00	Cloudy	Normal Operation	25.0	759.0	218.5	
16-Feb-05	WA3	2	10:00	11:00	Cloudy	Normal Operation	25.0	759.0	218.0	
16-Feb-05	WA3	3	11:00	12:00	Cloudy	Normal Operation	25.0	759.0	212.1	
16-Feb-05	WA4	1	9:00	10:00	Cloudy	Normal Operation	25.0	759.0	209.8	
16-Feb-05	WA4	2	10:00	11:00	Cloudy	Normal Operation	25.0	759.0	208.3	
16-Feb-05	WA4	3	11:00	12:00	Cloudy	Normal Operation	25.0	759.0	199.8	
16-Feb-05	WA5	1	9:00	10:00	Cloudy	Normal Operation	25.0	759.0	169.1	
16-Feb-05	WA5	2	10:00	11:00	Cloudy	Normal Operation	25.0	759.0	168.9	
16-Feb-05	WA5	3	11:00	12:00	Cloudy	Normal Operation	25.0	759.0	164.2	
16-Feb-05	WA6	1	9:00	10:00	Cloudy	Normal Operation	25.0	759.0	222.6	
16-Feb-05	WA6	2	10:00	11:00	Cloudy	Normal Operation	25.0	759.0	217.1	
16-Feb-05	WA6	3	11:00	12:00	Cloudy	Normal Operation	25.0	759.0	212.0	
16-Feb-05	WA7	1	8:55	9:55	Cloudy	Normal Operation	25.0	759.0	191.7	
16-Feb-05	WA7	2	9:55	10:55	Cloudy	Normal Operation	25.0	759.0	202.7	
16-Feb-05	WA7	3	10:55	11:55	Cloudy	Normal Operation	25.0	759.0	195.9	
16-Feb-05	WA8	1	13:03	14:03	Cloudy	Normal Operation	25.0	759.0	211.8	
16-Feb-05	WA8	2	14:03	15:03	Cloudy	Normal Operation	25.0	759.0	213.2	
16-Feb-05	WA8	3	15:03	16:03	Cloudy	Normal Operation	25.0	759.0	209.5	
16-Feb-05	WA9	1	13:02	14:02	Cloudy	Normal Operation	25.0	759.0	217.4	
16-Feb-05	WA9	2	14:02	15:02	Cloudy	Normal Operation	25.0	759.0	201.4	
16-Feb-05	WA9	3	15:02	16:02	Cloudy	Normal Operation	25.0	759.0	198.7	
16-Feb-05	WA10	1	13:01	14:01	Cloudy	Normal Operation	25.0	759.0	167.0	
16-Feb-05	WA10	2	14:01	15:01	Cloudy	Normal Operation	25.0	759.0	162.2	
16-Feb-05	WA10	3	15:01	16:01	Cloudy	Normal Operation	25.0	759.0	159.4	
16-Feb-05	WA11	1	13:00	14:00	Cloudy	Normal Operation	25.0	759.0	188.9	
16-Feb-05	WA11	2	14:00	15:00	Cloudy	Normal Operation	25.0	759.0	182.3	
16-Feb-05	WA11	3	15:00	16:00	Cloudy	Normal Operation	25.0	759.0	188.7	

## 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						
23-Feb-05	WA3	1	13:00	14:00	Cloudy	Normal Operation	20.0	759.0	160.7	
23-Feb-05	WA3	2	14:00	15:00	Cloudy	Normal Operation	20.0	759.0	171.3	
23-Feb-05	WA3	3	15:00	16:00	Cloudy	Normal Operation	20.0	759.0	182.3	
23-Feb-05	WA4	1	8:55	9:55	Cloudy	Normal Operation	20.0	759.0	229.2	
23-Feb-05	WA4	2	9:55	10:55	Cloudy	Normal Operation	20.0	759.0	221.9	
23-Feb-05	WA4	3	10:55	11:55	Cloudy	Normal Operation	20.0	759.0	221.5	
23-Feb-05	WA5	1	13:33	14:33	Cloudy	Normal Operation	20.0	759.0	197.7	
23-Feb-05	WA5	2	14:33	15:33	Cloudy	Normal Operation	20.0	759.0	199.8	
23-Feb-05	WA5	3	15:33	16:33	Cloudy	Normal Operation	20.0	759.0	222.4	
23-Feb-05	WA6	1	13:00	14:00	Cloudy	Normal Operation	20.0	759.0	250.4	
23-Feb-05	WA6	2	14:00	15:00	Cloudy	Normal Operation	20.0	759.0	241.6	
23-Feb-05	WA6	3	15:00	16:00	Cloudy	Normal Operation	20.0	759.0	244.8	
23-Feb-05	WA7	1	8:51	9:51	Cloudy	Normal Operation	20.0	759.0	144.5	
23-Feb-05	WA7	2	9:51	10:51	Cloudy	Normal Operation	20.0	759.0	126.0	
23-Feb-05	WA7	3	10:51	11:51	Cloudy	Normal Operation	20.0	759.0	152.8	
23-Feb-05	WA8	1	13:29	14:29	Cloudy	Normal Operation	20.0	759.0	172.2	
23-Feb-05	WA8	2	14:29	15:29	Cloudy	Normal Operation	20.0	759.0	170.9	
23-Feb-05	WA8	3	15:29	16:29	Cloudy	Normal Operation	20.0	759.0	205.5	
23-Feb-05	WA9	1	8:52	9:52	Cloudy	Normal Operation	20.0	759.0	171.7	
23-Feb-05	WA9	2	9:52	10:52	Cloudy	Normal Operation	20.0	759.0	162.7	
23-Feb-05	WA9	3	10:52	11:52	Cloudy	Normal Operation	20.0	759.0	161.7	
23-Feb-05	WA10	1	8:57	9:57	Cloudy	Normal Operation	20.0	759.0	188.3	
23-Feb-05	WA10	2	9:57	10:57	Cloudy	Normal Operation	20.0	759.0	243.6	
23-Feb-05	WA10	3	10:57	11:57	Cloudy	Normal Operation	20.0	759.0	240.1	
23-Feb-05	WA11	1	8:52	9:52	Cloudy	Normal Operation	20.0	759.0	171.6	
23-Feb-05	WA11	2	9:52	10:52	Cloudy	Normal Operation	20.0	759.0	168.5	
23-Feb-05	WA11	3	10:52	11:52	Cloudy	Normal Operation	20.0	759.0	168.6	

