

Maeda Corporation

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

Monthly Environmental
Monitoring and Audit
Report
January 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 – January 2005

February 2005

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7 February 2005

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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 (January 2005)**

We refer to the electronic version of the captioned report submitted by your Mr. Angus Choi via e-mail on 4 February 2005. We do not have comment and endorsed the report.

Yours sincerely



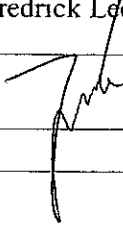


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Job title	West Contract No. HY/99/18 Castle Peak Road Improvement Between Sham Tseng and Ka Loon Tsuen, Tsuen Wan	Job number 23437
Document title	Environmental Monitoring and Audit	File reference
Document ref	23437-51	

Revision	Date	Filename	G:\env\project\23437\reports\Monthly\2005-01\51-Jan-05.doc		
First Issue	03/02/05	Description	Issue to IEC for comments		
			Prepared by	Checked by	Approved by
		Name	Fredrick Leong	Sam Tsoi	Sam Tsoi
		Signature			
Second Issue	08/02/05	Filename	G:\env\project\23437\reports\Monthly\2005-01\51-Jan-05-RevA.doc		
		Description	Submitted to Client with IEC verification letter		
			Prepared by	Checked by	Approved by
		Name	Fredrick Leong	Sam Tsoi	Sam Tsoi
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
		Name			
		Signature			

Issue Document Verification with Document ☒

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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-sixth monthly environmental monitoring and audit (EM&A) report presenting the progress of environmental monitoring and audit works for the period between 1 January 2005 and 31 January 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 5 sets of 3 consecutive 1-hour TSP measurements had been taken during the reporting month. The highest 24-hour TSP level was $202.2\mu\text{g}/\text{m}^3$ recorded at Tsing Lung Tau Temple (WA6) on 14 January 2005 while the lowest 24-hour TSP level was $50.5\mu\text{g}/\text{m}^3$ recorded at G/F, Regent Heights, Hong Kong Garden (WA10) on 26 January 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 1-hour TSP level was $316.4\mu\text{g}/\text{m}^3$ recorded at Car Park of Lido Garden (WA11) on 12 January 2005 while the lowest 1-hour TSP level was $153.7\mu\text{g}/\text{m}^3$ recorded at G/F of regent Heights, Hong Kong Garden (WA3) on 18 January 2005. There was no exceedance of the Action and Limit (A/L) Levels during the monitoring period.

The HVS at Tin Hau Temple in Tsing Lung Tau (WA6) has been out of order during the period between 20 December 2004 and 8 January 2005. After investigation, it was found that the HVS was broken down because of aging problems of integral parts and unstable power supply. Mitigation measures and contingency plan was proposed and will be implemented if the similar situation is encountered.

Noise

A total of 5 sets of daytime (0700 – 1900 hours) noise monitoring had been taken during the reporting month. The highest noise level was 73dB(A) recorded at Lido Garden (WN16) on 3 January 2005 while the lowest noise level was 66dB(A) recorded at Lido Garden (WN16) on 12 January 2005. There was no exceedance of the A/L Levels during the monitoring period.

Marine Water Quality

No marine water quality was conducted in January 2005.

Environmental Auditing

A total of 5 environmental site audits had been carried out on a weekly basis in January 2005. The major environmental concerns included the following issues:

- **Water quality:** cleaning of mud trails, implement wheel wash and stagnant water.
- **Air quality:** watering the haul roads and during rock breaking, and exposed slope and stockpiles covering.
- **Construction Noise:** noise label for plants.

- **Handling of waste and chemicals:** cleaning up oil leakage/ oil stain; and provision of drip trays for oil/chemical drums.

Landscape and Visual

A total of 2 landscape and visual monitoring and audits had been carried out on a biweekly basis in January 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 27 loads of Construction & Demolition (C&D) waste materials and a total of 2078 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 January 2005. No chemical waste was disposed of in January 2005.

Complaint Records

There were two environmental complaints received in January 2005.

Non-compliances

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

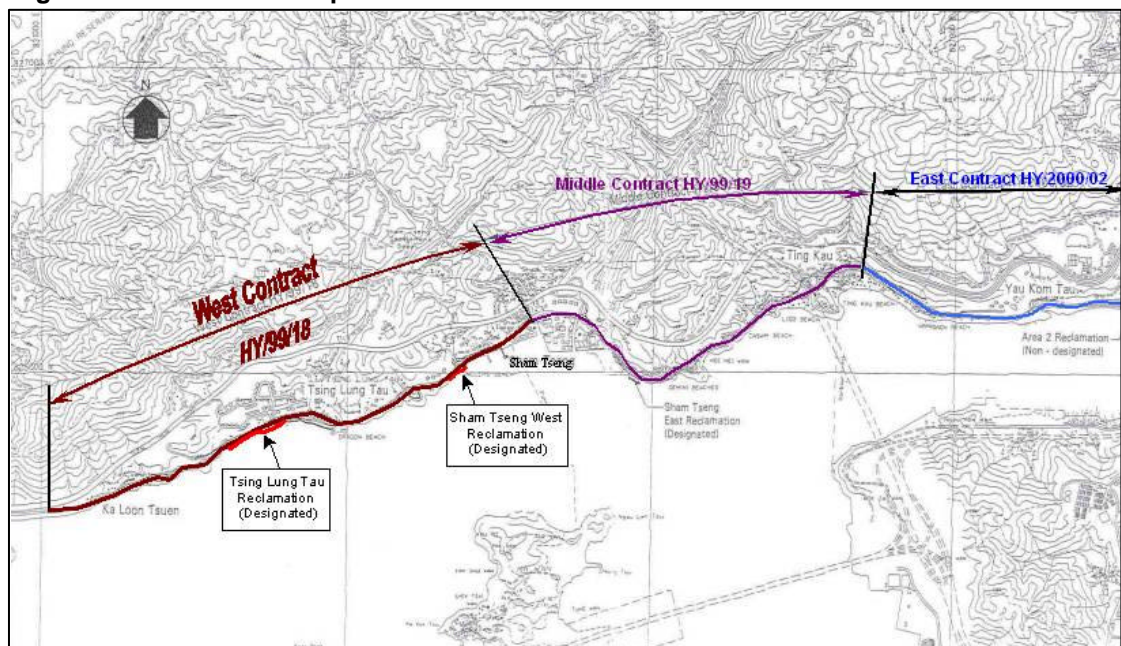
1. INTRODUCTION

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-sixth 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 January to 31 January 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 January 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^[1], 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 January 2005 and the tentative schedule for February 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
WA1	Bayside Villas	G/F, Bayside Villas (Temporary Suspended)
WA2	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 min)	Once per week	1
Between 1900-2300 hours on normal weekdays	L _{eq} (5 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

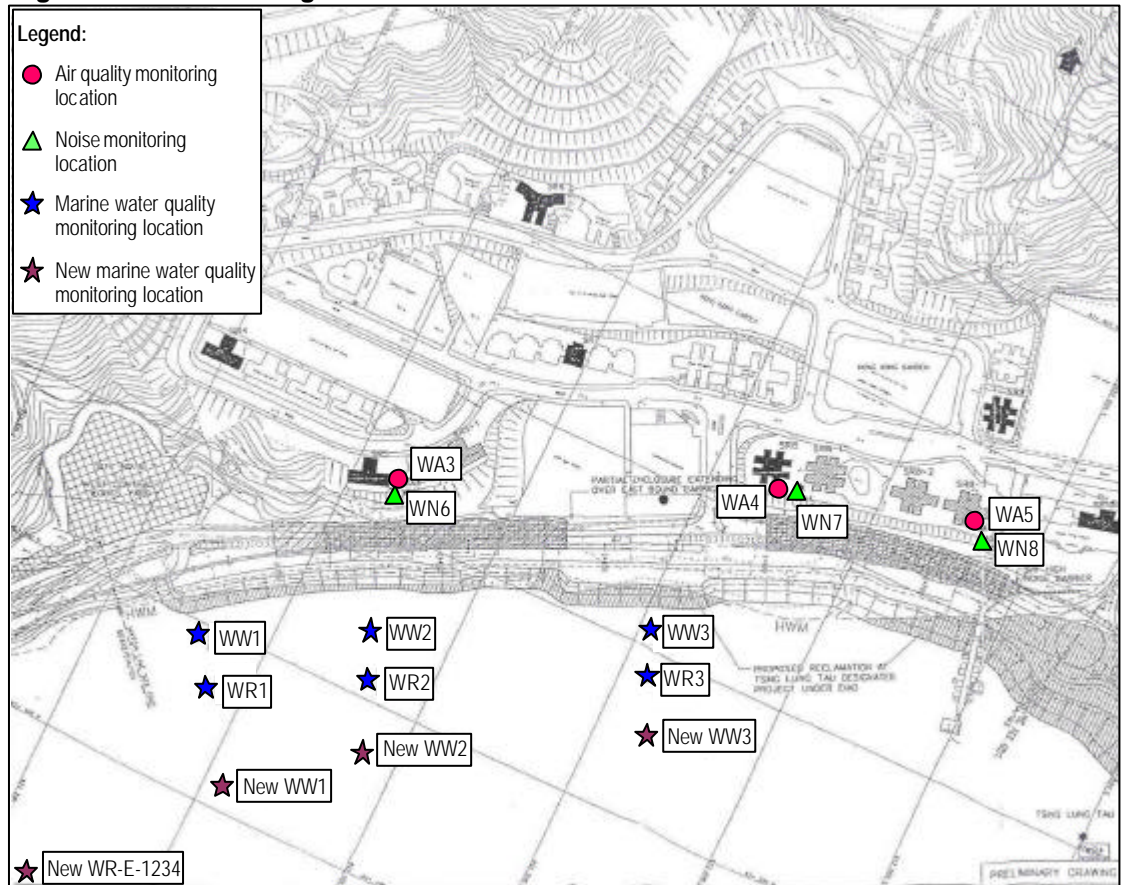
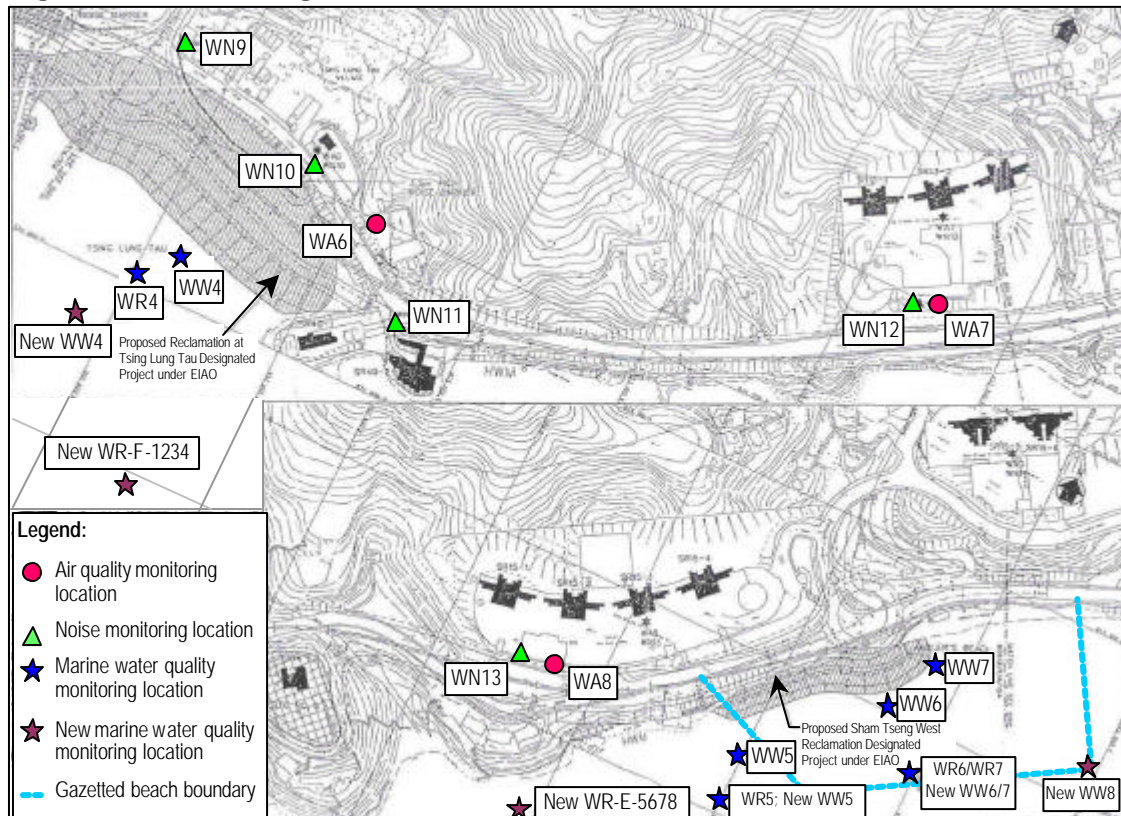
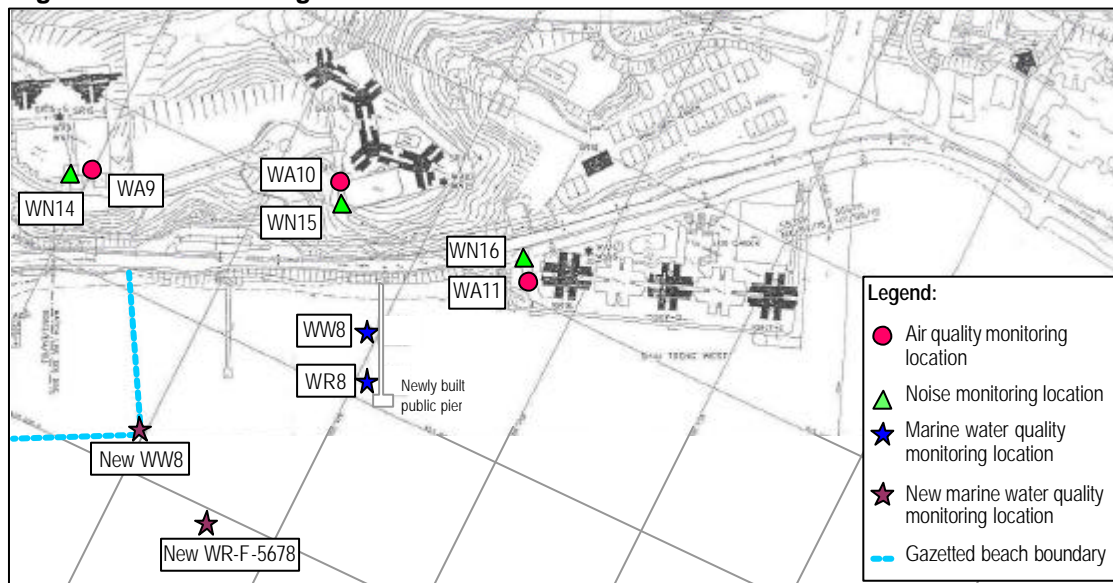
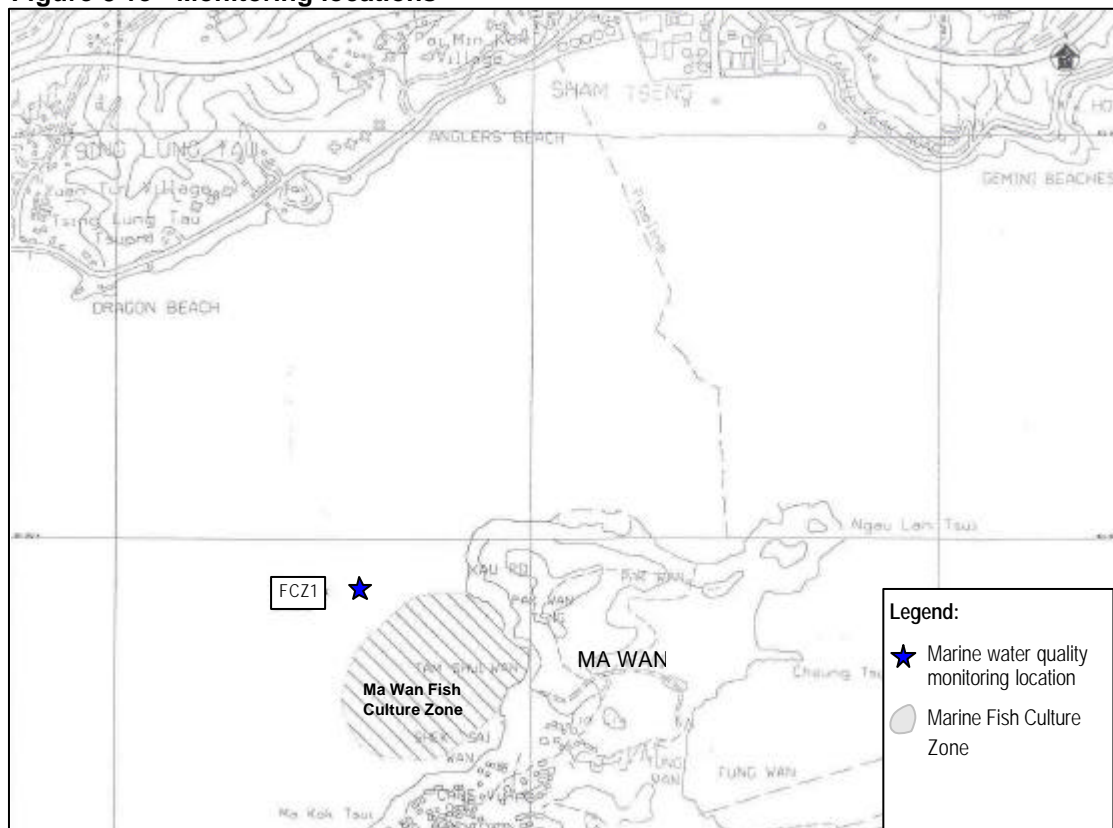
Figure 3-1b Monitoring locations**Figure 3-1c Monitoring locations**

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
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the IC(E) and the ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET Leader. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify the Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the IC(E) and the ER. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with the IC(E) and the Contractor on remedial actions required. 6. If exceedance continues, arrange meeting with the IC(E) and the ER. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET Leader. 2. Check the Contractor's working method. 3. Discuss with the ET Leader and the Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 2. Implement the agreed proposals. 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the ER and the EPD. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep the IC(E), the EPD and the ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET Leader. 2. Check the Contractor's working method. 3. Discuss with the ET Leader and the Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify the IC(E), the ER, the EPD and the Contractor. 2. Identify the source. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting the IC(E) and the ER to discuss the remedial actions to be taken. 7. Assess effectiveness of the Contractor's remedial actions and keep the IC(E), the EPD and the ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. In consultation with the IC(E), agree with the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 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. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

3.5.2 Construction Noise Impact

The action and limit levels for the construction noise extracted from the Baseline Monitoring Report^[2] 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) ⁽¹⁾
19:00 – 23:00 hours on all days and 07:00 – 23:00 on general holidays (including Sundays)		55 ⁽²⁾ / 70 ⁽³⁾
23:00 – 07:00 hours on all days		40 ⁽²⁾ / 55 ⁽³⁾

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

3.5.3 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
Mid-Ebb					
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.
Mid-Flood					
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
Trigger Value				
1. Trigger Value being surpassed for one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Conduct investigation to identify the source(s) of impact. 3. Check monitoring data, all plant, equipment, mitigation measures and the Contractor's working methods. 4. Inform the IC(E), ER, EPD, HyD, Contractor and AFCD (if required) the investigation results. 5. If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level" 	<ol style="list-style-type: none"> 1. If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level" 	<ol style="list-style-type: none"> 1. If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level" 	<ol style="list-style-type: none"> 1. If exceedance is confirmed as caused by the construction works, take relevant actions as detailed in "Action Level" and "Limit Level"
Action Level				
1. Action level being exceeded by one sampling day and is caused by the construction works	<ol style="list-style-type: none"> 1. Discuss the current mitigation measures with the IC(E) and the Contractor. 2. 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. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the current mitigation measures. 2. Assess the effectiveness of the current mitigation measures and advised the ER accordingly. 	<ol style="list-style-type: none"> 1. Discuss with the IC(E) on the current mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the exceedance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader and the IC(E) on the current mitigation measures.
2. Action level being exceeded by more than one consecutive days and is cause by the construction works	<ol style="list-style-type: none"> 1. Discuss mitigation measures with the IC(E) and the Contractor. 2. Ensure the proposed mitigation measures are implemented. 3. 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. 4. Prepare to increase the monitoring frequency to daily, if the Limit Level is exceeded as below. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the proposed mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E), the ET Leader and the Contractor on the proposed mitigation measures. 2. Make agreement on the proposed mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the consecutive exceedance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader and the IC(E) and propose mitigation measures to the IC(E) and the ER within 3 working day. 6. Implement the agreed mitigation measures.
Limit Level				
1. Limit level being exceeded by one sampling day and is cause by the construction works	<ol style="list-style-type: none"> 1. Discuss mitigation measures with the IC(E), the ER and the Contractor. 2. Ensure the proposed mitigation measures are implemented. 3. Prepare to increase the monitoring frequency to daily if further exceedances of the Limit Level are detected on the next sampling day 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the proposed mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E), the ET Leader and the Contractor on the proposed mitigation measures. 2. Request the Contractor to Critically review the working methods. 3. Make agreement on the proposed mitigation measures to be implemented. 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the exceedance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. 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. 6. Implement the agreed mitigation measures.

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	1. Discuss further mitigation measures with the IC(E), the ER and the Contractor. 2. Ensure the proposed further mitigation measures are implemented. 3. Increase the monitoring frequency to daily until no exceedance of the Limit Level.	1. Discuss with the ET Leader and the Contractor on the proposed further mitigation measures. 2. Review proposals on further mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented further mitigation measures.	1. Discuss with IC(E), the ET Leader and the Contractor on the proposed further mitigation measures. 2. Request the Contractor to Critically review the working methods. 3. Make agreement on the further mitigation measures to be implemented. 4. Assess the effectiveness of the implemented further mitigation measures. 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.	1. Inform the ER and confirm notification of the consecutive exceedance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 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. 6. Implement the agreed further mitigation measures. 7. As directed by the ER, slow down or stop all or part of the construction activities.

3.5.4 Landscape and Visual

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

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

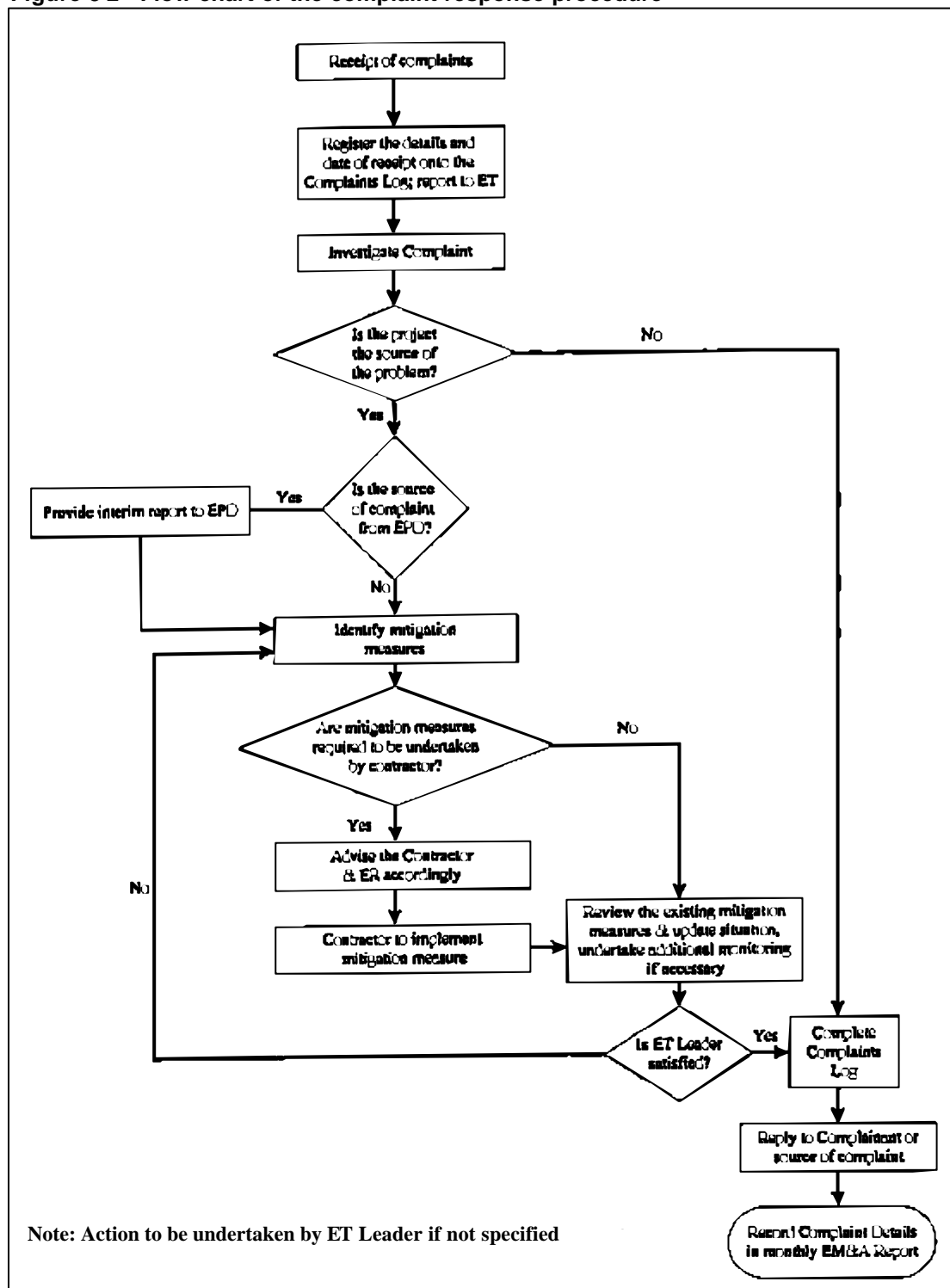
In accordance with the EM&A Manual, environmental complaints will be referred to the ET for initiation of the complaint investigation procedures. The ET will undertake the following procedures upon receipt of the complaints:

- 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>personal</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/m³
- v. calibration factor: 1.0
- vi. averaging time: 10s
- vii. battery charge: $\geq 50\%$
- viii. remaining memory: $\geq 10\%$

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

4.2.3 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 February 2005 for the HVS and 1 February 2005 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 sunny to fine during the air quality monitoring period in January 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

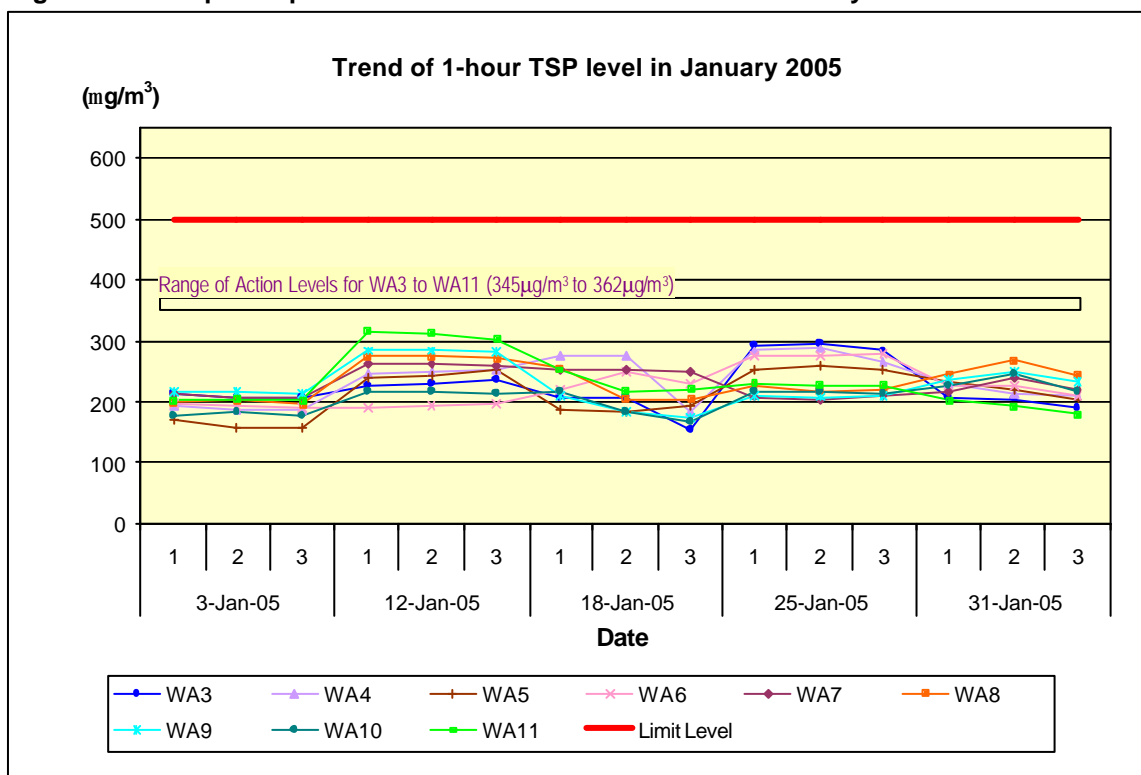
1-hour TSP

A total of 5 sets of 3 consecutive 1-hour TSP measurements had been taken on 3, 12, 18, 25 and 31 January 2005.

The highest 1-hour TSP level was $316.4\mu\text{g}/\text{m}^3$ recorded at Car Park of Lido Garden (WA11) on 12 January 2005 while the lowest 1-hour TSP level was $153.7\mu\text{g}/\text{m}^3$ recorded at G/F of regent Heights, Hong Kong Garden (WA3) on 18 January 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 January 2005



24-hour TSP

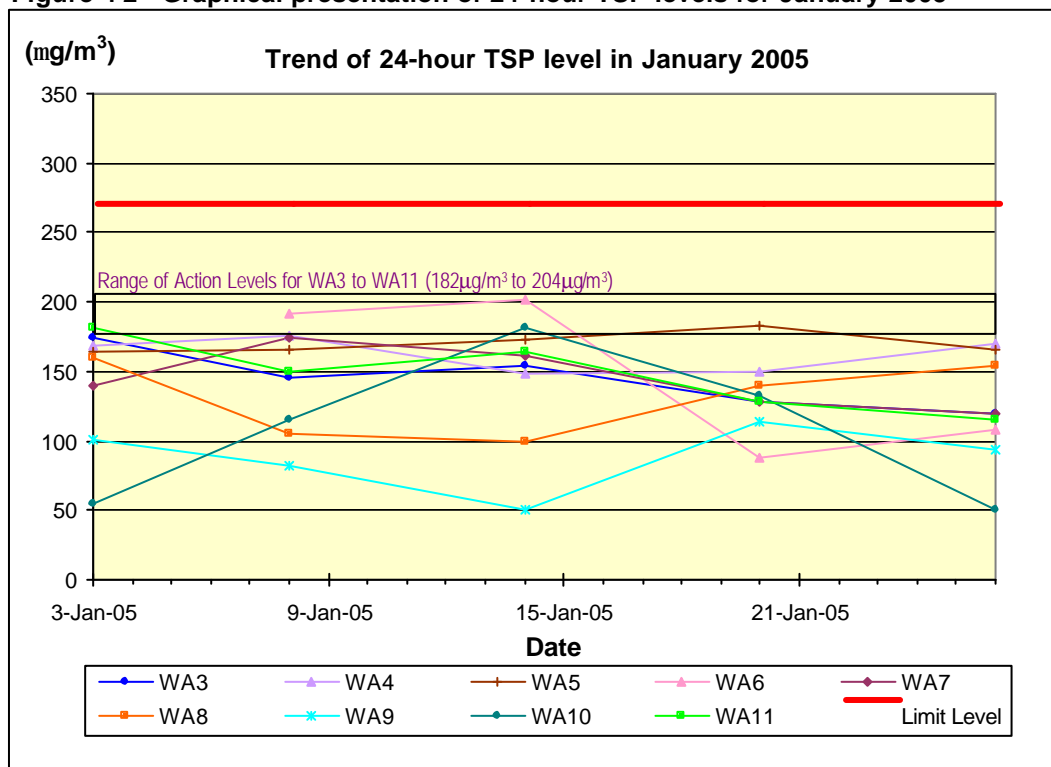
A total of 5 sets of 24-hour TSP measurement had been taken on 3, 8, 14, 20 and 26 January 2005.

The highest 24-hour TSP level was $202.2\mu\text{g}/\text{m}^3$ recorded at Tsing Lung Tau Temple (WA6) on 14 January 2005 while the lowest 24-hour TSP level was $50.5\mu\text{g}/\text{m}^3$ recorded at G/F, Regent Heights, Hong Kong Garden (WA10) on 26 January 2005. There was no exceedance of the A/L Levels during the monitoring period.

The HVS at Tin Hau Temple in Tsing Lung Tau (WA6) has been out of order during the period between 20 December 2004 and 8 January 2005. After investigation, it was found that the HVS was broken down because of aging problems of integral parts and unstable power supply. Mitigation measures and contingency plan was proposed and will be implemented if the similar situation is encountered. Details investigation report is given in Appendix G.

The detailed monitoring results of 24-hour TSP are given in Appendix H 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 January 2005



4.3.3 Wind Monitoring Data

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

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 J. 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 sunny to fine during the noise monitoring period in January 2005.

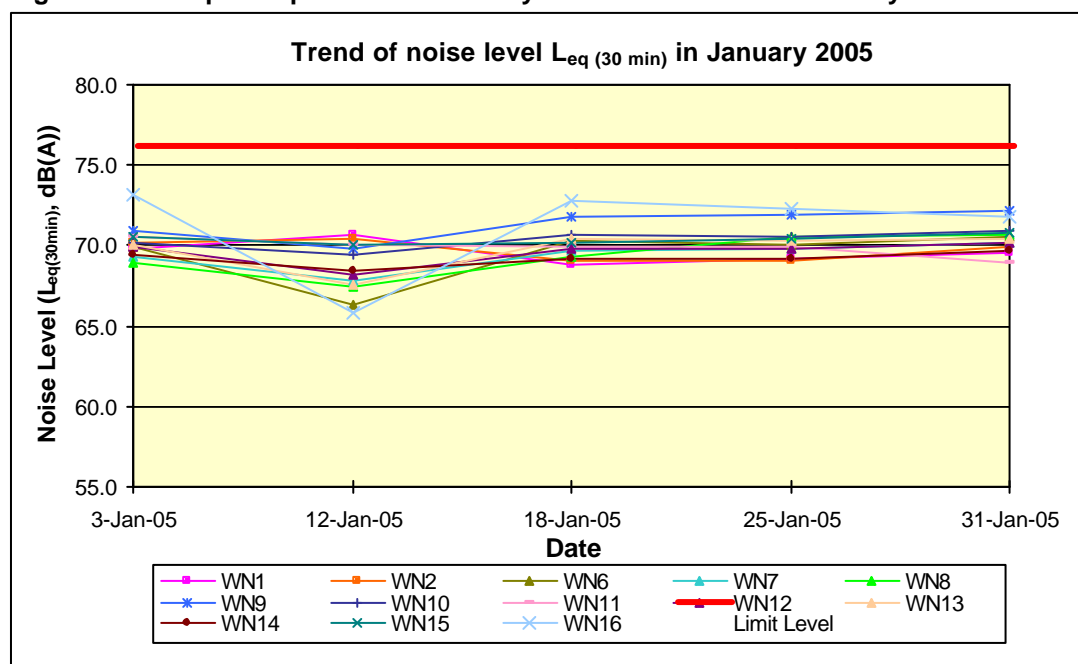
The construction site had been under normal operation during the noise monitoring period and no unusual operation was observed. Traffic noise had been noticed at some noise monitoring locations during the noise monitoring period.

5.3.2 Summary Results

A total of 5 set of noise measurement had been conducted between 0700-1900 hours on 3, 12, 18, 25 and 31 January 2005. The detailed construction noise monitoring results are given in Appendix K.

The highest noise level was 73dB(A) recorded at Lido Garden (WN16) on 3 January 2005 while the lowest noise level was 66dB(A) recorded at Lido Garden (WN16) on 12 January 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 January 2005



6. WATER QUALITY (DESIGNATED 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 6 and 20 January 2005 by a Registered Landscape Architect.

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

7.1 Summary of Inspection – 6 January 2005

7.1.1 Matters Arising from Previous Inspections

- The Contractor had cleared away the scrap-wood and garbage piles at retaining wall RW-01 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 garbage found at the temporary garbage collection area at Slope 6. The Contractor was reminded to keep the area clean and tidy.
- The Contractor had cleared away the garbage pile at the slope area behind noise enclosure NM-02 area. However, new garbage pile was found, the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the construction waste pile at ramp entrance of footbridge FB-01 area.
- The Contractor had tidied up the site area and cleared away the scrap-wood piles at Seawall 'C' area. However, new construction waste pile was found and the Contractor was requested to clear it away as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler's Beach was outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently.
- Dry surface conditions were observed at retaining wall RW13 area and footbridge FB-03 area. The Contractor was reminded to carry out more frequent watering of the site to prevent dust nuisance.

7.1.2 Site Clearance and Formation Works

- Existing tree bark at Slope 6SW-D/C186 was found damaged. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- Waste container bin at Seawall 'B' area was found to be full. The Contractor was requested to clear it away as soon as possible.
- Exposed soil slope surface was found at BPRW14 area. The Contractor was requested to provide temporary cover 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.
- The Contractor was reminded to carry out more frequent watering of the site during dry periods to prevent dust nuisance.