**APPENDIX G**

**Detailed air quality (24-  
hour TSP) monitoring  
results**





Details of 24-Hour TSP Monitoring

Month	Date	Receptor No.	Weather condition	Site condition	Filter Weight (g)	TSP weight (g)	Flow Rate (m <sup>3</sup> /min)	Average Flow	Elapse Time	Sampling Time (mins.)	Total	24-hour TSP	Remarks	
					Initial	Final	Initial	Final	Start	Finish				
Feb-05	1-Feb-05	WA3	Fine	Normal Operation	2,9110	3,0480	0.9026	0.9043	4725.28	4749.28	1440.00	1300.97	105.3	
Feb-05	1-Feb-05	WA4	Fine	Normal Operation	2,9272	3,0651	0.7532	0.7548	4790.31	4814.31	1440.00	1085.76	127.0	
Feb-05	1-Feb-05	WA5	Fine	Normal Operation	2,8986	3,1413	1.3291	1.3315	4784.27	4808.27	1440.00	1915.63	126.7	
Feb-05	1-Feb-05	WA6	Fine	Normal Operation	2,9001	3,0237	1.0446	1.0461	4133.20	4157.20	1440.00	1505.30	82.1	
Feb-05	1-Feb-05	WA7	Fine	Normal Operation	2,8907	3,0903	1.2920	1.2938	4795.22	4819.22	1440.00	1861.78	107.2	
Feb-05	1-Feb-05	WA8	Fine	Normal Operation	2,8756	3,1323	1.6092	1.6117	4825.45	4849.49	1442.40	2322.91	110.5	
Feb-05	1-Feb-05	WA9	Fine	Normal Operation	2,8912	3,0413	1.4218	1.4233	4862.06	4886.06	1440.00	2049.48	73.2	
Feb-05	1-Feb-05	WA10	Fine	Normal Operation	2,8865	3,0510	1.3474	1.3498	4775.89	4799.89	1440.00	1941.98	84.7	
Feb-05	1-Feb-05	WA11	Fine	Normal Operation	2,8786	3,0282	1.2255	1.2278	4949.11	4973.11	1440.00	1766.38	84.6	
Feb-05	7-Feb-05	WA3	Fine	Normal Operation	2,9105	3,0232	0.6488	0.6488	4749.28	4773.28	1440.00	934.66	120.6	
Feb-05	7-Feb-05	WA4	Fine	Normal Operation	2,8898	3,0321	0.9253	0.9253	4814.31	4838.30	1439.40	1331.88	106.8	
Feb-05	7-Feb-05	WA5	Fine	Normal Operation	2,8870	3,0992	1.3105	1.3105	4808.27	4832.27	1440.00	1897.12	112.4	
Feb-05	7-Feb-05	WA6	Fine	Normal Operation	2,8978	3,0534	1.1656	1.1656	4157.20	4181.21	1440.00	1679.16	92.7	
Feb-05	7-Feb-05	WA7	Fine	Normal Operation	2,9141	3,0152	1.2776	1.2776	4819.22	4843.22	1440.00	1839.74	55.0	
Feb-05	7-Feb-05	WA8	Fine	Normal Operation	2,8833	3,0225	1.4997	1.4997	4849.49	4873.43	1436.40	2154.17	64.6	
Feb-05	7-Feb-05	WA9	Fine	Normal Operation	2,8816	2,9871	1.2801	1.2801	4886.06	4910.06	1440.00	1800.14	58.6	
Feb-05	7-Feb-05	WA10	Fine	Normal Operation	2,9049	3,0194	1.2619	1.2619	4775.89	4799.90	1440.00	1817.89	63.0	
Feb-05	7-Feb-05	WA11	Fine	Normal Operation	2,8998	3,0115	0.9549	0.9549	4973.11	4997.11	1440.00	1375.05	81.2	
Feb-05	12-Feb-05	WA3	Fine	Normal Operation	2,8593	3,0345	1.3766	1.3742	4773.28	4797.29	1440.00	1982.02	88.4	
Feb-05	12-Feb-05	WA4	Fine	Normal Operation	2,8486	2,9223	0.5596	0.5574	4838.30	4862.31	1440.00	804.58	91.6	
Feb-05	12-Feb-05	WA5	Fine	Normal Operation	2,8508	3,0482	1.3185	1.3145	4832.27	4856.27	1440.00	1895.76	104.7	
Feb-05	12-Feb-05	WA6	Fine	Normal Operation	2,8558	3,1935	1.5445	1.5405	4173.21	4197.21	1440.00	2221.20	152.0	
Feb-05	12-Feb-05	WA7	Fine	Normal Operation	2,8541	2,9975	1.2837	1.2806	4843.22	4867.22	1440.00	1846.30	77.7	
Feb-05	12-Feb-05	WA8	Fine	Normal Operation	2,8587	3,0182	1.5975	1.5934	4873.43	4897.43	1440.00	2275.85	70.1	
Feb-05	12-Feb-05	WA9	Fine	Normal Operation	2,8662	2,9996	1.4461	1.4411	4910.06	4934.06	1440.00	2078.78	64.2	
Feb-05	12-Feb-05	WA10	Fine	Normal Operation	2,8790	3,0015	1.3367	1.3327	4799.90	4823.90	1440.00	1921.97	63.7	
Feb-05	12-Feb-05	WA11	Fine	Normal Operation	2,8830	3,0516	1.1518	1.1482	4997.11	5021.11	1440.00	1656.00	101.8	
Feb-05	18-Feb-05	WA3	Cloudy	Normal Operation	2,8660	3,0410	1.3652	1.3911	4797.29	4821.29	1440.00	1984.54	88.2	
Feb-05	18-Feb-05	WA4	Cloudy	Normal Operation	2,8476	3,0118	1.0446	1.0667	4862.31	4886.31	1440.00	1820.14	108.0	
Feb-05	18-Feb-05	WA5	Cloudy	Normal Operation	2,8585	3,1089	1.3082	1.3300	4856.27	4880.27	1440.00	1898.06	131.9	
Feb-05	18-Feb-05	WA6	Cloudy	Normal Operation	2,8842	3,0885	1.2681	1.2871	4197.21	4221.21	1440.00	1839.74	127.4	
Feb-05	18-Feb-05	WA7	Cloudy	Normal Operation	2,8519	3,0615	1.3254	1.3448	4867.23	4891.23	1440.00	1922.54	109.0	
Feb-05	18-Feb-05	WA8	Cloudy	Normal Operation	2,8575	3,0800	1.6136	1.6402	4897.43	4921.43	1440.00	2342.74	95.0	
Feb-05	18-Feb-05	WA9	Cloudy	Normal Operation	2,8540	2,9449	0.9487	0.9701	4934.06	4958.06	1440.00	1381.54	65.8	
Feb-05	18-Feb-05	WA10	Cloudy	Normal Operation	2,8604	3,0048	1.4575	1.4839	4823.90	4847.90	1440.00	2117.81	66.2	
Feb-05	18-Feb-05	WA11	Cloudy	Normal Operation	2,8637	3,0487	1.2657	1.2905	5021.11	5045.11	1440.00	1841.18	101.0	
Feb-05	24-Feb-05	WA3	Rainy	Normal Operation	2,8600	3,1340	1.3044	1.3593	4821.29	4845.29	1440.00	1917.86	142.9	
Feb-05	24-Feb-05	WA4	Rainy	Normal Operation	2,8474	3,1015	0.9823	1.0396	4886.31	4910.30	1439.40	1455.16	174.5	
Feb-05	24-Feb-05	WA5	Rainy	Normal Operation	2,8645	3,2145	1.3713	1.3666	4856.27	4880.27	1440.00	1971.29	177.5	
Feb-05	24-Feb-05	WA6	Rainy	Normal Operation	2,8559	2,9611	0.9507	0.9482	4221.21	4245.21	1440.00	1367.21	76.9	
Feb-05	24-Feb-05	WA7	Rainy	Normal Operation	2,8613	3,1110	1.3247	1.3484	4891.23	4915.23	1440.00	1941.70	128.6	
Feb-05	24-Feb-05	WA8	Rainy	Normal Operation	2,8600	2,9835	1.3760	1.4012	4945.43	4969.43	1440.00	1999.58	61.8	
Feb-05	24-Feb-05	WA9	Rainy	Normal Operation	2,8542	3,0463	1.2443	1.2392	4958.06	4982.06	1440.00	1788.12	107.3	
Feb-05	24-Feb-05	WA10	Rainy	Normal Operation	2,8636	3,1015	1.4565	1.4515	4847.90	4871.90	1440.00	2093.76	113.6	
Feb-05	24-Feb-05	WA11	Rainy	Normal Operation	2,8616	3,0539	1.1399	1.1358	5045.11	5069.11	1440.00	1638.50	117.4	



APPENDIX H

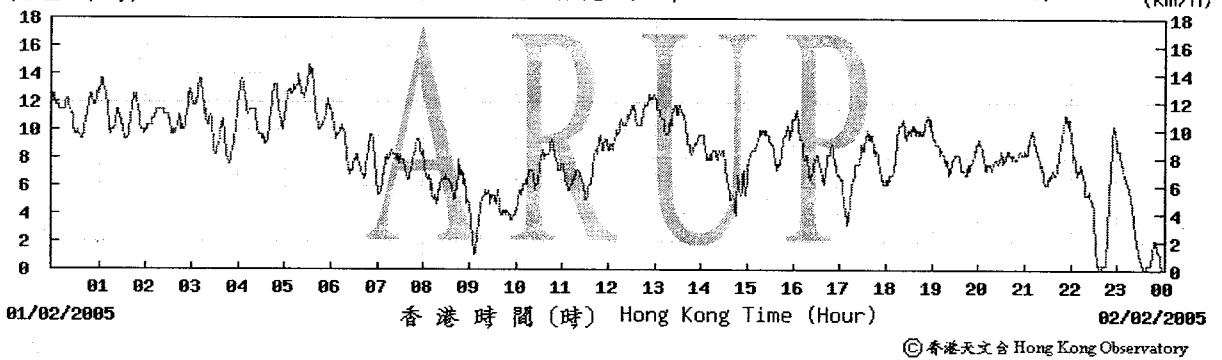
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**Detailed wind  
monitoring data for the  
air quality monitoring  
period**

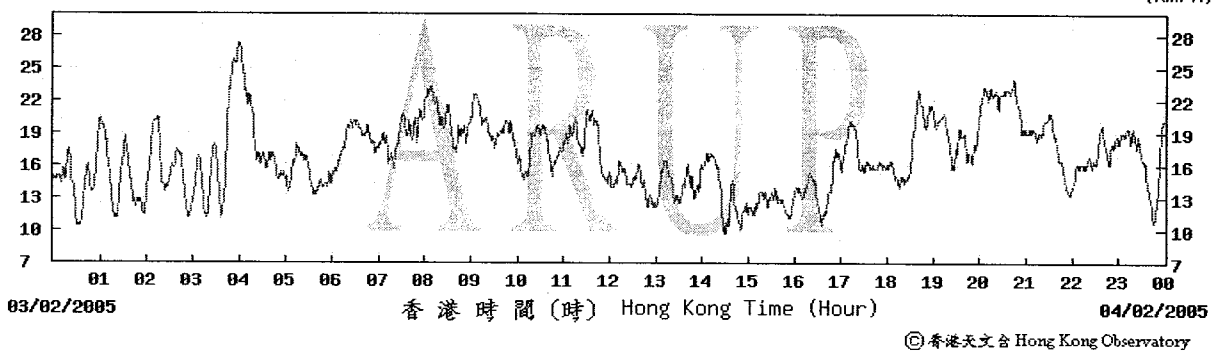


## Wind Monitoring Data – Wind Speed during air quality monitoring in February 2005

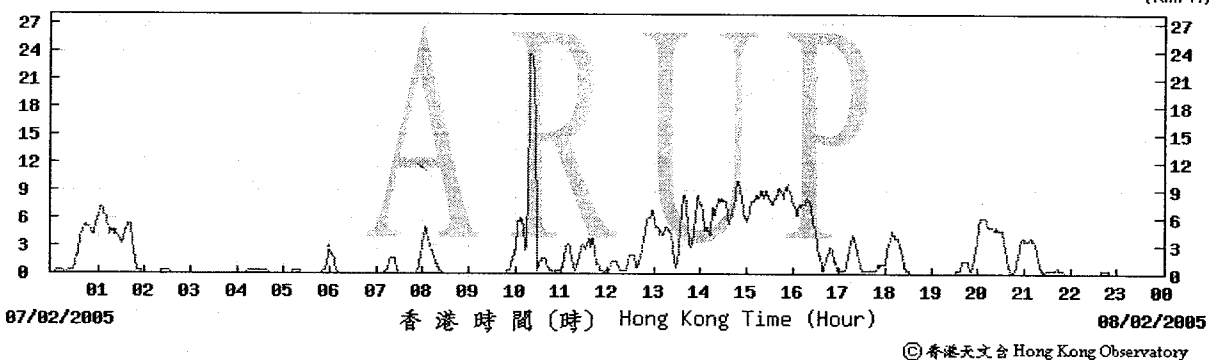
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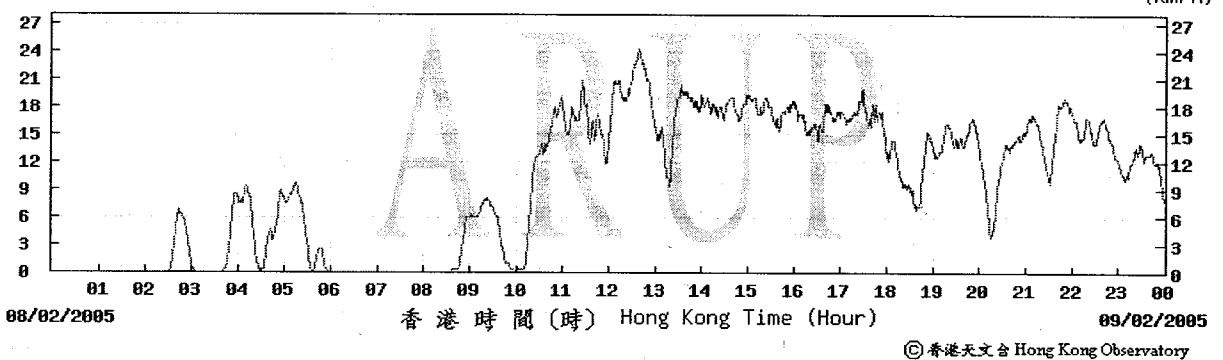
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(公里/小時) (於香港時間 2005 年 2 月 8 日 0 時 0 分更新) (Updated at 00:00H on 8 Feb 2005)

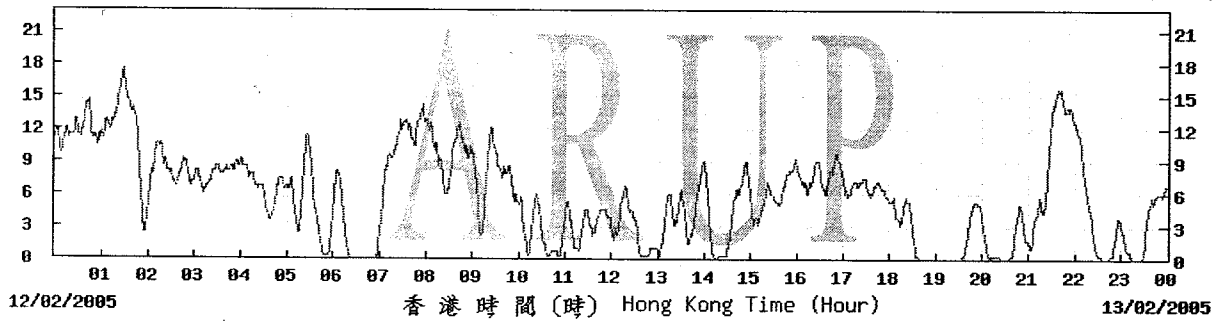


(公里/小時) (於香港時間 2005 年 2 月 9 日 0 時 0 分更新) (Updated at 00:00H on 9 Feb 2005)



(公里/小時) (於香港時間 2005 年 2 月 13 日 0 時 0 分更新) (Updated at 00:00H on 13 Feb 2005)

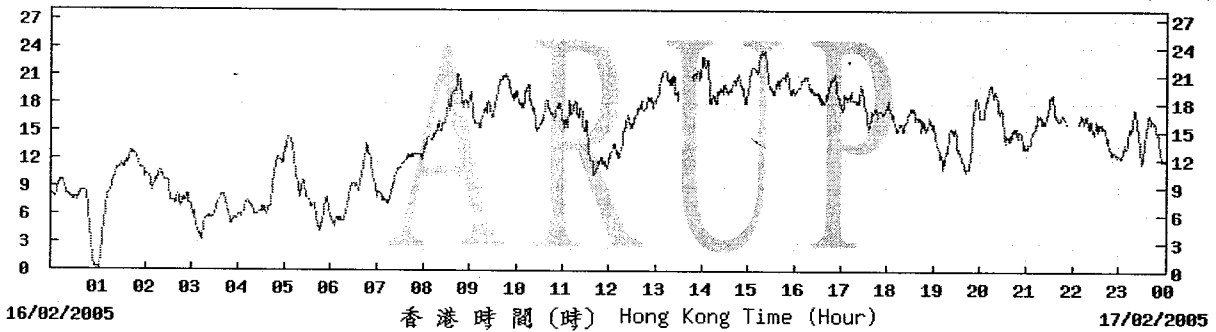
(km/h)



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(公里/小時) (於香港時間 2005 年 2 月 17 日 0 時 0 分更新) (Updated at 00:00H on 17 Feb 2005)

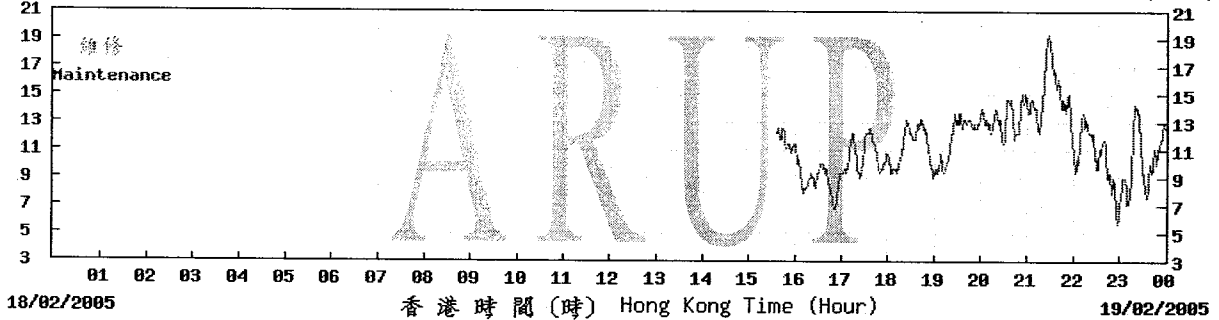
(km/h)



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(公里/小時) (於香港時間 2005 年 2 月 19 日 0 時 0 分更新) (Updated at 00:00H on 19 Feb 2005)