7.2 Summary of Inspection – 23 January 2005

7.2.1 Matters Arising from Previous Inspections

- The Contractor had emptied the waste container bin at retaining wall RW-01 area.
- The Contractor had cleared away the garbage pile at the slope area behind noise enclosure NM-02 area.
- The Contractor had cleared away the construction waste pile at Seawall ‘C’ area. However, the waste container bin was found to be full, and the Contractor was requested to clear it away as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler’s Beach was outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently.
- 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 emptied the waste container bin at Seawall ‘B’ area.
- Dry surface conditions were observed at noise enclosure NM-02 area, Seawall ‘C’, and footbridge FB-03 area. 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

- Scattered construction waste piles was found at RW-01 area. The Contractor was requested to clear it away as soon as possible.
- Garbage piles were found at footbridge FB-02 area. The Contractor was requested to clear it away as soon as possible.
- Scattered empty cement bags were found at BPRW14 area. The Contractor was requested to clear it away as soon as possible.

- Construction waste pile was found opposite Lido Garden 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 January is 100%.

7.4 Audit Schedule

7.4.1 Audit Schedule for February 2005

- The next audits are schedule to be conducted on 3rd and 17th February 2005.

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

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 6, 13, 20 and 27 January 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 January 2005

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
Water Quality				
16-Dec-04	No wheel washing facilities was found in site entrance at Seawall B east end.	To provide wheel wash facilities.	The site entrance was closed for road paving works.	20-Jan-05
6-Jan-05	Stagnant water was found at trench of RW-C.	To drain out the stagnant water.	Ponding area was backfilled.	27-Jan-05
13-Jan-05	Wheel washing facilities were not yet provided at W11.	To provide facilities once the site entrance is active.	Wheel washing facilities were provided.	20-Jan-05
13-Jan-05	Mud trails were found outside site entrance W24.	To clean up the road.	Mud trails were cleaned.	20-Jan-05
20-Jan-05	Mud trails were found at slope 6 and W15 site entrance.	To clean up the road.	Mud trails were cleaned.	27-Jan-05
27-Jan-05	Mud trails were found at site entrance W1 and W29.	To clean up the road.	Mud trails were cleaned.	3-Feb-05
Air Quality				
02-Dec-04	Exposed slope at FB03 was uncovered.	To cover the slope with tarpaulin sheet.	Exposed slope was hydroseeded.	13-Jan-05
16-Dec-04	Exposed slope behind NM02 was uncovered.	To cover the slope with tarpaulin sheet.	Exposed slope was under works.	13-Jan-05
23-Dec-04	Open stockpile at Seawall B was not covered.	To cover the slope with tarpaulin sheet.	Open stockpiles were covered.	27-Jan-05
6-Jan-05	Rock breaking at Outfall IA and Seawall C were not sprayed with water.	To water the breaking surface.	Rock breaking was sprayed with water.	13-Jan-05
27-Jan-05	Haul roads at RW01 and W23 were dry and dusty.	To water the road.	Haul roads were watered.	3-Feb-05
Construction Noise				
30-Dec-04	No noise label found on air compressor at RW01 east end and slope near FB02	To provide the noise label.	Noise label was provided.	13-Jan-05
06-Jan-05	Air compressors at NM02 and RW14 were not provided with noise label.	To provide noise label for air compressors.	Noise labels were provided.	13-Jan-05
06-Jan-05	Doors of air compressors at NM02 were not closed.	To close the doors of air compressors.	Doors of air compressors were closed.	13-Jan-05

Date of Issue Raised	Observation	Advice from EA	CT's Response / Environmental Outcomes	Closing Date
20-Jan-05	Air compressor at RW74 was not provided with noise label.	To provide noise label for air compressor.	Noise label was provided.	27-Jan-05
Handling of Wastes and Chemicals				
06-Jan-05	Waste accumulated near W24.	To remove waste from site.	Waste was removed from site.	13-Jan-05
06-Jan-05	Contractor was reminded to collect chemical waste in drip trays at RW01.	To collect chemical wastes.	Chemical waste was collected.	13-Jan-05
20-Jan-05	Chemicals were not placed in drip tray at RW74.	To provide drip tray.	Drip tray was provided.	27-Jan-05
20-Jan-05	A few diesel containers were placed on bare ground next to an air compressor at RW01.	To provide drip tray.	Drip tray was provided.	27-Jan-05
27-Jan-05	Waste accumulated at NM02.	To remove waste from site.	Waste was removed from site.	3-Feb-05
27-Jan-05	Steel waste was not segregated from C&D waste at NM02.	To implement waste segregation.	Steel waste was segregated from C&D waste.	3-Feb-05
27-Jan-05	Oil stains were found under the Backhoe near Sea Crest Villa Phase 4.	To remove oil stains.	Oil stains were removed.	3-Feb-05

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 January 2005

Type of waste or material		Disposal at	No. of loads or quantities	Remarks
C&D waste		WENT Landfill	27 loads	--
C&D material		Public Filling Area in Tuen Mun	2078 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 January 2005. A log record on the environmental complaints is given in Appendix M 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
2	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

... ALL CO-ORDINATES ARE IN ACCORDANCE WITH THE 1980 HONG KONG METRIC GRID SYSTEM.

Minor sign board
(size: 7.2m (L) x 1.5m (width))

CONTRACT² DRAWING

	2nd Issue	Contract Issue	SP	SP	31/01
B					
A	First Issue	Tender Issue	SP	DC PS	JUN 01
Rev	Issue	Amendment	Br	Chk App	Date



Major Works Project Management Office,
Highways Department,
Hong Kong

Project No.	65531H	Contract No.	HY / 99 / 18
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Mouchel Halcrow JV

Sub-Consultants
ACL Asia, MYA Asia Ltd.,

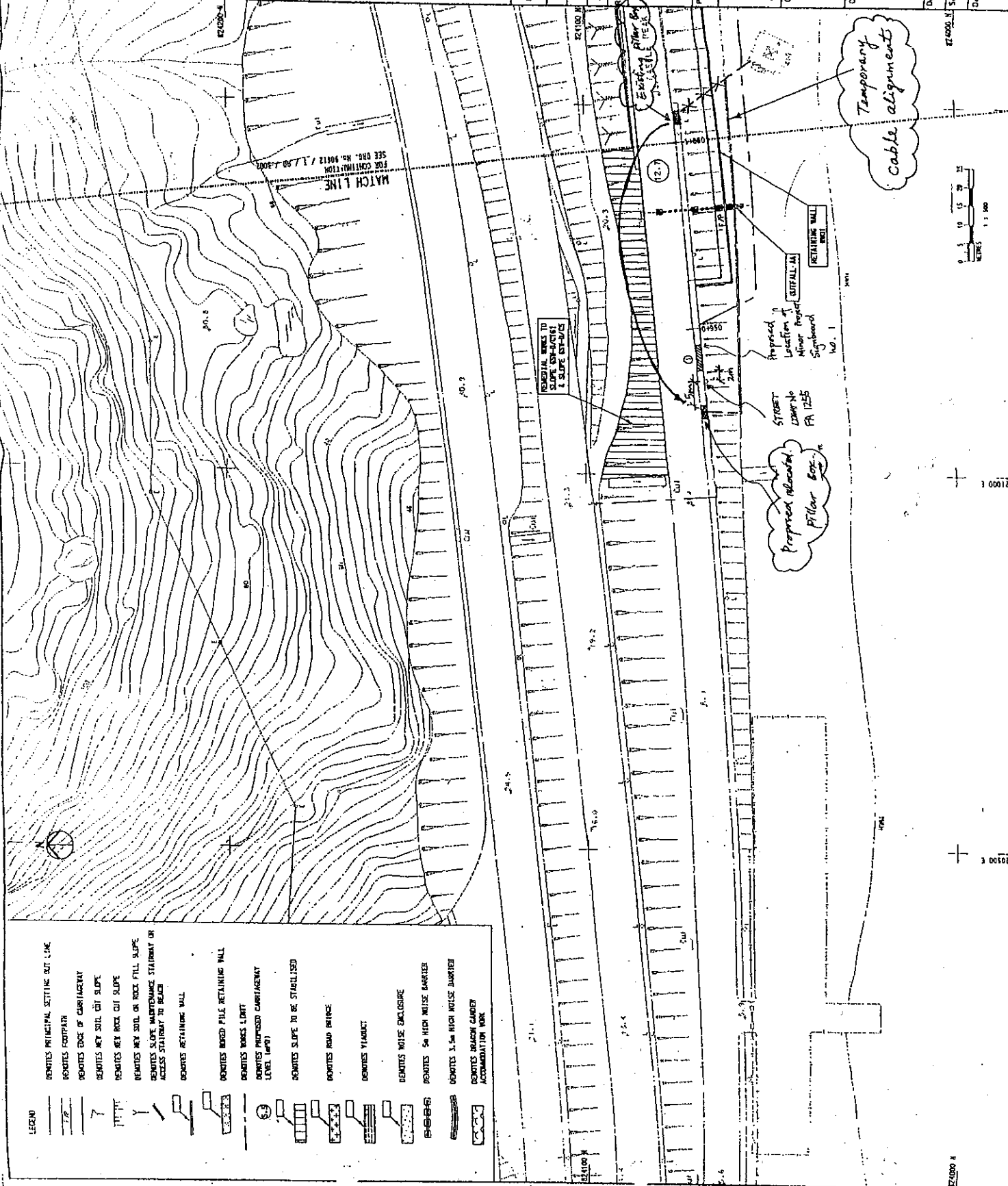
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Townland Consultants Ltd., Chesterton Petty Ltd.
Contract Title

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

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CONTRACT DRAWING

B	2nd issue	Contract issue	SP	5/10/01
A	1st issue	Tender issue	SP	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
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Sub-Consultants

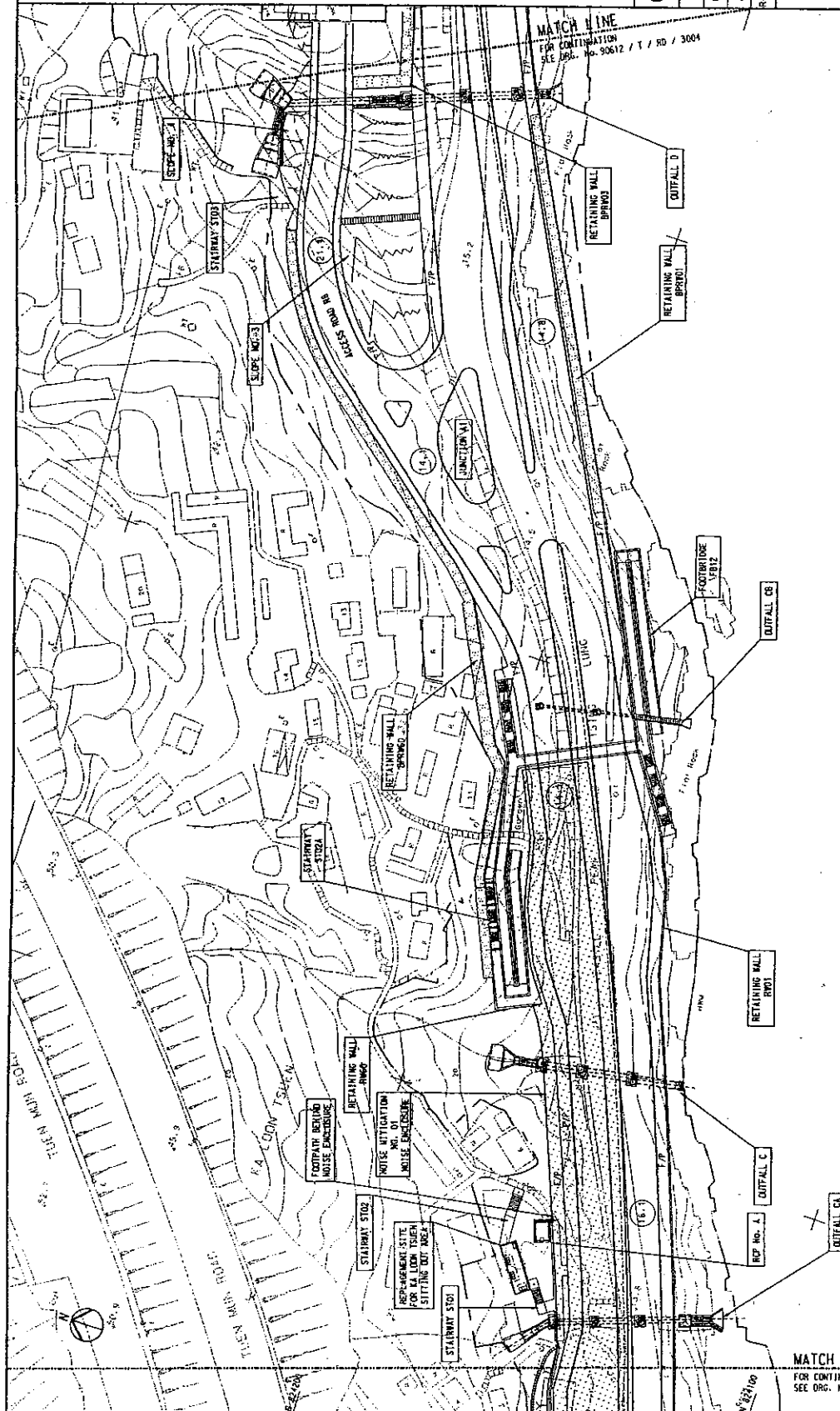
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Castle Peak Road Improvement Between
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

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1. FOR GENERAL NOTES AND LEGEND REFER TO
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Highways Department,
Hong Kong

Project No.	6553TH	Contract No.	HY / 99 / 18
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Sub-Consultants
ACL Asia, MVA Asia L

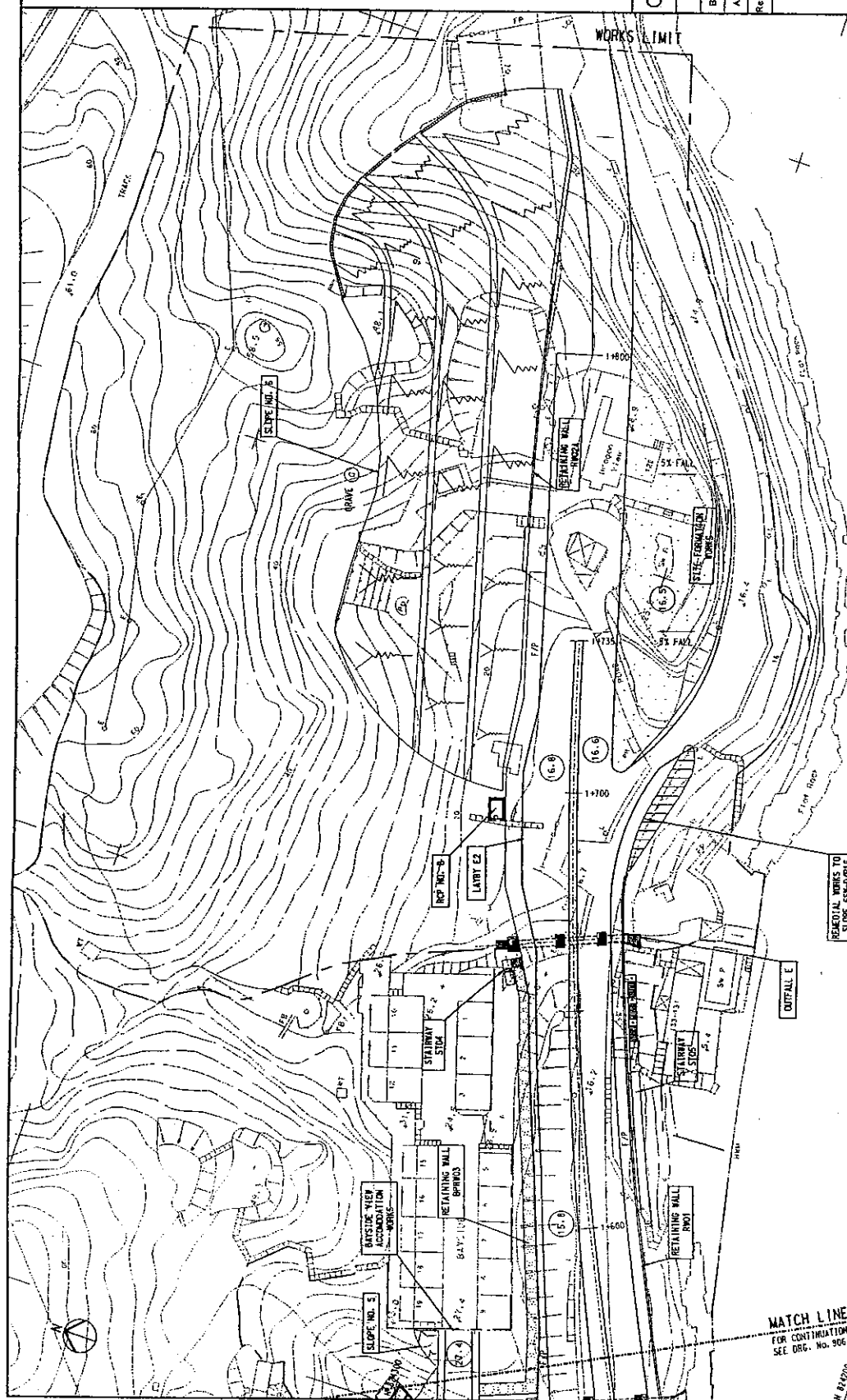
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Castle Peak Road Improvement Between
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

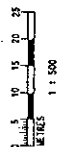
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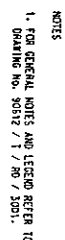
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Highways Department,
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Contract Title
Townland Consultants Ltd, Chesterston Petty Ltd.