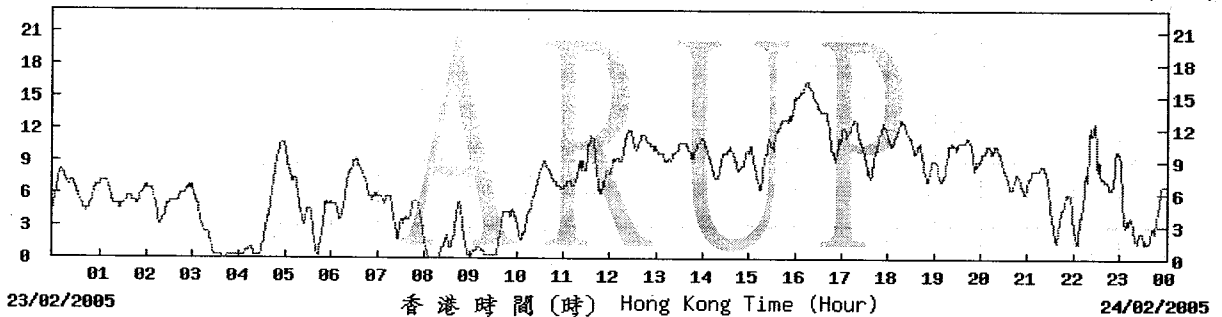
(km/h)



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(公里/小時) (於香港時間 2005 年 2 月 24 日 0 時 0 分更新) (Updated at 00:00H on 24 Feb 2005)

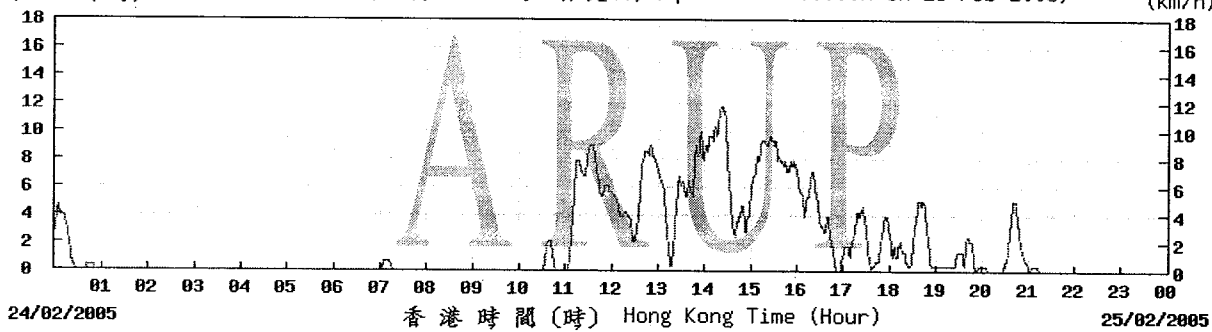
(km/h)



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(公里/小時) (於香港時間 2005 年 2月25日 0時 0分更新) (Updated at 00:00H on 25 Feb 2005)

(km/h)







APPENDIX I

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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. 2004001

Fax: +852 2268 3950

Tel: +852 2268 3216

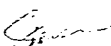
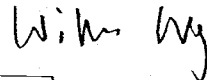
**CERTIFICATE OF CONFORMITY**

<u>Description of Test Instrument</u>	<u>Type No</u>	<u>Serial No</u>
Brüel & Kjaer Acoustic Calibrator	4230	1233887

Date of Test: 16 July 2004

Carried out by: Steven Wong

Approved by: William Ng

Signature: Signature: 

Ambient Conditions During Test	
Atmospheric Pressure:	1KPa
Air Temperature:	28°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 & Kjaer Multi Frequency Calibrator	4226	1531372
Brüel & Kjaer Coupler	UA0915	1531372

Certificate of Calibration Serial No. 12701  
By Brüel & Kjaer (UK) Ltd Calibration Date: 20 April 2004  
NAMAS Accredited Calibration Laboratory No. 0174

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

## Footnote:

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

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

AAc Certificate No. 2004002

Tel: +852 2268 3216

Fax: +852 2268 3950


**CERTIFICATE OF CONFORMITY**

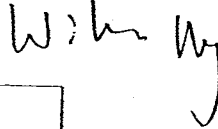
<u>Description of Test Instrument</u>	<u>Type No</u>	<u>Serial No</u>
Bruel & Kjaer Acoustic Calibrator	4231	2314016

Date of Test: 16 July 2004

Carried out by: Steven Wong

Approved by: William Ng

Signature: 

Signature: 

Ambient Conditions During Test	
Atmospheric Pressure:	1KPa
Air Temperature:	28°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.	12701	
By Brüel & Kjær (UK) Ltd Calibration Date:	20 April 2004	
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.



## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-5

Page 1 of 2

### Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
Type No. :	2238	,	4188
Serial No. :	2320707	,	2179479

Client :  
Ove Arup & Partners Hong Kong Ltd.  
Level 5, Festival Walk,  
80 Tat Chee Avenue,  
Kowloon Tong, Kowloon,  
Hong Kong.

### Calibration Conditions :

Air Temperature : 23.1 °C  
Air Pressure : 101.4 kPa  
Relative Humidity : 58 %

### Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of:  
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999  
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

### Test Result :

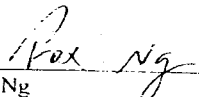
A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

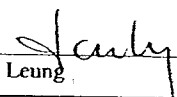
Date of Calibration : 09 September, 2004

Certificate issued : 10 September, 2004

Calibrated By :

Approved signatory :

  
Fox Ng

  
Jacky Leung

Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced after written permission.

## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-5

Page 2 of 2

### Results :

List of performed (sub) test with test status:

“OK” Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

“ - ” Means the result of the (sub)test is Outside these tolerances.

Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging		OK
Pulse Range		OK
Overload	SPL	OK
Overload	SEL	OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

### Calibration Equipment :

Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999				
Digital Multi-meter	Datron 1281	27361	08 Oct. 2003	HKSCS (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *Rex*  
Date : 09 September, 2004

Checked By : *Sealy*  
Date : 10 September, 2004

## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-4

Page 1 of 2

### Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
Type No. :	2238	,	4188
Serial No. :	2320696	,	2274286

Client :  
Ove Arup & Partners Hong Kong Ltd.  
Level 5, Festival Walk,  
80 Tat Chee Avenue,  
Kowloon Tong, Kowloon,  
Hong Kong.

### Calibration Conditions :

Air Temperature : 23.2 °C  
Air Pressure : 101.2 kPa  
Relative Humidity : 59 %

### Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of:  
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999  
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

### Test Result :

A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

Date of Calibration : 10 September, 2004

Calibrated By :

Certificate issued : 10 September, 2004

Approved signatory :

  
Fox Ng

  
Jacky Leung

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**CERTIFICATE OF CALIBRATION**

**Certificate No. : 2KS040905-4**

**Page 2 of 2**

**Results :**

List of performed (sub) test with test status:

“OK” Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

“-” Means the result of the (sub)test is Outside these tolerances.

Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging		OK
Pulse Range		OK
Overload	SPL	OK
Overload	SEL	OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

**Calibration Equipment :**

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999				
Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Digital Multi-meter	Datron 1281	27361	08 Oct, 2003	HKSCS (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *[Signature]*  
Date : 10 September, 2004

Checked By : *[Signature]*  
Date : 10 September, 2004



## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-3

Page 1 of 2

### Calibration of:

<b>Description</b> :	Sound Level Meter	,	Microphone
<b>Manufacture</b> :	Brüel & Kjær	,	
<b>Type No.</b> :	2238	,	4188
<b>Serial No.</b> :	2320694	,	2274284

**Client :**  
Ove Arup & Partners Hong Kong Ltd.  
Level 5, Festival Walk,  
80 Tat Chee Avenue,  
Kowloon Tong, Kowloon,  
Hong Kong.

### Calibration Conditions :

**Air Temperature** : 23.2 °C  
**Air Pressure** : 101.2 kPa  
**Relative Humidity** : 59 %

### Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

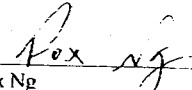
The measurements has been performed with the assistance of :  
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999  
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

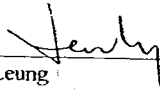
### Test Result :

A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

Date of Calibration : 10 September, 2004  
Calibrated By :

Certificate issued : 10 September, 2004  
Approved signatory :

  
Fox Ng

  
Jacky Leung

Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced after written permission.

## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-3

Page 2 of 2

### Results :

List of performed (sub) test with test status:

"OK" Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

" - " Means the result of the (sub)test is Outside these tolerances.

Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging		OK
Pulse Range		OK
Overload	SPL	OK
Overload	SEL	OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

### Calibration Equipment :

Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Brüel & Kjør's Sound Level Meter Calibration System	B&K 9600 CAL2238A,	Ver.25.10.1999		
Digital Multi-meter	Datron 1281	27361	08 Oct, 2003	HKSCS (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *Box Ng*  
Date : 10 September, 2004

Checked By : *Jerry*  
Date : 10 September, 2004



## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-1

Page 1 of 2

### Calibration of :

Description	: Sound Level Meter	,	Microphone
Manufacture	: Brüel & Kjær	,	
Type No.	: 2231	,	4188
Serial No.	: 1294630	,	2179478

Client : Ove Arup & Partners Hong Kong Ltd.  
Level 5, Festival Walk,  
80 Tat Chee Avenue,  
Kowloon Tong, Kowloon,  
Hong Kong.

### Calibration Conditions :

Air Temperature	: 23.2 °C
Air Pressure	: 101.2 kPa
Relative Humidity	: 59 %

### Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of :  
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 C2231\_10, Ver.03.11.1995  
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

### Test Result :

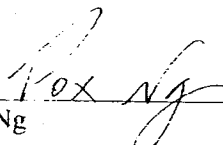
A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

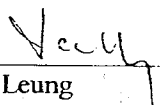
Date of Calibration: 10 September, 2004

Certificate issued: 10 September, 2004

Calibrated By :

Approved Signatory :

  
\_\_\_\_\_  
Fox Ng

  
\_\_\_\_\_  
Jacky Leung

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## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-1

Page 2 of 2

### Results :

List of performed (sub) test with test status:

“OK” Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

“-” Means the result of the (sub)test is Outside these tolerances.

Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Noise	Lin Lim	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Frequency Weighting	Lin Lim	OK
Frequency Weighting	Random	OK
Level Range Control	4000 Hz	OK
Linearity Range	SPL 10dB 1000 Hz	OK
Linearity Range	SPL 1dB 4000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging	Leq-SEL	OK
Pulse Range	SEL-Leq	OK
Overload	SPL	OK
Overload	SEL	OK
Internal Reference		OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

### Calibration Equipment :

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 C2231_10, Ver.03.11.1995				
Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable To
Digital Multi-meter	Datron 1281	27361	08 Oct 2003	HKSC(L)HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *Rox Ng*  
Date : 10 September, 2004

Checked By : *July*  
Date : 10 September, 2004



## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-2

Page 1 of 2

### Calibration of :

Description	: Sound Level Meter	,	Microphone
Manufacture	: Brüel & Kjær		
Type No.	: 2231	,	4188
Serial No.	: 1709184	,	2179476

Client : Ove Arup & Partners Hong Kong Ltd.  
Level 5, Festival Walk,  
80 Tat Chee Avenue,  
Kowloon Tong, Kowloon,  
Hong Kong.

### Calibration Conditions :

Air Temperature	: 23.2 °C
Air Pressure	: 101.2 kPa
Relative Humidity	: 59 %

### Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of :  
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 C2231\_10, Ver.03.11.1995  
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

### Test Result :

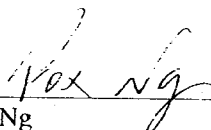
A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

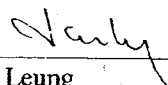
Date of Calibration: 10 September, 2004

Certificate issued: 10 September, 2004

Calibrated By :

Approved Signatory :

  
\_\_\_\_\_  
Fox Ng

  
\_\_\_\_\_  
Jacky Leung

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## CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-2

Page 2 of 2

### Results :

List of performed (sub) test with test status:

“OK” Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

“-” Means the result of the (sub)test is Outside these tolerances.

Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Noise	Lin Lim	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Frequency Weighting	Lin Lim	OK
Frequency Weighting	Random	OK
Level Range Control	4000 Hz	OK
Linearity Range	SPL 10dB 1000 Hz	OK
Linearity Range	SPL 1dB 4000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging	Leq-SEL	OK
Pulse Range	SEL-Ieq	OK
Overload	SPL	OK
Overload	SEL	OK
Internal Reference		OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

### Calibration Equipment :

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 C2231\_10, Ver.03.11.1995

Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable To
Digital Multi-meter	Datron 1281	27361	08 Oct 2003	HKSCS(HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *Box Ng*  
Date : 10 September, 2004

Checked By : *[Signature]*  
Date : 10 September, 2004

APPENDIX J

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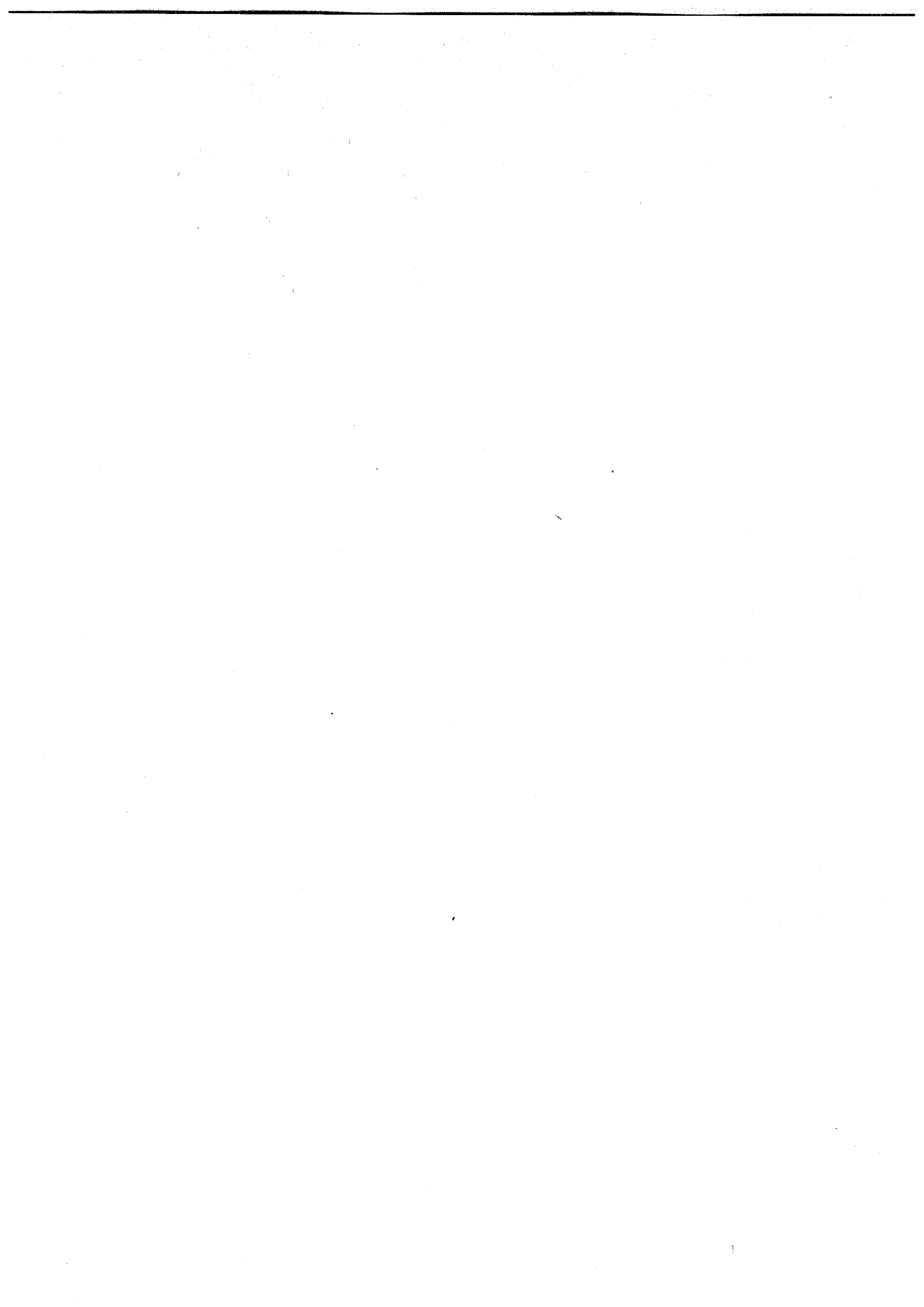
**Detailed noise  
monitoring results**





## 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>99</sub>	L <sub>10</sub>	L <sub>90</sub>	
8-Feb-05	WN1	14:15	14:45	Fine	1.0	67.3	69.0	56.5	Normal Operation
8-Feb-05	WN2	14:55	15:25	Fine	1.1	66.8	68.5	56.0	Normal Operation
8-Feb-05	WN6	13:20	13:50	Fine	1.3	70.1	72.5	61.0	Normal Operation
8-Feb-05	WN7	13:00	13:30	Fine	1.5	63.2	66.0	56.5	Normal Operation
8-Feb-05	WN8	13:35	14:05	Fine	1.4	62.4	65.5	56.0	Normal Operation
8-Feb-05	WN9	14:45	15:15	Fine	1.3	62.1	65.0	55.0	Normal Operation
8-Feb-05	WN10	15:20	15:50	Fine	1.4	59.0	62.5	50.0	Normal Operation
8-Feb-05	WN11	11:15	11:45	Fine	1.2	66.8	70.5	59.5	Normal Operation
8-Feb-05	WN12	10:30	11:00	Fine	1.8	65.1	68.5	57.0	Normal Operation
8-Feb-05	WN13	10:45	11:15	Fine	1.7	61.2	64.5	51.5	Normal Operation
8-Feb-05	WN14	10:10	10:40	Fine	1.1	67.1	70.0	61.5	Normal Operation
8-Feb-05	WN15	9:30	10:00	Fine	1.9	67.4	70.0	63.5	Normal Operation
8-Feb-05	WN16	11:30	12:00	Fine	1.8	64.8	67.5	59.0	Normal Operation
16-Feb-05	WN1	16:35	17:05	Cloudy	1.0	72.3	74.5	70.5	Normal Operation
16-Feb-05	WN2	16:00	16:30	Cloudy	0.8	71.7	73.5	69.5	Normal Operation
16-Feb-05	WN6	14:45	15:15	Cloudy	2.4	65.7	67.0	64.0	Normal Operation
16-Feb-05	WN7	14:00	14:30	Cloudy	1.9	67.3	69.0	66.0	Normal Operation
16-Feb-05	WN8	13:15	13:45	Cloudy	1.7	68.2	70.0	65.5	Normal Operation
16-Feb-05	WN9	16:45	17:15	Cloudy	0.6	69.9	72.0	68.5	Normal Operation
16-Feb-05	WN10	16:10	16:40	Cloudy	0.6	69.4	70.5	68.0	Normal Operation
16-Feb-05	WN11	15:30	16:00	Cloudy	0.4	69.8	71.5	67.5	Normal Operation
16-Feb-05	WN12	14:30	15:00	Cloudy	0.9	67.6	69.0	65.5	Normal Operation
16-Feb-05	WN13	13:45	14:15	Cloudy	0.5	66.4	68.5	65.0	Normal Operation
16-Feb-05	WN14	11:00	11:30	Cloudy	0.8	70.2	72.0	68.5	Normal Operation
16-Feb-05	WN15	10:30	11:00	Cloudy	0.6	69.1	70.5	68.0	Normal Operation
16-Feb-05	WN16	9:30	10:00	Cloudy	0.4	67.0	68.0	65.5	Normal Operation
23-Feb-05	WN1	15:00	15:30	Fine	1.8	71.0	73.0	69.5	Normal Operation
23-Feb-05	WN2	14:00	14:30	Fine	2.0	70.4	72.0	69.0	Normal Operation
23-Feb-05	WN6	11:30	12:00	Fine	1.1	66.4	68.0	65.0	Normal Operation
23-Feb-05	WN7	13:15	13:45	Fine	0.8	68.2	69.5	66.5	Normal Operation
23-Feb-05	WN8	13:00	13:30	Fine	1.0	67.3	69.5	66.0	Normal Operation
23-Feb-05	WN9	16:30	17:00	Fine	1.5	70.8	74.0	68.5	Normal Operation
23-Feb-05	WN10	15:30	16:00	Fine	1.8	68.9	72.0	66.0	Normal Operation
23-Feb-05	WN11	14:45	15:15	Fine	1.7	69.4	73.0	66.5	Normal Operation
23-Feb-05	WN12	14:00	14:30	Fine	1.7	69.1	72.0	66.5	Normal Operation
23-Feb-05	WN13	11:30	12:00	Fine	1.4	68.5	70.5	65.5	Normal Operation
23-Feb-05	WN14	10:30	11:00	Fine	1.2	67.4	70.5	65.0	Normal Operation
23-Feb-05	WN15	14:00	14:30	Fine	2.1	69.6	72.5	66.5	Normal Operation
23-Feb-05	WN16	15:30	16:00	Fine	2.0	69.3	72.0	66.0	Normal Operation



APPENDIX K

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**Landscape and visual  
monitoring and audit  
report**



**Contract No. HY/99/18**  
**Castle Peak Road Improvements between**  
**Sham Tseng and Ka Loon Tsuen**

**Landscape & Visual Audit and Monitoring**

**Monthly Inspection Report No. 36**

**(February 2005)**

Prepared by

URBIS LIMITED

Prepared by :

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

\_\_\_\_\_  
7<sup>th</sup> March 2005

Approved by :

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

\_\_\_\_\_  
7<sup>th</sup> March 2005

## **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 between Area 2 and Ka Loon Tsuen, Tsuen Wan - Environmental Monitoring and Audit Manual – West Contract.

Under the EIA, the proposed mitigation measures include both the planting works and treatment to structures. As stated in 6.4.2 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 – 3<sup>rd</sup> February 2005**

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

- The Contractor had cleared away the scattered construction waste piles found at RW-01 area. However, new scrap-wood and garbage piles were found and the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the garbage piles found at footbridge FB-02 area. However, the waste container bin was found to be full, and the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the scattered empty cement bags were found at BPRW14 area.
- The Contractor had emptied the waste container bin at Seawall 'C' area.
- The Contractor had cleared away the construction waste pile found opposite Lido Garden area.
- Tree protection to existing tree at Slope 6SW-D/C186 was still outstanding. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler's Beach was still outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently, including tree stability.

##### **3.1.2 Site Clearance and Formation Works**

- Construction waste piles was found at NM-02 area. The Contractor was requested to clear it away as soon as possible.
- The 'drum' litter bin was found to be full at RW13 area. The Contractor was requested to clear it away as soon as possible.

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

- No tree transplanting works was carried out during the inspection period.

##### **3.1.4 Recommendations**

- The Contractor was reminded to urgently carry out root pruning and proper tree protection of existing trees on site.
- The Contractor was reminded to clear away all scattered litter, garbage, etc. as found on site, and keep the site in a tidy condition at all times.

**Contract No. HY/99/18**  
**Castle Peak Road Improvements between Sham Tseng and Ka Loon Tsuen**  
**Landscape & Visual Audit and Monitoring**

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**3.2 Summary of Inspection – 17<sup>th</sup> February 2005**

**3.2.1 Matters Arising from Previous Inspections**

- The Contractor had emptied the 'drum' litter bin at retaining wall RW-13 area.
- The Contractor had cleared away the construction waste piles found at NM-02 area.
- The Contractor had cleared away the scrap-wood and garbage piles found at RW-01 area. However, new construction waste piles was found and the Contractor was requested to clear it away as soon as possible.
- The Contractor had emptied the waste container bin found at footbridge FB-02 area. However, the bins were again found to be full, and the Contractor was requested to clear it away as soon as possible.
- Tree protection to existing tree at Slope 6SW-D/C186 was outstanding. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- The Contractor had backfilled the root area of the retained tree (T44) at Angler's Beach with concrete. However, the Contractor was reminded to carry out proper assessment of the stability of the tree to ensure the tree is stable.
- Dry surface conditions were observed at RW-01 and Seawall 'C' areas. The Contractor was reminded to carry out more frequent watering of the site to prevent dust nuisance.

**3.2.2 Site Clearance and Formation Works**

- A large garbage pile was found at Portion 6 area. The Contractor was requested to clear it away as soon as possible.

**3.2.3 Tree Felling and Transplanting Works**

- No tree transplanting work was carried out during the inspection period.

**3.2.4 Recommendations**

- The Contractor was reminded to carry out proper tree protection to ensure existing trees retained are not damaged.
- The Contractor was reminded to clear away all scattered litter, garbage, etc. as found on site, and keep the site in a tidy condition at all times.
- The Contractor was reminded to carry out more frequent watering of the site during dry periods to prevent dust nuisance.



**4.0 TREE TRANSPLANTING SURVIVAL RATE**

**4.1 Tree Transplanting Survival Rate**

The tree transplanting survival rate as reported by the Contractor for the period up to the end of February is 100%.

**5.0 AUDIT SCHEULE**

**5.1 Audit Schedule for March 2005**

The next audits are schedule to be conducted on 3<sup>rd</sup>, 17<sup>th</sup>, and 24<sup>th</sup> March 2005.