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NOTES

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CONTRACT DRAWING

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Major Works Project Management Office,
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Hong Kong

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

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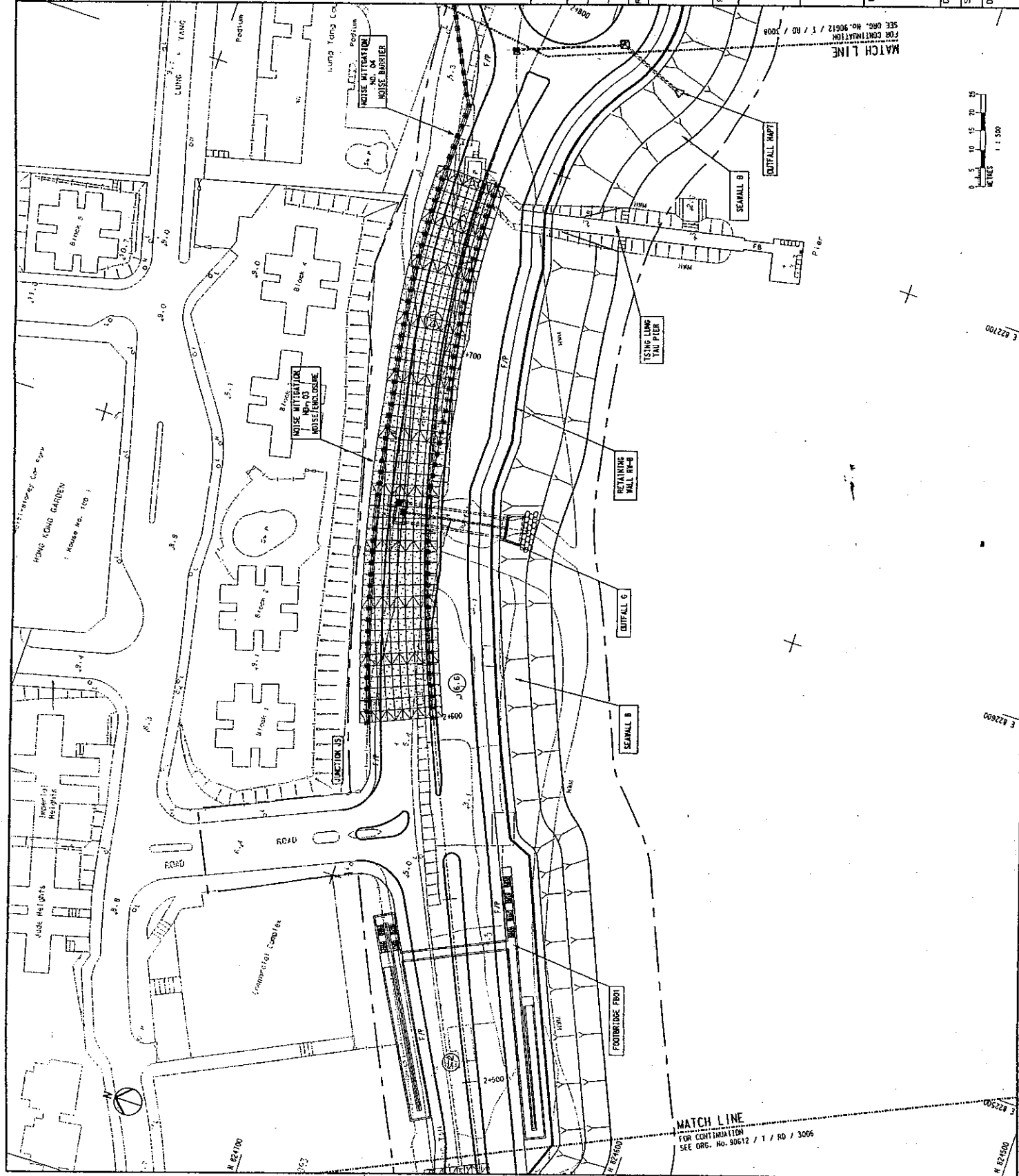
Sub-Consultants
ACL Asia, MVA Asia Ltd.,
Townland Consultants Ltd., Chesterton Pelly Ltd.

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

Drawing Title

SCHEME GENERAL ARRANGEMENT
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NOTES

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

CONTRACT DRAWING

2nd Issue	Contract Issue	SP/CD	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1	12/1	13/1	14/1	15/1	16/1	17/1	18/1	19/1	20/1	21/1	22/1	23/1	24/1	25/1	26/1	27/1	28/1	29/1	30/1	31/1	32/1	33/1	34/1	35/1	36/1	37/1	38/1	39/1	40/1	41/1	42/1	43/1	44/1	45/1	46/1	47/1	48/1	49/1	50/1	51/1	52/1	53/1	54/1	55/1	56/1	57/1	58/1	59/1	60/1	61/1	62/1	63/1	64/1	65/1	66/1	67/1	68/1	69/1	70/1	71/1	72/1	73/1	74/1	75/1	76/1	77/1	78/1	79/1	80/1	81/1	82/1	83/1	84/1	85/1	86/1	87/1	88/1	89/1	90/1	91/1	92/1	93/1	94/1	95/1	96/1	97/1	98/1	99/1	100/1	101/1	102/1	103/1	104/1	105/1	106/1	107/1	108/1	109/1	110/1	111/1	112/1	113/1	114/1	115/1	116/1	117/1	118/1	119/1	120/1	121/1	122/1	123/1	124/1	125/1	126/1	127/1	128/1	129/1	130/1	131/1	132/1	133/1	134/1	135/1	136/1	137/1	138/1	139/1	140/1	141/1	142/1	143/1	144/1	145/1	146/1	147/1	148/1	149/1	150/1	151/1	152/1	153/1	154/1	155/1	156/1	157/1	158/1	159/1	160/1	161/1	162/1	163/1	164/1	165/1	166/1	167/1	168/1	169/1	170/1	171/1	172/1	173/1	174/1	175/1	176/1	177/1	178/1	179/1	180/1	181/1	182/1	183/1	184/1	185/1	186/1	187/1	188/1	189/1	190/1	191/1	192/1	193/1	194/1	195/1	196/1	197/1	198/1	199/1	200/1	201/1	202/1	203/1	204/1	205/1	206/1	207/1	208/1	209/1	210/1	211/1	212/1	213/1	214/1	215/1	216/1	217/1	218/1	219/1	220/1	221/1	222/1	223/1	224/1	225/1	226/1	227/1	228/1	229/1	230/1	231/1	232/1	233/1	234/1	235/1	236/1	237/1	238/1	239/1	240/1	241/1	242/1	243/1	244/1	245/1	246/1	247/1	248/1	249/1	250/1	251/1	252/1	253/1	254/1	255/1	256/1	257/1	258/1	259/1	260/1	261/1	262/1	263/1	264/1	265/1	266/1	267/1	268/1	269/1	270/1	271/1	272/1	273/1	274/1	275/1	276/1	277/1	278/1	279/1	280/1	281/1	282/1	283/1	284/1	285/1	286/1	287/1	288/1	289/1	290/1	291/1	292/1	293/1	294/1	295/1	296/1	297/1	298/1	299/1	300/1	301/1	302/1	303/1	304/1	305/1	306/1	307/1	308/1	309/1	310/1	311/1	312/1	313/1	314/1	315/1	316/1	317/1	318/1	319/1	320/1	321/1	322/1	323/1	324/1	325/1	326/1	327/1	328/1	329/1	330/1	331/1	332/1	333/1	334/1	335/1	336/1	337/1	338/1	339/1	340/1	341/1	342/1	343/1	344/1	345/1	346/1	347/1	348/1	349/1	350/1	351/1	352/1	353/1	354/1	355/1	356/1	357/1	358/1	359/1	360/1	361/1	362/1	363/1	364/1	365/1	366/1	367/1	368/1	369/1	370/1	371/1	372/1	373/1	374/1	375/1	376/1	377/1	378/1	379/1	380/1	381/1	382/1	383/1	384/1	385/1	386/1	387/1	388/1	389/1	390/1	391/1	392/1	393/1	394/1	395/1	396/1	397/1	398/1	399/1	400/1	401/1	402/1	403/1	404/1	405/1	406/1	407/1	408/1	409/1	410/1	411/1	412/1	413/1	414/1	415/1	416/1	417/1	418/1	419/1	420/1	421/1	422/1	423/1	424/1	425/1	426/1	427/1	428/1	429/1	430/1	431/1	432/1	433/1	434/1	435/1	436/1	437/1	438/1	439/1	440/1	441/1	442/1	443/1	444/1	445/1	446/1	447/1	448/1	449/1	450/1	451/1	452/1	453/1	454/1	455/1	456/1	457/1	458/1	459/1	460/1	461/1	462/1	463/1	464/1	465/1	466/1	467/1	468/1	469/1	470/1	471/1	472/1	473/1	474/1	475/1	476/1	477/1	478/1	479/1	480/1	481/1	482/1	483/1	484/1	485/1	486/1	487/1	488/1	489/1	490/1	491/1	492/1	493/1	494/1	495/1	496/1	497/1	498/1	499/1	500/1	501/1	502/1	503/1	504/1	505/1	506/1	507/1	508/1	509/1	510/1	511/1	512/1	513/1	514/1	515/1	516/1	517/1	518/1	519/1	520/1	521/1	522/1	523/1	524/1	525/1	526/1	527/1	528/1	529/1	530/1	531/1	532/1	533/1	534/1	535/1	536/1	537/1	538/1	539/1	540/1	541/1	542/1	543/1	544/1	545/1	546/1	547/1	548/1	549/1	550/1	551/1	552/1	553/1	554/1	555/1	556/1	557/1	558/1	559/1	560/1	561/1	562/1	563/1	564/1	565/1	566/1	567/1	568/1	569/1	570/1	571/1	572/1	573/1	574/1	575/1	576/1	577/1	578/1	579/1	580/1	581/1	582/1	583/1	584/1	585/1	586/1	587/1	588/1	589/1	590/1	591/1	592/1	593/1	594/1	595/1	596/1	597/1	598/1	599/1	600/1	601/1	602/1	603/1	604/1	605/1	606/1	607/1	608/1	609/1	610/1	611/1	612/1	613/1	614/1	615/1	616/1	617/1	618/1	619/1	620/1	621/1	622/1	623/1	624/1	625/1	626/1	627/1	628/1	629/1	630/1	631/1	632/1	633/1	634/1	635/1	636/1	637/1	638/1	639/1	640/1	641/1	642/1	643/1	644/1	645/1	646/1	647/1	648/1	649/1	650/1	651/1	652/1	653/1	654/1	655/1	656/1	657/1	658/1	659/1	660/1	661/1	662/1	663/1	664/1	665/1	666/1	667/1	668/1	669/1	670/1	671/1	672/1	673/1	674/1	675/1	676/1	677/1	678/1	679/1	680/1	681/1	682/1	683/1	684/1	685/1	686/1	687/1	688/1	689/1	690/1	691/1	692/1	693/1	694/1	695/1	696/1	697/1	698/1	699/1	700/1	701/1	702/1	703/1	704/1	705/1	706/1	707/1	708/1	709/1	710/1	711/1	712/1	713/1	714/1	715/1	716/1	717/1	718/1	719/1	720/1	721/1	722/1	723/1	724/1	725/1	726/1	727/1	728/1	729/1	730/1	731/1	732/1	733/1	734/1	735/1	736/1	737/1	738/1	739/1	740/1	741/1	742/1	743/1	744/1	745/1	746/1	747/1	748/1	749/1	750/1	751/1	752/1	753/1	754/1	755/1	756/1	757/1	758/1	759/1	760/1	761/1	762/1	763/1	764/1	765/1	766/1	767/1	768/1	769/1	770/1	771/1	772/1	773/1	774/1	775/1	776/1	777/1	778/1	779/1	780/1	781/1	782/1	783/1	784/1	785/1	786/1	787/1	788/1	789/1	790/1	791/1	792/1	793/1	794/1	795/1	796/1	797/1	798/1	799/1	800/1	801/1	802/1	803/1	804/1	805/1	806/1	807/1	808/1	809/1	810/1	811/1	812/1	813/1	814/1	815/1	816/1	817/1	818/1	819/1	820/1	821/1	822/1	823/1	824/1	825/1	826/1	827/1	828/1	829/1	830/1	831/1	832/1	833/1	834/1	835/1	836/1	837/1	838/1	839/1	840/1	841/1	842/1	843/1	844/1	845/1	846/1	847/1	848/1	849/1	85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NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. S0612 / 1 / RD / 3001.

CONTRACT DRAWING

2nd Issue	Contract Issue	SP	PC	PS	JUN ON
A	First Tender Issue	SP	PC	PS	JUN ON
Rev	Issue	By	Chk	App	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.

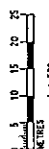
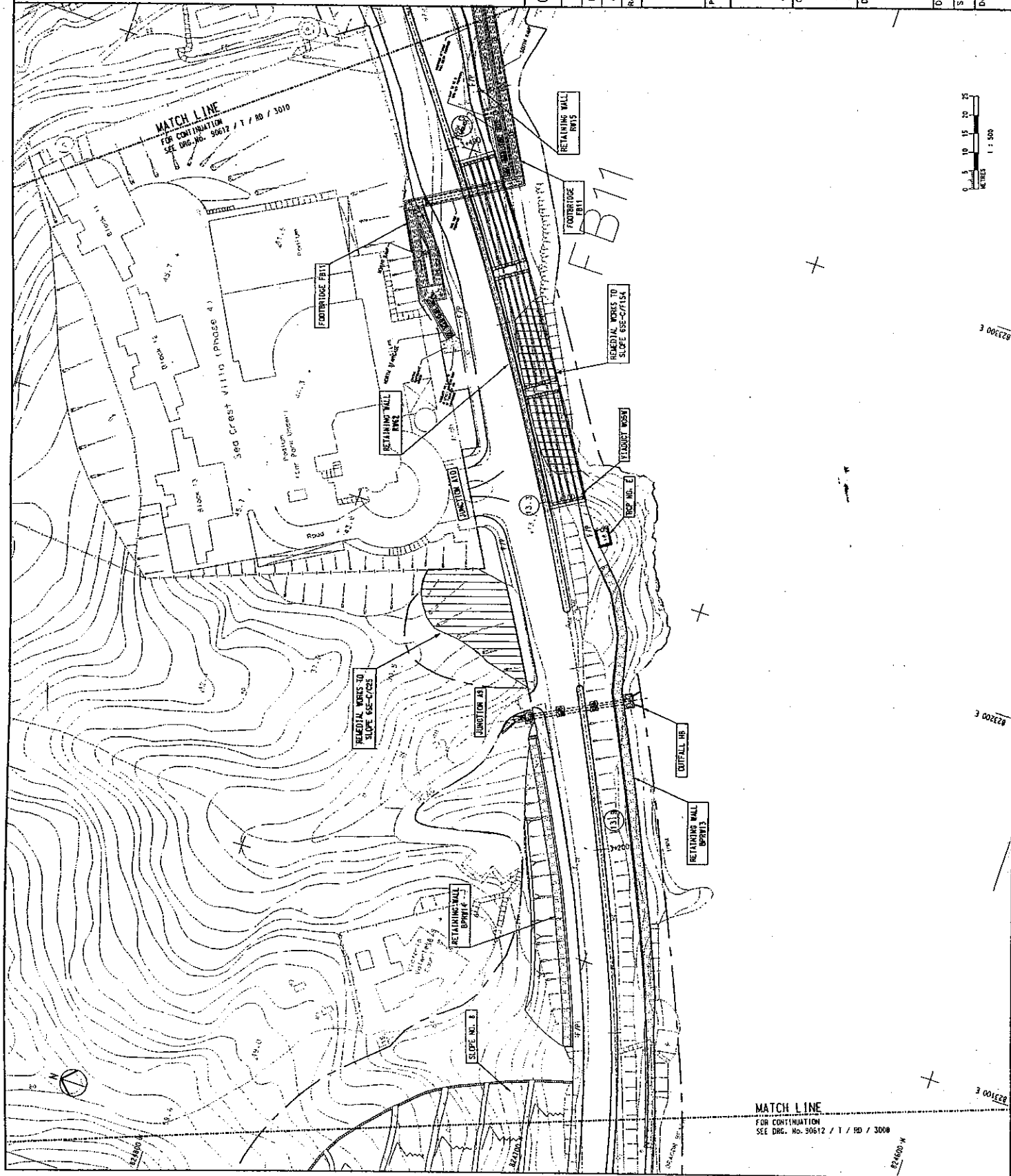
Contract Title
Castle Peak Road Improvement Between
Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Drawing Title

SCHEME GENERAL ARRANGEMENT
CHAINAGE 3130 TO 3430

Drawn	WDD	Checked	JWTL	Approved	PS
Scale	1:500	CAD File No.	RD3009.DGN	Date	JUNE 2001
Date issued	JUNE 2001	Drawing No.	90612/1/RD/3009	Rev	B

05 MAY 2001



B23300 E

B23300 E

B23300 E

MATCH LINE
FOR CONTINUATION
SEE DRG. NO. 90612 / 1 / RD / 3008

B24600 W

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

CONTRACT DRAWING

2nd Contract Issue		S.P. / B.C. / A. / 3/4/01	
Issue	First	SP	OC PS JUN 01
Issue	Tender Issue	SP	OC PS JUN 01
Rev	Issue	Arrangement	By CHM App Date
Rev	Issue	Arrangement	By CHM App Date

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

Project No. 65537H Contract No. HY / 99 / 18

Mouchel Halcrow JV

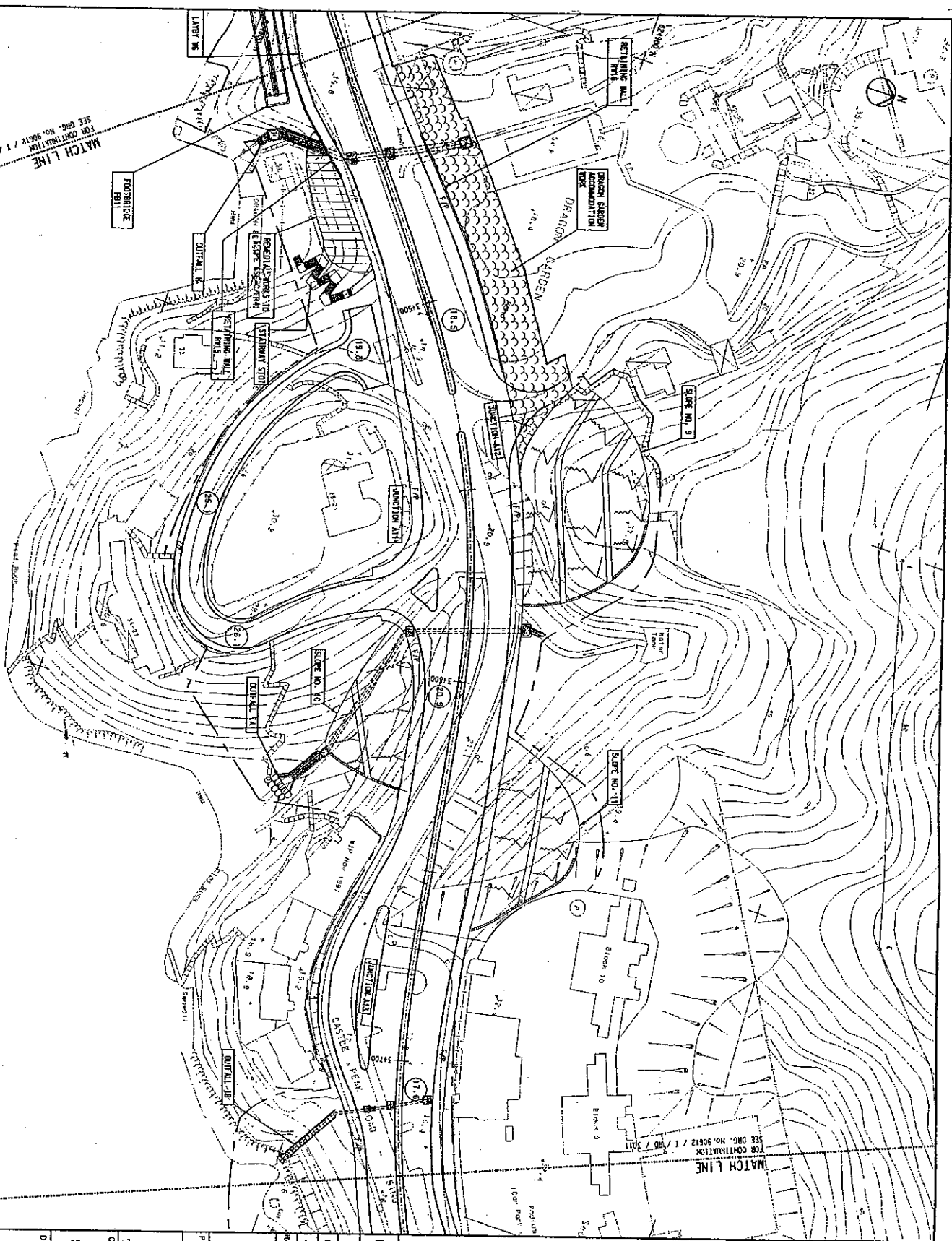
Sub-Consultants
ACL Asia JVA Asia Ltd.,
Towland Consultants Ltd., Chesterton Pelly Ltd.