APPENDIX L

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**Log record on  
environmental  
complaints**



## Log Record on Environmental Complaints

No.	Date of Complaint Received	Description	Proposed Actions	Completion Date	Remarks
029	12-Aug-02	Complaint from Mr. Au regarding muddy water washing out from Kowloon Bound Lane from the construction site	Enlarge concrete paving at site entrance; further improvement to the existing temporary drainage system to minimise wash-off of waste water to the adjacent road; and make sure temporary water supply points are properly turned off during lunch break or other times when they are not in use.	16-Aug-02	
036	31-Aug-02	Complaint from Mrs. Chung regarding the generation of fugitive dust from the construction site in front of Tsing Lung Tau Village	Frequent watering of the related works area with the aid of water browser	31-Aug-02	
054	7-Dec-02	Complaint from Mr. Lo regarding the stagnant water ponding in front of the construction site at Sham Tseng	Explained to the complainant that the water ponding was a wheel washing bay	7-Dec-02	
067	3-Mar-03	Complaint from Hong Kong Garden Management Office regarding the noise from vehicular movement over the temporary road cover at Castle Peak Road provided by the Contractor	The Contractor has added extra welding to improve the rigidity of the temporary steel deck. The work was completed during the off-peak hours in the period between 12-Mar-03 to 17-Mar-03.	17-Mar-03	The Contractor has taken noise readings and found that the noise level was within the baseline levels.
068	11-Mar-03	Complaint from Mr. Leung at Hong Kong Garden regarding the noise from evening road traffic, travelling over the steel decking plate on the adjacent temporary road diversion.	The Contractor has added extra welding to improve the rigidity of the temporary steel deck. The work was completed during the off-peak hours in the period between 12-Mar-03 to 17-Mar-03.	17-Mar-03	The Contractor has taken noise readings and found that the noise level was within the baseline levels.
070	6-Mar-03	Complaint from EPD regarding the reclamation works at Seawall B opposite to Hong Kong Garden on Sunday	The Contractor has previously informed the subcontractor of the statutory requirements as noise, dust emission, water discharge, and waste management. The Contractor agreed to keep vigilant in monitoring and surveillance of the site and continue to remind the subcontractors of the statutory requirements.	10-Mar-03	The Contractor has formally closed all site area for the Chinese New Year. Entrances of all site area were barricaded before the Contractor's staff vacated the sites on 30 January 2003.
070	6-Mar-03	Complaint from EPD regarding dust emission from the reclamation works at Seawall B opposite to Hong Kong Garden.	The Contractor has previously informed the subcontractor of the statutory requirements as noise, dust emission, water discharge, and waste management. The Contractor agreed to keep vigilant in monitoring and surveillance of the site and continue to remind the subcontractors of the statutory requirements.	10-Mar-03	The Contractor has investigated and confirmed that the marine works towards the eastern end of Seawall B was wet and the concreting works at the west end of the Seawall B were not dusty and no dust was emitted. Ground surface was also covered with crushed rock. The Contractor was also further reminded to spray water before and during unloading and moving of rock boulders and onto the haul road.
070	24-Mar-03	Complaint from EPD regarding daytime construction noise at Seawall B opposite to Hong Kong Garden.	The Contractor agreed to continuously monitor and review the operation in the vicinity opposite to Lung tang Court, in order to minimize the noise impact caused to the public. In addition the Contractor will respond to the complaints received on the 24- hours Contract Complaint Hotline 2496 2555 in the first instant.	31-Mar-03	No exceedance was recorded at the noise monitoring station WN6, WN7 and WN8 from January 2003 to March 2003. It was suspected that the noise was due to traffic noise together with operational noise of plant equipment at Seawall B. The Contractor was also reminded if reorganization of working arrangement is necessary, mitigation proposal should be submitted to IC(E) for review. Additional noise monitoring shall also be conducted at the noise monitoring station WN8 once the mitigation proposal is implemented.

## Log Record on Environmental Complaints

No.	Date of Complaint Received	Description	Proposed Actions	Completion Date	Remarks
076	15-Apr-03	Complaint from Mr. Wong of TL 60 Management Limited regarding the noise nuisance generated from the vehicle movement over the temporary steel decking in front of Hong Kong Garden at Castle Peak Road provided by the Contractor.	The Contractor has replaced the isolated decking plate by 17 April 2003 and agreed to frequently inspect the condition of the steel decking. Further improvement works were completed on 25 April 2003.	25-Apr-03	
078	15-Apr-03	Complaint from Mr. Chau of Hong Kong Garden regarding the noise nuisance generated from vehicle movement over the temporary steel plate in front of the premises.	The Contractor has explained to Mr. Chau that the improvement works were completed on 25 April 2003 and agreed to carry out daily inspection to check the condition of the steel plate.	29-Apr-03	The complainant agreed that the noise nuisance has abated.
080	5-May-03	Complaint from Mr. Tsao / Mr. Chan of Mui Yuen, opposite to Bayside Villas regarding water leakage from the rocky slope behind his house and the damage of water pipes by cleaning works.	The water pipe was repaired on 9 May 2003. The Contractor has explained that the rocky slope was outside the site boundary.	9-May-03	
082	7-May-03	Complaint from Ms. Chan regarding water ponding on existing footpath along Castle Peak Road near the Contractor's site office.	The Contractor has formed holes at existing upstand wall to drain off water trapped in the adjacent footpath and to patch up local depression at the affected footway with plain concrete.	19-May-03	
084	21-May-03	Complaint from Ms. Lam of Sea Crest Villa Phase I regarding construction noise from the slope works outside Sea Crest Villa Phase I.	The Contractor has observed low-noise emission construction equipment were being used at the time of inspection and proposed to speed up the works to limit the duration of daytime construction noise impact.  The Contractor has provided additional information in their letter ref. HY/99/18/M45/300/40/10229 dated 25 June 2003. Additional noise monitoring had been taken by the Contractor on 22 May 2003 at WN15 obtaining the result of 66.6dB(A), which was below the limit level of 75dB(A). After reviewing the findings and investigation details, the Contractor confirmed that no further remedial actions was required.	25-Jun-03	The Contractor was requested to submit mitigation proposal to IC(E) for review and to implement the mitigation proposal. Additional noise monitoring is required to be conducted at the noise monitoring station WN15 once the mitigation proposal is implemented.  The IC(E) had no comment on the Contractor's findings. Since no mitigation measures were implemented, additional noise monitoring was not conducted.
086	23-May-03	Complaint from Mr. So regarding stagnant water in the drainage and wheel washing bay near the entrance of Sea Crest Villa Phase IV and the damage of road surface near L1 main gate and CLP electricity supply room.	Explained to the complainant that the stagnant water inside the wheel washing bay was for cleaning of vehicle. The leakage found the temporary water pipe was repaired. The water and silt trapped in the U-channel near the main entrance of the estate was removed and the kerb on west side of the run-in to Gate L1 was reinstated.	29-May-03	The Contractor will properly maintain the wheel washing facility, regularly inspect and clean the drainage channel and the gully pots near the main entrance of the estate. The damaged paving slab and cable pit near the power supply room will be restored to original condition after completion of the adjacent substructure works around mid August 2003.
088	3-Jun-03	Complaint from EPD regarding construction dust from Seawall B.	The Contractor proposed to place the concerned area under higher priority and endeavor to water the concerned haul road more frequently during dry days.	6-Jun-03	No rock breaking activity has been observed in site audits since 5 June 2003. The haul road at Seawall B was observed wetted in the site audits. The Contractor was reminded to provide water spraying if there is rock breaking activity in this vicinity.

## Log Record on Environmental Complaints

No.	Date of Complaint Received	Description	Proposed Actions	Completion Date	Remarks
088	3-Jun-03	Complaint from EPD regarding construction noise from Seawall B.	The Contractor reported that there may be occasional crashing noise for the piling works when rock level is reached. The Contractor has been providing mitigation measures, such as barrier and restriction of the rate of concerned works. The Contractor will also endeavor to expedite the works to reduce the duration of perceived daytime impact. The Contractor proposed to perform additional ad hoc inspections on Mondays, Wednesday and Fridays at the concerned area to confirm continual implementation of measures and to conduct additional noise monitoring where appropriate.	6-Jun-03	No rock breaking activity has been observed in site audits since 5 June 2003. Contractor has been reminded to submit mitigation proposal to IC(E) for review and to implement the mitigation proposal if provision of additional mitigation measures is required. The Contractor was also advised to provide portable noise barrier if there is rock breaking activity. Additional noise monitoring is also required to be conducted at the noise monitoring station WN8 once the mitigation proposal is implemented. The IC(E) had no comment on the Contractor's findings. Since no mitigation measures were implemented, additional noise monitoring was not conducted.
091	16-Jun-03	Complaint from Ms. Chan of Sea Crest Villa Phase 1 regarding noise from drilling works carried out at BPRW70 outside Sea Crest Villa Phase 1 before 07:00.	Upon investigation, the Contractor confirmed that there has been no construction work being conducted before 07:00. Nevertheless, the Contractor has scheduled the concerned work to be commenced at 08:00 as on 17 July 2003.	17-Jun-03	
092	16-Jun-03	Complaint from Mrs. Chung of Lido Garden regarding noise from drilling works carried out at BPRW70 opposite to Lido Garden before 07:00.	Upon investigation, the Contractor confirmed that there has been no construction work being conducted before 07:00. Nevertheless, the Contractor has scheduled the concerned work to be commenced at 08:00 as on 17 July 2003.	17-Jun-03	
097	27-Jun-03	Complaint from Mr Fok of Kai Shing Management Services regarding noise nuisance and the ponding of stagnant water arising from the construction activities outside Sea Crest Villa Phase III.	Upon investigation, the condition of water pumps installed separately at east end of the slope close to SCV Phase III and Pai Min Kok Stream Course has been checked. Noise generated from the ongoing construction works in these areas has been monitored. The rock breaking with jackhammer at PMK had been completed on 26 June 2003.	4-Jul-03	After further enquiry into the nature of the complaint, it appears that the complaint refers to the extended duration of construction works in the concerned area (i.e. inconvenience caused due to lengthy works program). The Contractor's Mr Peter Ip has explained the nature of the works to the Management Office. There have been no further complaints from SCV Phase III since the briefing.
103	31-Jul-03	Complaint from Hong Kong Management Office regarding the noise generated by vehicles running over the steel decking plate on the Castle Peak Road close to Hong Kong Garden.	The existing steel decking plate had been repaired during off peak hours and regular inspection on the condition of steel plate and adjacent road surface was agreed to be conducted.	5-Aug-03	There had been no further complaints after the repair.
105	13-Aug-03	Complaint from Mr Chow of Sham Tseng regarding fell of all old trees along section of Castle Peak Road near Ma Wan Pier.	After investigation on the matter, it had been confirmed that the felling and the transplanting of group of trees along the Castle Peak Road near Ma Wan Pier had been carried out in compliance with approved plans and schedules. No follow up is required.	16-Aug-03	
108	11-Sep-03	Complaint from Mr Edith Lee of Sea Crest Villa Phase I complained that it was very dusty at her house and she found that there was no water spraying at the construction site of the slope near Ma Wan Pier.	After investigation on the matter, water browser was arranged for spraying through the haul road. Rock breaking location would be sprayed directly connected from water supply point. To follow up the case, water browser would be arranged every 2 to 3 hours depends on drying up condition. A worker would be arranged for spraying water through out the rock breaking process.	11-Sep-03	

## Log Record on Environmental Complaints

No.	Date of Complaint Received	Description	Proposed Actions	Completion Date	Remarks
112	10-Oct-03	Complaint from Mr Cheung of FEHD that regarding the general refuse being accumulating on the pedestrian walkway between Sea Crest Villa Phase III and Phase II and the drainage channel at Pai Min Kok Village.	Investigation was conducted immediately on 11 October 2003. It was observed that the pedestrian walkway and Outfall I had been tidied up except at the corner of Sea Crest Villa Phase III where a broken umbrella and some broken traffic light was lying on the ground. Immediate action was taken to remove the broken umbrella and signal lights. The site area would be maintained regularly. It was noted that wooden formwork and construction materials might possibly been mistaken to be rubbish.	13-Oct-03	
114	25-Nov-03	Complaint log no. 114 was received on 25 November 2003 regarding the muddy water found on the beach opposite to Sea Crest Villa Phase III.	An inspection for the concerned site area at the interface between the beach and the construction site revealed that there was no evidence of active construction works adjacent to the beach or the presence of muddy water. There was also no evidence of muddy water discharge from Outfall I. The work programme for the following days leading up to the complaint was inspection and found that the bored piling activity had been completed and removed since 15 November 2003. The contractor would regularly monitor the area for muddy water. If potential discharge sources were identified, the Contractor would take action to rectify the situation.	26-Nov-03	
115	30-Nov-03	Complaint from Miss Chan of Sham Tseng Latrine was received on 30 November 2003 regarding the pond of foul water at the footway in front of Sham Tseng Latrine.	An inspection for the concerned site area was carried out. The water ponding was confirmed to be overflow from the terminal manhole, which was a part of public latrine system. The maintenance of the public latrine and the associated systems were the responsibility of FEHD. The Contractor had contacted FEHD to follow up the issue.	1-Dec-03	
116	6-Dec-03	Complaint from Mr Paul Wong of Hong Kong Garden Management Office was received on 6 December 2003 regarding construction noise during early hours of 8:00am.	Inspection of concern area and no abnormal construction activities was found. The Contractor had explained to the Complainer that no statutory permit was required for construction work other than percussive piling at 8:00am and the nature of works conducted at the area was well within permitted limits. ET was reminded the Contractor to implement noise mitigation proposal in accordance with EM&A Manual.	8-Dec-03	Noise generated from the ongoing construction works in these areas was monitored and no exceedance was found. As the Contractor had responded to the complainant and no further complaint was recorded, the Contractor proposed that no further remedial/ preventative measures were necessary.
123	20-Feb-04	Complaint from Mr Ho of TL60 Management Ltd was received on 20 February 2004 regarding noise arising from the temporary steel plates on road pavement near Blocks 1 & 2 of Hong Kong Garden	Condition of the decking plat was checked on 23 February 2004 and was repaired on 24 February 2004 during off peak hours.	24-Feb-04	Regular inspection will be conducted and adjacent works was be expedited to allow early road diversion for permanent removal of the steel plates.
139	9-Jul-04	Complaint from EPD was received on 9 July 2004 regarding noise arising from prescribed construction works or works using power mechanical equipment at night near Seawall-B area opposite to Hong Kong Garden	After investigation on the matter, there was no evidence of carrying out the prescribed construction works or using power mechanical equipment between 1900 and 2300 on 3 July 2004.	23-Jul-04	
140	10-Jul-04	Complaint from Highway Department was received on 10 July 2004 regarding noise arising from rock breaking near Sea Crest Villa Phase 3	After investigation on the matter, there was no evidence of rock breaking activities undertaken in the vicinity of Sea Crest Villa Phase 3.	23-Jul-04	



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No.	Date of Complaint Received	Description	Proposed Actions	Completion Date	Remarks
149	11-Aug-04	Complaint from EPD regarding the sandy wake of a marine vessel carrying sand to the beach reinstatement area of Seawall B	After investigation on the matter, the following action was proposed. The vessel and water depth should be thoroughly checked prior to sand placing. If shadow water need to be approached, another shallower vessel should be used. The land co-ordinator should cease the sand placing operation if muddy plumes were noticeable.	31-Aug-04	
154	25-Aug-04	Complaint from Ms Tang regarding littering on the slope close to the Sea Crest Villa Phase 2.	After investigation on the matter, there was no evidence that the problem was caused by any construction activities.	27-Aug-04	
156	18-Sep-04	Complaint from Mr Chu regarding excessive garbage trapped along the adjacent shore of Seawall B west end.	It was out of control over the accumulation of floating rubbish drifting toward the shore. However, the contractor would remove them as soon as possible.	20-Sep-04	
166	4-Nov-04	Complaint from Mr Wong regarding the accumulation of foul ground and sewage waters in the trench in front of the strip of restaurants at Sham Tseng.	Contractor placed a sludge separation plant to treat the accumulated water prior to discharge and pumped away the accumulated water as regularly as possible. An CNP has been attained for the pumping of concerned areas.	11-Nov-04	
172	5-Jan-05	Complaint from Mr Raymond Chan regarding the daytime construction noise started 7:30am over the past few days.	Contractor clarified with Mr Chan that construction work at 7:30am was within regulation guidelines. However, the contractor still agreed to arrange noisy activities be carried out after 8:00am.	5-Jan-05	
175	28-Jan-05	Complaint from Mr Kan regarding the rubbish discarded at the finished RERW slopes and Outfalls opposite to Sea Crest Villa Phase II and III.	Contractor inspected the concerned area, taken photographs and carry out maintenance works as requested.	31-Jan-05	