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

Drawing Title

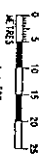
SCHEME GENERAL ARRANGEMENT
CHAINAGE 3430 TO 3730

Drawn	Checked	JWL	Approved	PS
WOD				
Scale	1:500	CAD FILE NO.	RD3010.DGN	JUN 2001
Date Issued	JUNE 2001	Drawing No.	90612/1/RD/3010	B



FOR CONTINUATION
SEE DRG. NO. 90612 / 1 / RD / 3003

FOR CONTINUATION
SEE DRG. NO. 90612 / 1 / RD / 3011



1. FOR GENERAL NOTES AND LEGEND REFER
TO DRAWING NO. 90612 / 7 / RD / 3001.

CONTRACT DRAWING

B	2nd issue	Contract issue	SP	DC	PS	JUN 01	31 Jul
A	First issue	Tender issue	SP	DC	PS	JUN 01	
	Issue Status	Amendment	By	Chk.	App	Date	

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

Project No.	6553TH	Contract No.	HY / 99 / 18
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Mouchel Halcrow - JV

Sub-Consultants
ACL Asia, MVA Asia Ltd.,

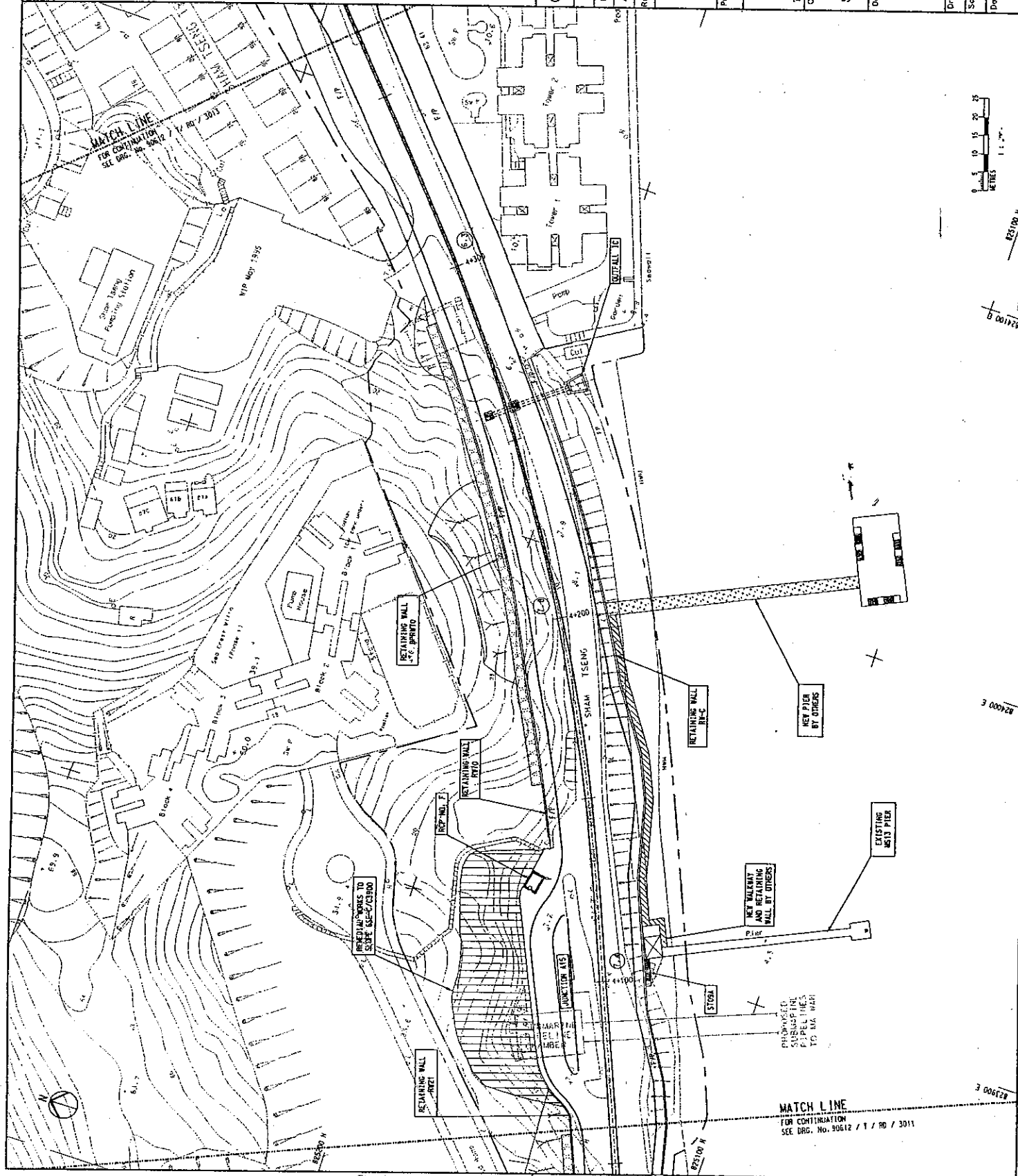
Contract Title	Townland Consultants Ltd., Chesterton Petty Ltd.

Castle Peak Road Improvement Between

Rowing Title

SCHEME GENERAL ARRANGEMENT
CHAINAGE 4050 TO 4370

own	WPD	Checked	JWTL	Approved	PS
Size 11,500		CAD File No. RD3072.DGN	Date	JUNE 2001	
File Issued		Drawing No.	Rev		
JUNE 2001		90612/T/RD/3012	B		



1. FOR GENERAL NOTES AND LEGEND REFER
TO DRAWING NO. 50612 / T / RD / 3001.

2nd issue	Contract issue	SP	DC	5/11/20
Final issue	Tender issue	SP	DC	PS JUN 0
Issue Status	Amendment	By Cht	App	Date

SA

Contract No. HY / 00 / 18

Sub-Consultant:

ACL Asia, MYA Asia Ltd.
Consultants Ltd. Chester

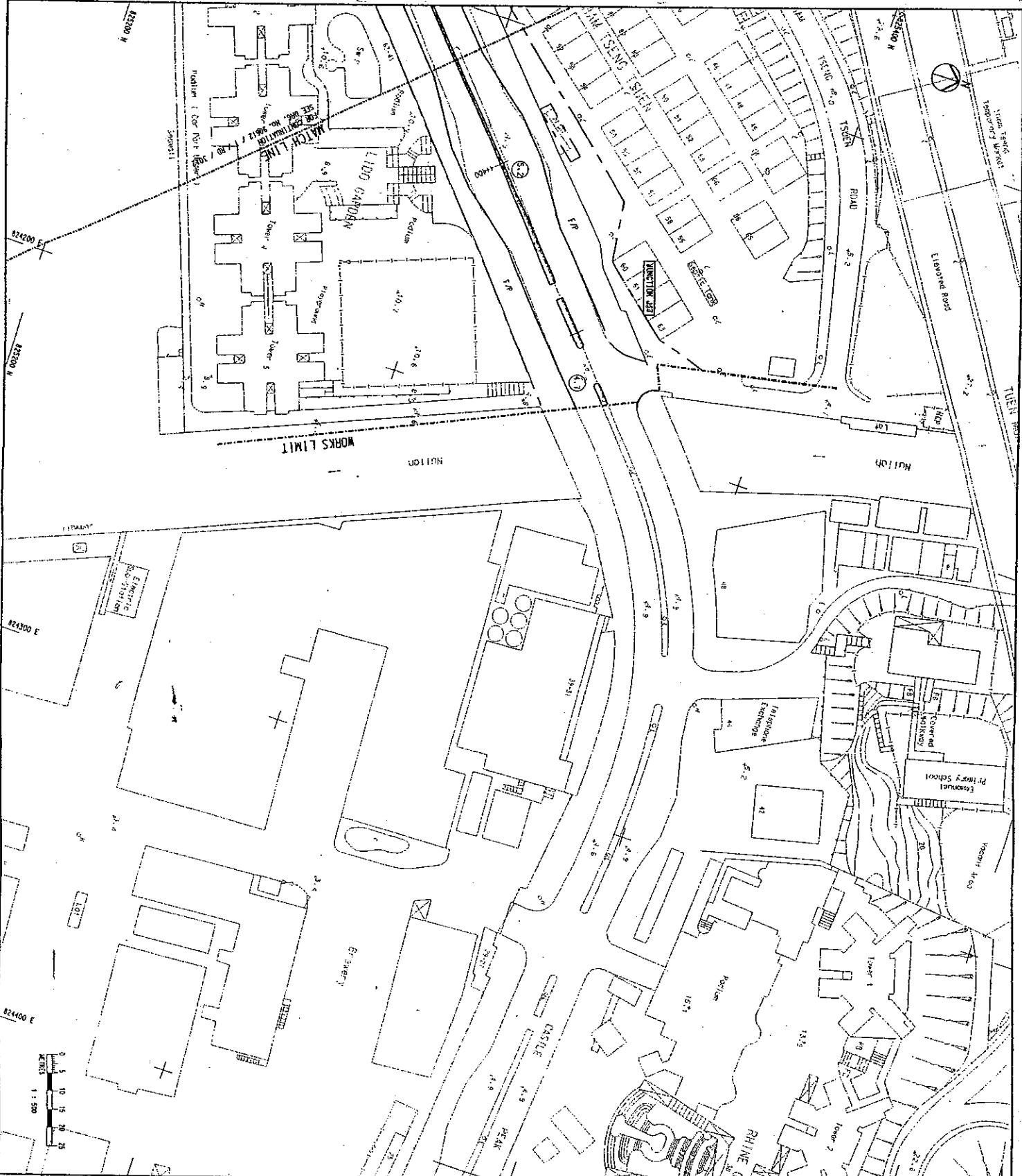
Contract Title

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

Drawing Tile

SCHEME GENERAL ARRANGEMENT
CHAINAGE 4370 TO 4470

Drawn	WDB	Checked	JWL	Approved	PS
Scale	1:500	CAD File No.	RD3013.00EN	Date	JUNE 2001
Date Issued	JUNE 2001	Drawing No.	90612/T/RD/3013	Rev	B



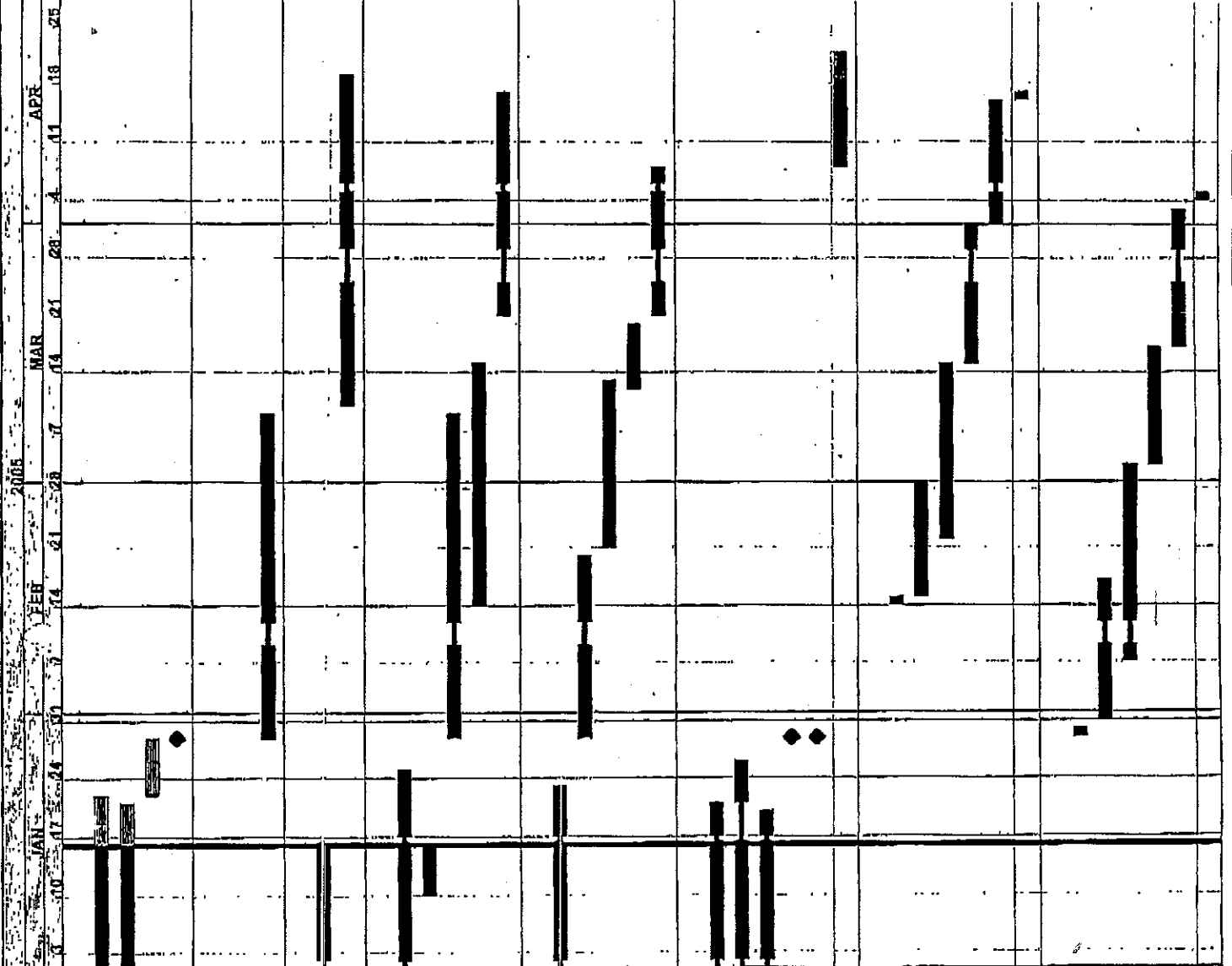
APPENDIX B

Construction programme

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	JAN 01	JAN 07	JAN 24	FEB 01	FEB 14	2005 FEB 21	MAR 07	MAR 14	MAR 21	APR 04	APR 11	APR 18	APR 25
Proposed Utility Works																		
01-12039	Proposed CLP on E/B C-way CH1060-1205	8	10JAN05A	20JAN05	-138													
01-1206	Proposed CATV on W/B C-way CH0950-1075	6	10JAN05A	15JAN05A														
01-120362	Proposed HT on E/B C-way CH1060-1100	4	17JAN05	20JAN05	-138													
01-12064	Proposed CATV on W/B C-way CH1075-1205	6	24JAN05	29JAN05	-128													
01-120712	HKT Cross Rd. Ducts at W/B CH1285	4	07APR05	11APR05	-88													
01-120722	CLP Cross Rd. Ducts at W/B CH1345	4	12APR05	15APR05	-88													
01-12071	Proposed HKT on W/B C-way CH1205-1464	13	15APR05	30APR05	-82													
01-12084	Proposed HKT on W/B C-way CH1205-1464	13	15APR05	30APR05	-82													
3. Roadworks																		
Earthworks																		
03-3010	Backfill behind RWD1-CH1350 to 1464	30	13SEP04A	26JAN05	-87													
03-3013	Backfill behind RWD1-CH1554-1700	30	15APR05	20MAY05	-88													
Drainage Works																		
03-3134	Drainage at Access Road R8	30	10MAY04A	08JAN05A														
03-3135	Drainage along W/B C-way bet CH1075-1205	26	11OCT04A	19JAN05	-146													
03-31312	Drainage along E/B C-way bet CH1464-1550	20	10JAN05A	27JAN05	37													
03-3121	Drainage along W/B C-way bet CH1205-1464	44	24FEB05	20APR05	-88													
Pipe Works (Local Supply Watermain)																		
03-3154	Pipe Works at Access Road R8	20	02AUG04A	07JAN05A														
Road Works																		
03-3218	Lay sub-base, kerbs & bedding; Access Rd R8	12	04OCT04A	20JAN05	-3													
03-32182	Construct rd pave & ftr. Access Rd R8	12	22NOV04A	25JAN05	-3													
03-32130	Break the temp. footpath at E/B CH1060-1205	12	03JAN05A	13JAN05A														
03-32180	Demolish extel. RW2A & install Gate Bay Side VI	38	10JAN05A	22FEB05	-17													
03-31140	Construct kerbs/ft. W/B CH950-1075	10	17JAN05	27JAN05	-148													
03-31144	Construct rd pave & ftr. W/B CH1075-1205	10	19JAN05	28JAN05	-148													
03-31142	Formation, Sub-base; W/B CH1150-1205	6	20JAN05	26JAN05	-148													
03-321302	Construct Centre Divider at CH1600-1140	10	24JAN05	03FEB05	-150													
03-31105	Rd finishes, marking & lighting; W/B CH0950-1205	4	28JAN05	01FEB05	-148													
03-31143	Divert Traffic to W/B Pema C'Way CH1075-1205	0		01FEB05	-148													
03-32131	Lay sub-base, kerbs/footpath; E/B CH1100-1205	12	02FEB05	18FEB05	-148													
03-321304	Consl. Centre Divider at CH1050-1100/1140-1170	10	04FEB05	18FEB05	-150													
03-32134	Rd finishes, marking & lighting; E/B CH0950-1205	12	15FEB05	28FEB05	-150													
03-32184	Rd finishes, marking & lighting; Access Rd R8	8	15FEB05	23FEB05	-17													
03-3113	Lay sub-base, kerbs & edging; W/B CH1464-1550	9	21FEB05	02MAR05	-29													
03-31132	Construct rd pave & ftr. W/B CH1464-1550	9	28FEB05	09MAR05	-29													
03-31133	Divert Traffic to W/B C'Way CH1464-1550	0		09MAR05	-29													
5. Footbridges																		
Footbridge FB12																		
05-5320	South Pile caps for FB12: 9 Nos.	40	22SEP04A	19JAN05	-85													
05-53202	South Capbrims & Column head For FB12: 9 Nos.	50	03JAN05A	04MAY05	-85													
05-53505	Erect Steelwork & Roofing for FB12 (North)	30	08JAN05A	29JAN05	30													
05-5350	Construct Ramp for FB12 (South)	60	05MAR05	19MAY05	-85													

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
Footbridge FB-1					
05-5349	Const/Erect Deck of Main Span for FB12	45	19MAR05	14MAY05	-53
05-53504	Construct Stairway for FB12 (South)	30	14APR05	19MAY05	-85
6. Retaining Walls					
Bored Pile Wall BPRW03					
05-82235	FTJ & Trim Slope/Construct U-Channel; 1 to 30	30	02MAR04A	18JAN05	-1
L-Shaped Walls					
05-8105	Retaining Wall RW01 (CH1340-1390); 5 bays	295*	29JAN04A	24JAN05	-69
05-8102	Retaining Wall RW01 (CH1205-1340); 14 bays	198*	08MAY04A	05JAN05A	
05-8105	Retaining Wall RW01 (CH1554-1890); 13 bays	146*	17NOV04A	19MAY05	-89
05-81051	Excavate/temp soil nailwall for bays 53-65	100	17NOV04A	18MAR05	-88
05-8103	Retaining Wall RW01 (CH1380-1463); 7 bays	63*	25NOV04A	12FEB05	-89
05-81032	Construct base wall for bays 48-52	50	25NOV04A	13JAN05A	
05-81024	Construct plinth for bays 33-40	10	11DEC04A	05JAN05A	
05-81054	Construct plinth for bays 41-45	10	08JAN05A	24JAN05	-69
05-81034	Construct plinth for bays 46-52	14	25JAN05	12FEB05	-69
05-81052	Construct base wall for bays 53-65	80	27JAN05	07MAY05	-88
7. Noise Structures					
Procurement of Noise Barrier					
07-7080	Fabrication of Steel Members for Noise Barrier	120	17MAY04A	04FEB05	13
07-7080	Delivery of Steel Members for Noise Barrier	90	19JUL04A	14FEB05	13
07-7070	Fabrication of Panels for Noise Barrier	60	09FEB05	09APR05	-37
07-7090	Delivery of Panels for Noise Barrier	60	01MAR05	19APR05	-37
Noise Mitigation No. 01					
07-7122	Foundation of NM01 (S); CH1205-1320 (bays 15-22)	50	26NOV04A	28JAN05	-150
07-7121	Foundation of NM01 (S); CH1320-1405 (bays 23-28)	45	22JAN05	18MAR05	-88
8. Culverts and Outfalls					
Culvert-Outfall B					
08-82024	1.5m Cascade at Outfall B outside RW01	12	10DEC04A	18JAN05	-141
08-8203	Excavate Culvert-Outfall B (Within Exist C/P)	12	03JAN05A	22JAN05	-150
08-82032	Const. Culvert-Outfall B (middle) & backfill	12	24JAN05	05FEB05	-150
Culvert-Outfall CA					
08-83024	1.2m Concrete & DI pipes with concrete surround	10	03JAN05A	21JAN05	-68
Culvert-Outfall C					
08-84028	1.5m DI pipe/Step Culvert; Outside RW01	10	26JAN05	05FEB05	-15
Culvert-Outfall CB					
08-81602	Exc. Culvert-Outfall CB (South of RW01)	6	07DEC04A	19JAN05	-50
08-81603	Exc. Culvert-Outfall CB (Middle Portion)	6	10JAN05A	19JAN05	-54
08-816032	Const. Culvert-Outfall CB (Middle Portion)	12	11JAN05A	22JAN05	-64
08-816022	Const. Culvert-Outfall CB (South of RW01)	21	20JAN05	16FEB05	-41
Culvert-Outfall D					
08-8503	Exc. Culvert-Outfall D (South)	6	23MAR05	01APR05	-68
08-85032	Const. 2 Manholes & 1.5m Conc. Pipe (South)	18	02APR05	21APR05	-68

Activity ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Total Elapsed
Programme for SA No. 3					
01-0113	Prepare final SA	12	26NOV03A	21JAN05	27
01-0114	Review & endorse detailed design by ICEM/HW/QS	12	28NOV03A	20JAN05	27
01-0119	Prepare format copies of SA for execution SA	7	22JAN05	28JAN05	27
01-01110	Execute SA	0	0	28JAN05	27
3. Roadworks					
Utility Diversion					
03-3212	Protect/Divert Exist. UUs at E/B CH 2580-2800	30	29JAN05	03MAR05	68
Earthworks					
03-3203	Road formation at GPR CH2800 & 3010	30	07JUN04A	15JAN05A	
03-3204	Backfill/Road formation at E/B CH2300-2580	30	10MAR05	18APR05	29
Drainage Works					
03-3225	Drainage Works at E/B CH2610-2995/CH2750-2800	30	20DEC04A	24JAN05	3
03-32242	Drainage Works at E/B C'way bet CH2450-2480	12	10JAN05A	15JAN05A	
03-32252	Drainage Works at E/B CH2580-2610/CH2695-2750	30	29JAN05	08MAR05	7
03-32243	Drainage/F4, 1-4, 31 at E/B CH2480-2580	25	14FEB05	14MAR05	7
03-3225	Drainage Works at Access Road R9 at West	20	21MAR05	16APR05	17
Pipe Works (Local Supply Watermain)					
03-32342	Testing & Connection of 150mm Pipes CH2270-2570	18	20DEC04A	22JAN05	54
03-3235	Pipe Works on E/B C'way bet CH2610-2720	18	29JAN05	19FEB05	60
03-32352	Testing & Connection of Pipeworks at CH2610-2720	18	21FEB05	12MAR05	60
03-3233	Water Works at Portion W10	7	12MAR05	19MAR05	70
03-3236	Pipe Works on at Access Road R9 at West	12	21MAR05	07APR05	70
Road Works					
03-3146	Lay sub-base, kerbs & edgings: CH2800-3010	10	11OCT04A	20JAN05	92
03-31482	Construct rd pave & fin: CH2800-3010	10	08NOV04A	25JAN05	92
03-31452	Construct rd pave & fin: WB CH2480-2800	12	24NOV04A	19JAN05	84
03-31471	Divert Traffic to WB Perma C'way CH2450 to 2800	0	0	29JAN05	92
03-31472	Divert Traffic to WB Perma C'way CH2800 to 3010	0	0	29JAN05	92
03-3180	Formallion/ sub-base, kerbs: Access Rd R9 at West	12	08APR05	21APR05	70
Junction J5 (adjacent to Hong Kong Garden)					
J5-02	Close western lane of slip road to HK Garden	1	14FEB05	14FEB05	40
J5-04	Expose existing UUs at western lane of slip rd	12	15FEB05	28FEB05	40
J5-05	Const. drainage within western lane of slip rd	18	22FEB05	14MAR05	40
J5-08	Lay UU cross rd	12	15MAR05	31MAR05	40
J5-10	Const. western lane of slip rd	12	01APR05	15APR05	40
J5-12	Close eastern lane of slip road to HK Garden	1	16APR05	16APR05	40
Junction J6 (at Lung Yu Road)					
J6-02	Close eastern lane of Lung Yuen Rd	1	29JAN05	29JAN05	30
J6-04	Expose existing UUs at eastern lane	12	31JAN05	16FEB05	30
J6-06	Const. drainage both storm & sewer at east lane	18	07FEB05	02MAR05	30
J6-08	Lay UU cross rd	12	03MAR05	16MAR05	30
J6-10	Const. eastern lane of Lung Yuen Rd	12	17MAR05	02APR05	80
J6-12	Close western lane of Lung Yuen Rd	1	04APR05	04APR05	30



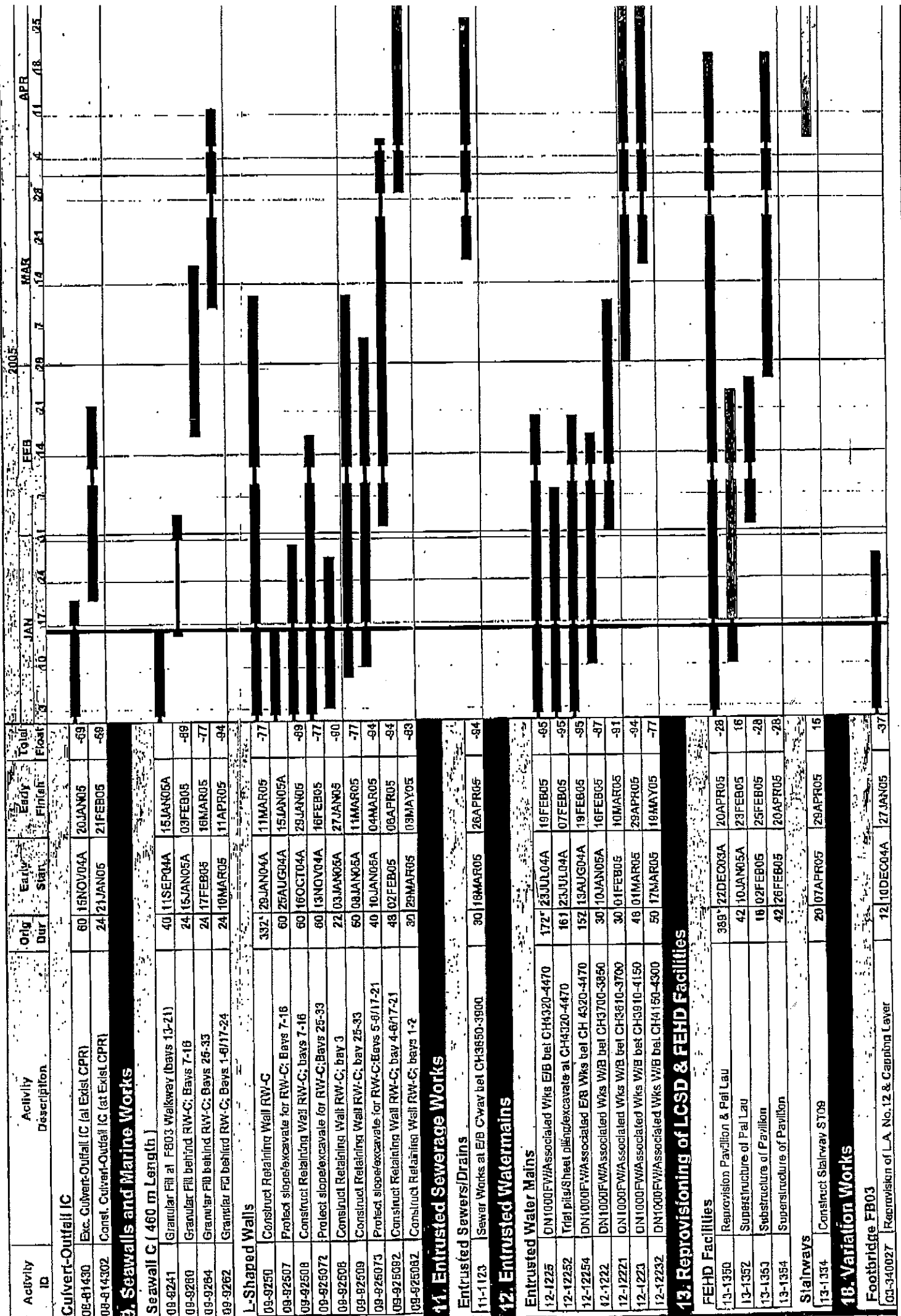
Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
5. Footbridges					
Footbridge FB01					
05-61112	Piling Works at North Supports for FB01, 12 Nos.	72	03SEP04A	06FEB05	-64
05-61508	Erect Steelwork & Roofing for FB01 (South)	30	22NOV04A	27JAN05	62
05-61113	Dismantle Piling Rig & Pile Test, FB01 (N)	18	24JAN05	16FEB05	-64
05-61330	North Pile caps for FB01, 5 Nos.	25	14FEB05	14MAR05	-64
05-61302	North Columns & Column head for FB01, 9 Nos.	30	10MAR05	26APR05	-54
05-61400	Consl./Erect Deck of Main Span for FB01	45	12APR05	03JUN05	-54
Footbridge FB02					
05-62706	Erect Steelwork & Roofing for FB02 (North)	30	14JUL04A	22JAN05	101
05-62806	Erect Steelwork & Roofing for FB02 (South)	30	21SEP04A	22JAN05	101
05-62802	Erect Steelwork & Roofing of Main Span for FB02	30	26SEP04A	22JAN05	101
05-62800	E&M and Finishing Works for Footbridge FB02	30	08DEC04A	03FEB05	101
7. Noise Structures					
Noise Mitigation No. 02					
07-72221	Foundation of NM02 (North)	66	17JAN05	11APR05	-33
07-72211	Excavation/formation for NM02 (Bays 25-26)	24	17JAN05	16FEB05	-27
07-72212	Excavation/formation for NM02 (14-24)	30	24JAN05	02MAR05	-30
07-72213	Construct base for NM02 (Bays 25-26)	24	07FEB05	08MAR05	-27
07-72214	Construct base for NM02 (Bays 14-24)	30	07FEB05	10MAR05	-33
07-72215	Construct wall stem for NM02 (Bays 25-26)	24	24FEB05	23MAR05	-27
07-72216	Construct wall stem for NM02 (Bays 14-24)	30	28FEB05	08APR05	-33
07-72217	Consl. R.C. barrier/columns, NM02 (Bays 25-26)	18	10MAR05	02APR05	-27
07-72218	Consl. R.C. barrier/columns, NM02 (Bays 14-24)	24	10MAR05	11APR05	-30
07-72212	Erect Steel Members at North Supports for NM02	30	12APR05	17MAY05	-33
Noise Mitigation No. 03					
07-73212	Erect Steel Members at South Supports for NM03	30	14DEC04A	31JAN05	20
07-73211	Foundation of NM03 (North)	80	09MAR05	23MAY05	-68
07-73212	Excavation/formation for NM03 (North)	30	09MAR05	16APR05	-68
07-73214	Construct base for NM03 (North)	30	23MAR05	30APR05	-68
07-73216	Construct wall stem for NM03 (North)	30	13APR05	18MAY05	-68
Noise Mitigation No. 04					
07-74004	Foundation of NM04 (Bays 1-4)	50	18FEB05	19APR05	-36
8. Culverts and Outfalls					
Culvert-Outfall F					
08-87205	Backfill Outfall F	4	03JAN05A	12JAN05A	
9. Seawalls and Marine Works					
L-Shaped Walls					
08-81331	Reconstruction of Pavilion at Sea Wall B	476	19JUN03A	22JAN05	-80
09-91333	Roofing/staircase/flooring & Finishing	40	07JUN04A	22JAN05	111

Activity ID	Activity Description	Qty Dur	Early Start	Early Finish	Total Float
10. Geotechnical & Slope Works					
Existing Slope Works					
09-9212	Remedial Works to Slope No. C180 & C1C78	163' 14JUL04A	27JAN05		-13
09-92124	Remedial Works to Slopes 6SW-DIC1 & C78	163' 14JUL04A	27JAN05		-13
09-921245	Drainage/Slair at 6SW-DIC1&C78; VO388	12 08NOV04A	27JAN05		-13
09-921244	Soil nails 5 rows at 6SW-DIC1&C78; VO388	35 16DEC04A	20JAN05		-31
11. Entrusted Sewerage Works					
Entrusted Sewers/Drains					
11-1122	Sewer Works at Access Road R9 at West	40 29JAN05	10MAR05		-70
11-1131	Sewer Works at CPR CH2650-2760	25 08FEB05	11MAR05		-7
12. Entrusted Watermains					
Entrusted Water Mains					
12-1232	DN150 cross rd & fire hydrant at CH L600	12 12APR05	25APR05		-3
16. Variation Works					
Add. Fishermen's Access Staircase at Sewall B.					
VO-35800	Construct Fishermen's Access Staircase; VO358	18 17JAN05	05FEB05		99
Additional Mass Wall at East End of RW-B					
AI41004	Construct Additional Mass Wall at RW-B; 2 bays	8 30DEC04A	13JAN05A		
CPR from Chainage 3+010 to Chainage 3+730					
3. Roadworks					
Earthworks					
03-324Z	Earthworks at WB C'way CH3400-3530	192' 09AUG04A	02APR05		-60
Drainage Works					
03-33202	Drainage Works on WB C'way bet CH3300-3400	20 28FEB05	21MAR05		-91
03-3323	Drainage Works on EB C'way bet CH3000-3130	50 21MAR05	23MAY05		-92
Road Works					
03-3340	Dragon Garden Accommodation	849' 12APR02A	23FEB05		-92
03-334008	Remove Temporary Hoarding & Reinstatement	35 28APR04A	23FEB05		67
03-33145	Lay sub-base, kerbs & edgings; WB CH3300-3400	10 22MAR05	09APR05		-91
03-33146	Construct rd pave & f/c; WB CH3300-3400	10 04APR05	15APR05		-91
03-33161	Divert Traffic on WB Perma C'way CH3300-3400	0	15APR05		-91
R.E. Wall REV05					
Reinforced Earth Wall REV05					
REV014	L-shaped wall & Plinth	40 03JAN05A	21FEB05		-91
REV016	P1 Parapets	30 03JAN05A	09MAR05		-91
5. Footbridges					
Footbridge FB11					
05-5620	South Pile caps for FB11; 7 Nos.	35 10OCT03A	19JAN05		-26
05-56202	South Columns & column head for FB11; 9 Nos.	40 08DEC03A	15FEB05		-26
05-56606	Erect Steelwork & Roofing for FB11 (North)	30 17JAN05	23FEB05		67
05-5640	Const./Erect Deck of Main Span for FB11	45 16FEB05	13APR05		-11

Activity ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Total Float	2005	MAR	APR
Footbridge FB11								
UE-5550	Construct Ramp for FB11 (South)	60	16FEB05	30APR05	-28			
05-55504	Construct Stairway for FB11 (South)	30	23MAR05	30APR05	-28			
05-55402	Erect Steelwork & Roofing of Main Span for FB11	30	14APR05	18MAY05	-11			
6. Retaining Walls								
Reinforced Earth Wall 14								
RE1410	Excavation/Temp. soil nail/Clearing the base	85	01DEC04A	23MAR05	-41			
RE1412	Mass conc./Install panel & mesh/Backfilling	60	24MAR05	07JUN05	-91			
1. Shaped Walls								
05-55800	Construct Retaining Wall RW15	208*	09AUG04A	22APR05	-50			
05-55803	Backfill for RW15, bays 1-3	10	08JAN05A	19JAN05	-80			
05-55805	Excavation for RW15, bays 4-6	18	14JAN05A	03FEB05	-80			
05-55804	Piling for RW15, bays 1-3	12	20JAN05	02FEB05	-11			
05-55806	Basewall for RW15, bays 4-6	40	28JAN05	19MAR05	-60			
05-55807	Backfill for RW15, bays 4-6	10	19MAR05	02APR05	-60			
05-55808	Piling for RW15, bays 4-6	16	04APR05	22APR05	-60			
8. Culverts and Outfalls								
Culvert - Outfall HB								
05-81020	Temp. Works & Exc. Culvert-Outfall HB (N)	21	10JAN05A	02FEB05	-85			
05-810202	Const. Culvert-Outfall HB (Remaining Portion 1)	30	03FEB05	12MAR05	-68			
Culvert-Outfall H								
05-81130	Exc. Culvert-Outfall H (Remaining Portion)	12	21JAN05	03FEB05	-32			
05-811302	Const. SHH-12, Outfall H	10	24FEB05	07MAR05	-48			
05-811303	Const. 1.65m pipe with conc. surround, Outfall H	10	08MAR05	18MAR05	-48			
05-811304	Const. 1.65m cascade, Outfall H	10	19MAR05	02APR05	-60			
10. Geotechnical & Slope Works								
Existing Slope Works								
10-1092	Remedial Works to Slope No. FR41	451*	26JUL04A	28JAN05	2			
10-10928	Fill behind RW104 & Finishing Work	18	07JAN04A	29JAN05	2			
11. Entrusted Sewerage Works								
Entrusted Sewers/Drains								
11-114001	350mm Twin Rising Mains at CH 3000-3130	40	25FEB05	18APR05	-92			
12. Entrusted Water Mains								
Entrusted Water Mains								
12-12212	DN 1000FW/Associated Wks/WB Cway	26	18DEC04A	27JAN05	4			
12-12230	DN1000FW/Associated Wks EIB CH2970-3130	50	29JAN05	04APR05	-42			
12-12301	DN1000FW/Associated Wks EIB CH3130-3250	50	16APR05	15JUN05	-91			
12-12302	DN1000FW/Associated Wks EIB CH3250-3400	50	16APR05	15JUN05	-91			
13. Reprovisioning of LCSD & FEHD Facilities								
FEHD Facilities								
13-1321	Construct RCP E	35	10DEC04A	29JAN05	95			

Activity ID		Activity Description	Orig Dur	Early Start	Early Finish	Total Float
Stairways						
13-1332		Construct Stairway ST07	81	25OCT04A	29JAN05	2
13-1332B		Concrete curing/repair/finish & falsework, ST07	10	13DEC04A	08JAN05A	
13-1332B		Finishing & railing, ST07	12	17JAN05	29JAN05	2
18. Variation Works						
New Slope No. 11						
10-10757		Removal of B. Fence, V.O. No. 131	45	07FEB04A	29JAN05	105
Culvert-Outlet 1A						
08-81231		Excavate & Break Conc. Pipe; L. Part	16	03JAN05A	15JAN05A	
08-81232		Const. Cascade/M. Slabway/Backfill; L. Part	16	17JAN05	05FEB05	18
08-81233		Excavate for U. Part of Slipped Channel	12	07FEB05	23FEB05	18
08-81234		Const. Cascade/M. Slabway/Backfill; U. Part	12	24FEB05	09MAR05	18
08-81235		Excavate for 1050 Concrete Pipe	6	10MAR05	16MAR05	18
08-81236		Const. 1050 dia. C. Pipes	6	17MAR05	23MAR05	18
08-81237		Construct M. Slabway at the top	6	24MAR05	02APR05	18
08-81238		Reinstate Slope/Drainage Incl. Hydroseeding	12	04APR05	18APR05	18
Vehicular Parapets						
VO-24960		Additional Vehicular Parapets at CH 3400-3425	18	09APR05	29APR05	-60
GPR from Chainage 3+730 to Chainage 4+470						
1. Preliminaries						
Proposed Utility Works						
01-12471		Additional Gasmain on E/B C-way CH4330-4470	21	07DEC04A	31MAR05	-93
01-12455A		HKT Cross Rd. Ducts at W/B CH3670	4	19FEB05	23FEB05	-91
01-124441		CLP Cross Rd. Ducts at W/B CH3810	4	24FEB05	28FEB05	-91
01-12444		Proposed Gasmain on W/B C-way CH3670-3850	25	07MAR05	08APR05	-91
01-124842		HKT Cross Rd. Ducts at E/B Slow Lane CH4365	4	10MAR05	14MAR05	-93
01-1247352		HT Cross Rd. Ducts at E/B Slow Lane CH4361	4	12MAR05	16MAR05	-93
01-1247381		CATV Cross Rd. Ducts at Slow Lane E/B CH4374	4	15MAR05	18MAR05	-93
01-124442		Proposed CLP on W/B C-way CH3850-3910	6	16MAR05	22MAR05	-88
01-1247383		CLP C. Rd. Ducts at E/B Slow Lane CH4320	4	17MAR05	21MAR05	-93
01-124432		Proposed HKT on W/B C-way CH3850-3910	6	23MAR05	01APR05	-88
01-124434		Proposed HKB on W/B C-way CH3850-3910	6	23MAR05	01APR05	-88
01-124733		Proposed CATV on E/B C-way CH4330-4470	7	24MAR05	04APR05	-14
01-124431		HKEN Cross Rd. Ducts at W/B CH3870	4	29MAR05	01APR05	-88
01-12444		Proposed CLP on W/B C-way CH3630-3850	11	02APR05	15APR05	-88
01-124734		Proposed NWT on W/B C-way CH4450	7	06APR05	13APR05	-14
01-124735		Proposed HT on E/B C-way CH4330-4470	7	14APR05	21APR05	-14
01-12443		Proposed HKT on W/B C-way CH3630-3850	11	16APR05	28APR05	-88
3. Roadworks						
Utility Diversion						
03-34508		Exposed/unrated UUs at E/B CH 3850-3900	30	01FEB05	10MAR05	-94
Earthworks						
03-3403		Road formation at W/B C-way CH3850-3910	6	19JAN05	25JAN05	-84

Activity ID	Activity Description	Qty Dur	Early Start	Early Finish	Total Float	JAN	FEB	MAR	APR
Earthworks									
03-3401	Road formation at W/B Cway CH3630-3850	30 01MAR05	08APR05	-91					
Drainage Works									
03-3465	Construct drainagebackfill at E/B CH4300-4470	148 25AUG04	23MAR05	-95					
03-34202	Drainage Works at W/B Cway CH3650-3910	20 25OCT04	20JAN05	-94					
03-34201	Drainage Works at W/B Cway CH3610-3700	30 20JAN05	26FEB05	-91					
03-3420	Drainage Works at W/B Cway CH3700-3850	30 02FEB05	14MAR05	-87					
03-3421	Drainage Works at W/B Cway CH3650-4150	60 16FEB05	18APR05	-94					
03-34212	Drainage Works at W/B Cway CH4150-4330	50 03MAR05	04MAY05	-77					
03-3423	Drainage Works at E/B Cway CH3650-3910	20 29JAN05	09JAN05	-94					
03-3425	Drainage Works at W/B Cway CH4330-4470	68 11APR05	14JUN05	-95					
03-34252	Trial piling shell piling/excavate for drainage	60 11APR05	08JUN05	-95					
Pipe Works (Local Supply Materials)									
03-3431	Pipe Works at W/B Cway bel CH3890-3910	10 29DEC04	07JAN05						
03-34310	Pipe Works at W/B Cway bel CH3600-8700	20 28FEB05	22MAR05	-91					
03-3434	Pipe Works at W/B Cway bel CH3950-4150	30 01APR05	08MAY05	-94					
Road Works									
03-34534	Stage 3 TTA (works at E/B show lane)	210 23JUL04	09APR05	-95					
03-34561	Lay sub-base, kerbs & edgings, E/D CH4330-4470	12 15DEC04	02APR05	-95					
03-34558	Construct rd base, R10	8 20DEC04	20JAN05	-28					
03-34558	Rd finishes, marking & lighting, R10	10 21JAN05	01FEB05	-28					
03-345022	Construct Temp. Road W/B CH3850-3910	6 25JAN05	31JAN05	-94					
03-34509	Diver Road at W/B CH3850-3910/East of Outfall 1	0	31JAN05	-94					
03-345423	Construct rd base & lip: E/B CH4330-4470	12 23MAR05	09APR05	-95					
03-3450	Lay sub-base, kerbs & edgings: W/B CH3630-3850	20 24MAR05	20APR05	-91					
03-3412	Diver Traffic to E/B Cway CH4330-4470	0	09APR05	-95					
03-34502	Construct rd base & lip: W/B CH3830-3850	20 08APR05	02MAY05	-91					
03-34535	Stage 4 TTA (works at W/B catlows way)	105 11APR05	16JUN05	-95					
5. Footbridges									
Footbridge FB03									
05-5412	GI Works for Middle Supports at FB03	8 07DEC02	04FEB05	-73					
05-54606	Erect Steelwork & Roofing for FB03 (North)	30 08NOV04	25JAN05	64					
05-54608	Erect Steelwork & Roofing for FB03 (South)	30 08JAN05	15FEB05	49					
05-54121	GI Reproductive Foundation Levels: FB03(M)	12 05FEB05	22FEB05	-73					
05-54122	Piling and Pile Testing (2 Nos.): FB03 (Middle)	30 23FEB05	01APR05	-73					
05-54123	Middle Pile cap for FB03: 1 Nos.	12 02APR05	16APR05	-73					
8. Culverts and Outfalls									
Culvert-Outfall 1B									
08-81520	Exc. Culvert-Outfall 1B (South Portion)	173 02JUL04	27JAN05	-91					
08-815204	SMHIB2. 1/1050 Conc. Pile	12 18DEC04	27JAN05	-91					
Culvert-Outfall 1									
08-81330	Excavate Culvert bays 5-7: Outfall 1	24 08FEB05	10MAY05	-94					
08-813302	Const. Culvert bays 5-7: Outfall 1	30 11MAR05	19APR05	-94					



Activity ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Total Float																								
Stairways																													
13-1338	Const. New Pavbdr/rel. wall/fldr. VO 211	112	15NOV04A	04APR05	-28																								
13-13364	Const. RW-C1; VO 211	24	01FEB05	03MAR05	-28																								
13-13366	Const. New Pavbdr/stair VO 211	24	04MAR05	04APR05	-28																								
13-1337	Const. gantry/walkway, RW-C Day 29-33; VO 211	40	12MAR05	02MAY05	-51																								
Additional Outfall Mt. VO 244																													
08-81826	Excavation for 675mm twin pipes at exist. CFR	12	17JAN05	29JAN05	-54																								
08-81827	Construct 675mm twin pipes at exist. CPR	8	31JAN05	08FEB05	-54																								
Additional Works at RW-C; Bays 2-4																													
VO-39308	Temp. works/Excavation/Install concrete; Bay 4	20	28JAN05	07MAR05	-20																								
VO-39509	Temp. works/Excavation/Install concrete; Bay 2	12	11MAR05	24MAR05	-83																								
Remedial Works to Existing Feature No. 6SE-C/C22																													
VO-30902	Erect scaffolding platform	6	02FEB05	08FEB05	9																								
VO-30904	Remove existing shotcrete	12	12FEB05	25FEB05	9																								
VO-30905	Construct 12 nos. test walls	18	20FEB05	19MAR05	9																								
VO-30908	Construct 202 nos. soil nails	40	19MAR05	09MAY05	9																								
Vehicular Parapets																													
VO-24970	Additional Vehicular Parapets at CH 3735-3950	30	17FEB05	23MAR05	-87																								

APPENDIX C

**Monitoring schedule for
January 2005 and
February 2005**

Environmental Monitoring and Audit Schedule - January 2005

Note 1: L30 denotes $L_{eq(30 min)}$ 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

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

Tentative 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 24-hour TSP	2	3 Site Inspection + L&V	4	5
6	7 24-hour TSP Site Inspection	8 L30 3 x 1-hour TSP	9 L30 3 x 1-hour TSP	10 L30 3 x 1-hour TSP	11 24-hour TSP	12 24-hour TSP
13	14	15	16 L30 3 x 1-hour TSP	17 Site Inspection + L&V	18 24-hour TSP	19
20	21	22	23 L30 3 x 1-hour TSP	24 24-hour TSP Site Inspection	25	26
27	28					

APPENDIX D

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

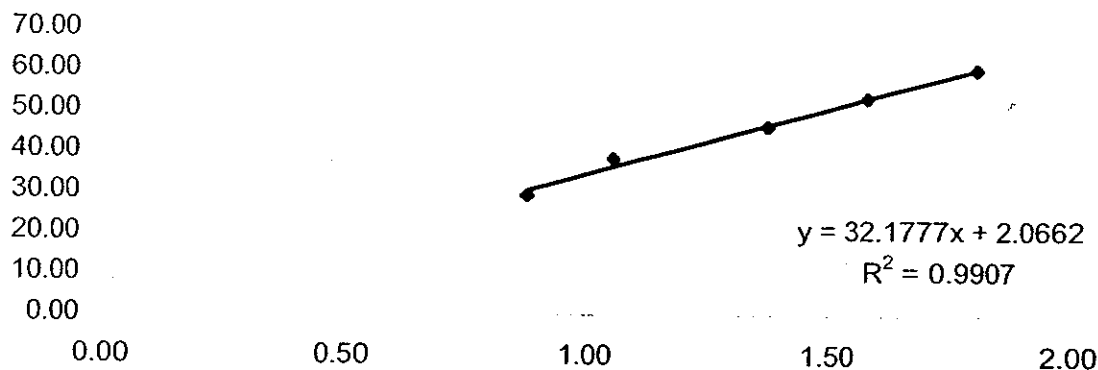
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High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA3 - Hong Kong Garden (Regent Heights)	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0505	T _{std}	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m _s	1.93285		
Intercept of the standard curve, b _s	0.00398		

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.90	29.00	0.88	29.05
7	4.20	38.00	1.06	38.06
10	7.10	46.00	1.38	46.08
13	9.40	53.00	1.59	53.09
18	12.20	60.00	1.81	60.10

Calibration Curve



Linear Regression

Sampler slope (m): 32.1777
Sampler intercept (b): 2.0662
Correlation coefficient (R²): 0.9907

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

Performed by:

Date: 3-12-04

Checked by:

Date: 6-12-04

Ove Arup Partners (Hong Kong) Limited

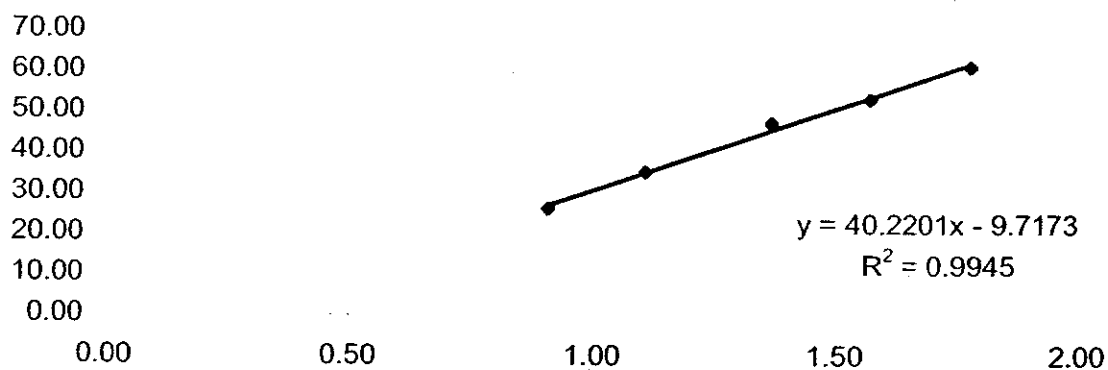
High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA6 - Tsing Lung Tau Temple	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0529	T _{std}	298 K

Calibrator model	GMW-2535
Calibrator serial number	1201
Slope of the standard curve, m _s	1.93285
Intercept of the standard curve, b _s	0.00398

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.10	26.00	0.91	26.04
7	4.60	35.00	1.11	35.06
10	7.00	47.00	1.37	47.08
13	9.20	53.00	1.57	53.09
18	11.80	61.00	1.78	61.10

Calibration Curve



Linear Regression

Sampler slope (m) : 40.2201
Sampler intercept (b) : -9.7173
Correlation coefficient (R^2) : 0.9945

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

Performed by:

Date: 3-12-04

Checked by:

Date: 6-12-04

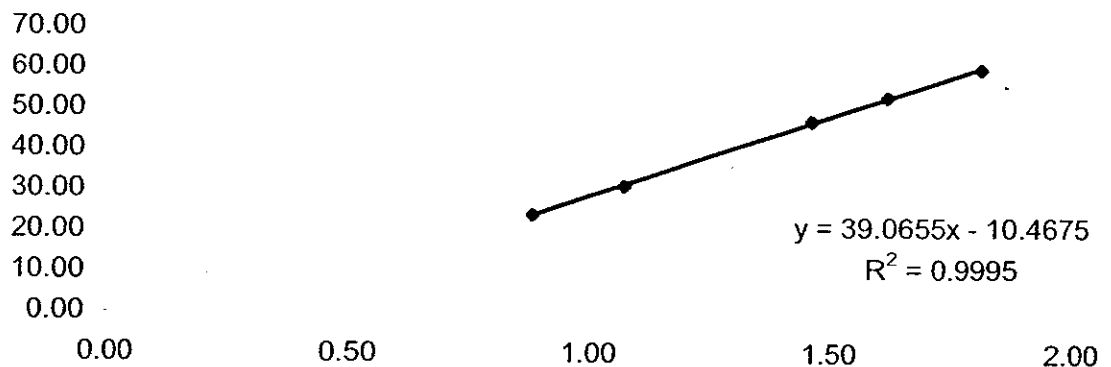
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA7 - Sea Crest Villa (Phase 4 Blk 12)	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0517	T _{std}	298 K
Calibrator model		GMW-2540	
Calibrator serial number		1201	
Slope of the standard curve, m _s		1.93285	
Intercept of the standard curve, b _s		0.00398	

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.90	24.00	0.88	24.04
7	4.30	31.00	1.07	31.05
10	8.00	47.00	1.46	47.08
13	9.80	53.00	1.62	53.09
18	12.30	60.00	1.82	60.10

Calibration Curve



Linear Regression

Sampler slope (m) : 39.0655
 Sampler intercept (b) : -10.4675
 Correlation coefficient (R²) : 0.9995

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

Performed by: *[Signature]*
 Checked by: *[Signature]*

Date: 3-12-04
 Date: 6-12-04

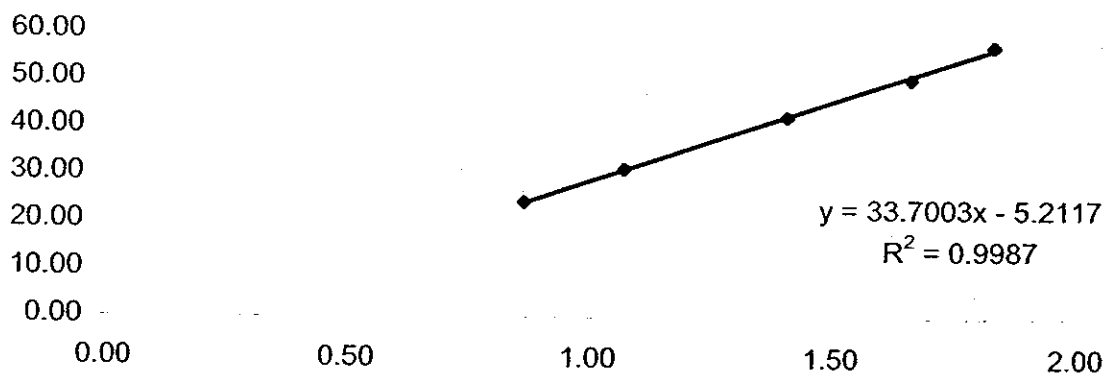
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High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA8 - Sea Crest Villa (Phase 3 Block 8)	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0526	T _{std}	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m _s	1.93285		
Intercept of the standard curve, b _s	0.00398		

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.80	24.00	0.87	24.04
7	4.30	31.00	1.07	31.05
10	7.40	42.00	1.41	42.07
13	10.30	50.00	1.66	50.08
18	12.50	57.00	1.83	57.10

Calibration Curve



Linear Regression

Sampler slope (m): 33.7003
 Sampler intercept (b): -5.2117
 Correlation coefficient (R²): 0.9987

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

Performed by: Jr.

Date: 3-12-04

Checked by: [Signature]

Date: 6-12-04

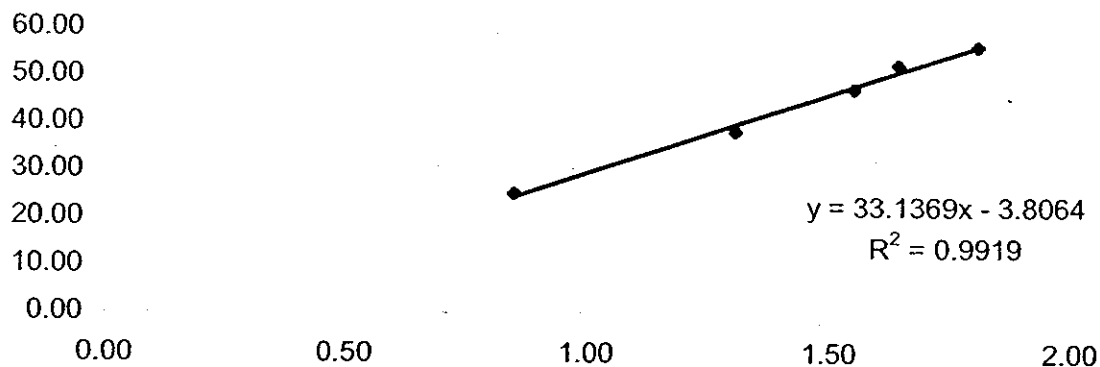
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High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA10 - Sea Crest Villa (Phase 1 Blk 1)	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0507	T _{std}	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m _s	1.93285		
Intercept of the standard curve, b _s	0.00398		

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.70	25.00	0.85	25.04
7	6.40	38.00	1.31	38.06
10	9.00	47.00	1.55	47.08
13	10.10	52.00	1.64	52.09
18	12.20	56.00	1.81	56.09

Calibration Curve



Linear Regression

Sampler slope (m): 33.1369
Sampler intercept (b): -3.8064
Correlation coefficient (R²): 0.9919

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

Performed by: ju.

Date: 3-12-04

Checked by: [Signature]

Date: 6-12-04

Ove Arup Partners (Hong Kong) Limited

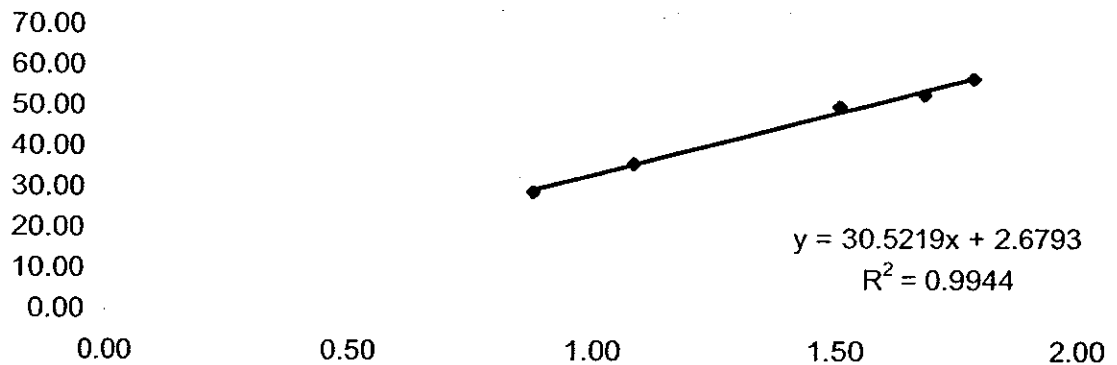
High Volume Air Sampler Calibration Worksheet

Calibration date	03-Dec-04	Barometric pressure	760 mm Hg
Calibration due date	01-Feb-05	Temperature (°C)	24 °C
Sampler location	WA11 - Lido Garden Tower 1	Temperature (K)	297 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	0521	T _{std}	298 K

Calibrator model	GMW-2535
Calibrator serial number	1201
Slope of the standard curve, m _s	1.93285
Intercept of the standard curve, b _s	0.00398

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.90	29.00	0.88	29.05
7	4.40	36.00	1.09	36.06
10	8.50	50.00	1.51	50.08
13	10.60	53.00	1.69	53.09
18	11.90	57.00	1.79	57.10

Calibration Curve



Linear Regression

Sampler slope (m) :	30.5219
Sampler intercept (b) :	2.6793
Correlation coefficient (R ²) :	0.9944

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

Performed by: Jr.

Checked by: [Signature]

Date: 3-12-04

Date: 6-12-04

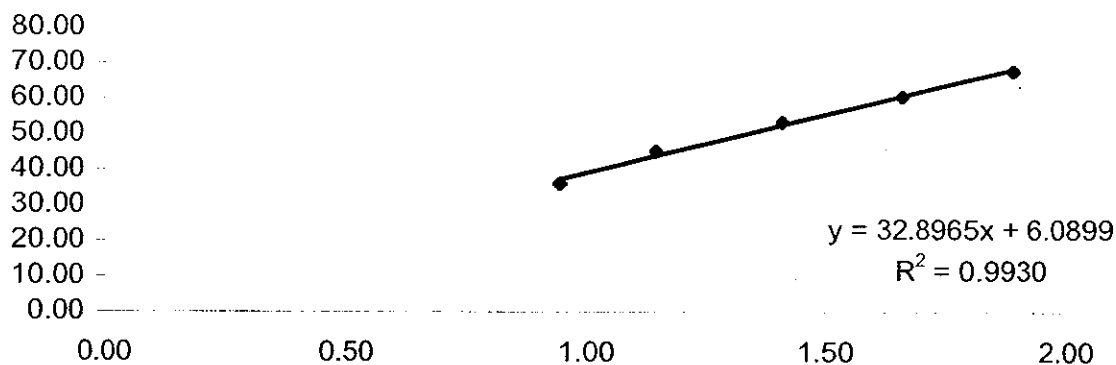
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High Volume Air Sampler Calibration Worksheet

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 _{std}	760 mm Hg
Sampler serial number	0512	T _{std}	298 K
Calibrator model	GMW-2535		
Calibrator serial number	1201		
Slope of the standard curve, m _s	1.93285		
Intercept of the standard curve, b _s	0.00398		

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	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 (R²) : 0.9930

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

Performed by: [Signature]

Date: 29-12-04

Checked by: [Signature]

Date: 30-12-04

Ove Arup Partners (Hong Kong) Limited

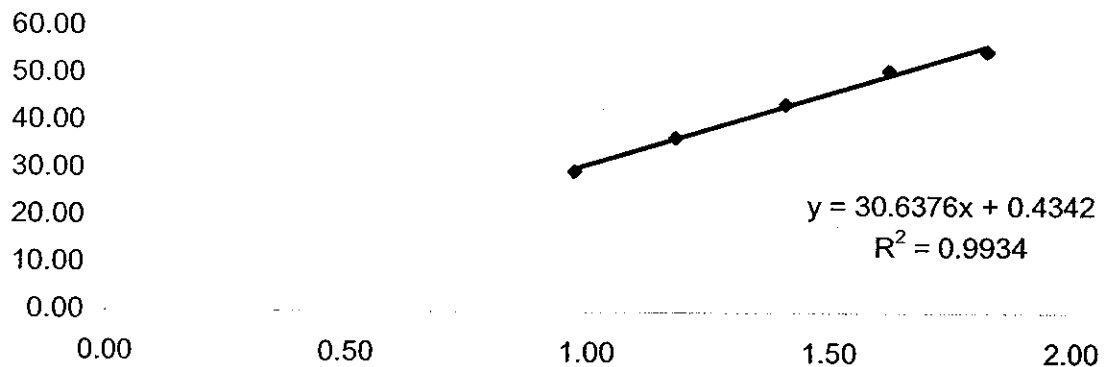
High Volume Air Sampler Calibration Worksheet

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 _{std}	760 mm Hg
Sampler serial number	0511	T _{std}	298 K

Calibrator model	GMW-2535
Calibrator serial number	1201
Slope of the standard curve, m _s	1.93285
Intercept of the standard curve, b _s	0.00398

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	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



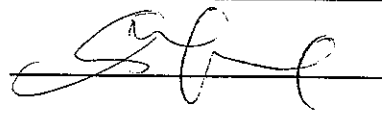
Linear Regression

Sampler slope (m) : **30.6376**
 Sampler intercept (b) : **0.4342**
 Correlation coefficient (R²) : **0.9934**

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

Calibration due date 27-Feb-05

Sampler location WA9 - Sea Crest Villa
(Phase 2 Blk 6)

Sampler model TE-5170

Sampler serial number 0523

Barometric pressure 766.5 mm Hg

Temperature (°C) 14 °C

Temperature (K) 287 K

P_{std} 760 mm Hg

T_{std} 298 K

Calibrator model GMW-2535

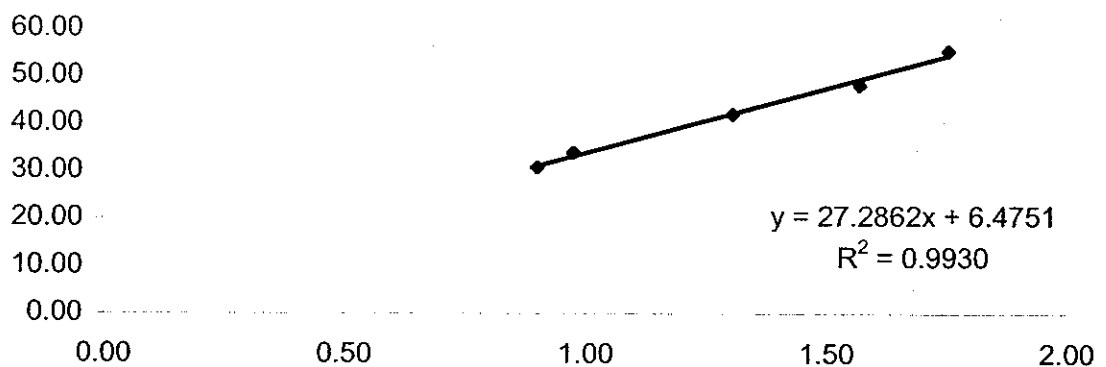
Calibrator serial number 1201

Slope of the standard curve, m_s 1.93285

Intercept of the standard curve, b_s 0.00398

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	2.90	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 (R²): 0.9930

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

Performed by: [Signature]

Date: 29-12-04

Checked by: [Signature]

Date: 30-12-04

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



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

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: Roman	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

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	$\mu\text{g}/\text{m}^3$
Record the pDR background concentration:	326	$\mu\text{g}/\text{m}^3$
Temperature	124	$\mu\text{g}/\text{m}^3$
Humidity	72	$^{\circ}\text{F}$
Technician:	33	%
	Date:	11-21-03

MASTER # 2026

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

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: *J. Racheppelle*

DATE: 1/15/04

MASTER # 2026

THERMO ELECTRON
27 FORGE PARKWAY
FRANKLIN MA 02038
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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

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: H. Lapelle

DATE: 1/15/04

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

PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER: 4492

CALIBRATION RATIO: 1.013

AVG. PDR-1000 CONCENTRATION: 3.04 mg/m3

CALIBRATION MASTER AVG. CONCENTRATION: 2.69 mg/m3

DR BACKGROUND CONCENTRATION: .291 mg/m3

TEMPERATURE: 75F

HUMIDITY: 52%

TECHNICIAN K. Lachapelle

DATE: 7/27/04

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

PDR-1000 CALIBRATION CERTIFICATE

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

SERIAL NUMBER: 4736

CALIBRATION RATIO: 1.004

AVG. PDR-1000 CONCENTRATION: 2.75 mg/m3

CALIBRATION MASTER AVG. CONCENTRATION: 2.44 mg/m3

DR BACKGROUND CONCENTRATION: .271 mg/m3

TEMPERATURE: 74F

HUMIDITY: 44%

TECHNICIAN K. Lachapelle

DATE: 7/27/04

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: 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

MASTER # D320 LAST CALIBRATED 10/1/04

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

PDR-1000 CALIBRATION CERTIFICATE

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

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

TECHNICIAN K. Lachapelle

DATE: 10/6/04

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

TECHNICIAN K. Lachapelle

DATE: 10/6/04

APPENDIX F

**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						
3-Jan-05	WA3	1	8:45	9:45	Fine	Normal Operation	17.0	764.0	213.5	
3-Jan-05	WA3	2	9:45	10:45	Fine	Normal Operation	17.0	764.0	207.8	
3-Jan-05	WA3	3	10:45	11:45	Fine	Normal Operation	17.0	764.0	206.9	
3-Jan-05	WA4	1	8:53	9:53	Fine	Normal Operation	17.0	764.0	193.1	
3-Jan-05	WA4	2	9:53	10:53	Fine	Normal Operation	17.0	764.0	187.6	
3-Jan-05	WA4	3	10:53	11:53	Fine	Normal Operation	17.0	764.0	186.6	
3-Jan-05	WA5	1	8:55	9:55	Fine	Normal Operation	17.0	764.0	170.4	
3-Jan-05	WA5	2	9:55	10:55	Fine	Normal Operation	17.0	764.0	158.9	
3-Jan-05	WA5	3	10:55	11:55	Fine	Normal Operation	17.0	764.0	157.8	
3-Jan-05	WA6	1	8:52	9:52	Fine	Normal Operation	17.0	764.0	196.3	
3-Jan-05	WA6	2	9:52	10:52	Fine	Normal Operation	17.0	764.0	191.0	
3-Jan-05	WA6	3	10:52	11:52	Fine	Normal Operation	17.0	764.0	190.3	
3-Jan-05	WA7	1	8:55	9:55	Fine	Normal Operation	17.0	764.0	215.4	
3-Jan-05	WA7	2	9:55	10:55	Fine	Normal Operation	17.0	764.0	207.1	
3-Jan-05	WA7	3	10:55	11:55	Fine	Normal Operation	17.0	764.0	207.1	
3-Jan-05	WA8	1	13:12	14:12	Fine	Normal Operation	17.0	764.0	199.6	
3-Jan-05	WA8	2	14:12	15:12	Fine	Normal Operation	17.0	764.0	200.7	
3-Jan-05	WA8	3	15:12	16:12	Fine	Normal Operation	17.0	764.0	197.0	
3-Jan-05	WA9	1	13:04	14:04	Fine	Normal Operation	17.0	764.0	216.9	
3-Jan-05	WA9	2	14:04	15:04	Fine	Normal Operation	17.0	764.0	218.0	
3-Jan-05	WA9	3	15:04	16:04	Fine	Normal Operation	17.0	764.0	214.6	
3-Jan-05	WA10	1	13:14	14:14	Fine	Normal Operation	17.0	764.0	175.3	
3-Jan-05	WA10	2	14:14	15:14	Fine	Normal Operation	17.0	764.0	183.8	
3-Jan-05	WA10	3	15:14	16:14	Fine	Normal Operation	17.0	764.0	175.6	
3-Jan-05	WA11	1	13:12	14:12	Fine	Normal Operation	17.0	764.0	203.2	
3-Jan-05	WA11	2	14:12	15:12	Fine	Normal Operation	17.0	764.0	206.1	
3-Jan-05	WA11	3	15:12	16:12	Fine	Normal Operation	17.0	764.0	203.0	
12-Jan-05	WA3	1	13:09	14:09	Fine	Normal Operation	18.0	766.0	228.4	
12-Jan-05	WA3	2	14:09	15:09	Fine	Normal Operation	18.0	766.0	229.4	
12-Jan-05	WA3	3	15:09	16:09	Fine	Normal Operation	18.0	766.0	235.1	
12-Jan-05	WA4	1	13:12	14:12	Fine	Normal Operation	18.0	766.0	247.0	
12-Jan-05	WA4	2	14:12	15:12	Fine	Normal Operation	18.0	766.0	248.6	
12-Jan-05	WA4	3	15:12	16:12	Fine	Normal Operation	18.0	766.0	252.3	
12-Jan-05	WA5	1	13:08	14:08	Fine	Normal Operation	18.0	766.0	241.1	
12-Jan-05	WA5	2	14:08	15:08	Fine	Normal Operation	18.0	766.0	244.5	
12-Jan-05	WA5	3	15:08	16:08	Fine	Normal Operation	18.0	766.0	251.8	
12-Jan-05	WA6	1	13:10	14:10	Fine	Normal Operation	18.0	766.0	189.6	
12-Jan-05	WA6	2	14:10	15:10	Fine	Normal Operation	18.0	766.0	191.0	
12-Jan-05	WA6	3	15:10	16:10	Fine	Normal Operation	18.0	766.0	195.4	
12-Jan-05	WA7	1	8:51	9:51	Fine	Normal Operation	18.0	766.0	261.7	
12-Jan-05	WA7	2	9:51	10:51	Fine	Normal Operation	18.0	766.0	261.9	
12-Jan-05	WA7	3	10:51	11:51	Fine	Normal Operation	18.0	766.0	258.8	
12-Jan-05	WA8	1	8:52	9:52	Fine	Normal Operation	18.0	766.0	274.6	
12-Jan-05	WA8	2	9:52	10:52	Fine	Normal Operation	18.0	766.0	274.7	
12-Jan-05	WA8	3	10:52	11:52	Fine	Normal Operation	18.0	766.0	272.8	
12-Jan-05	WA9	1	8:49	9:49	Fine	Normal Operation	18.0	766.0	283.8	
12-Jan-05	WA9	2	9:49	10:49	Fine	Normal Operation	18.0	766.0	283.2	
12-Jan-05	WA9	3	10:49	11:49	Fine	Normal Operation	18.0	766.0	279.4	
12-Jan-05	WA10	1	8:51	9:51	Fine	Normal Operation	18.0	766.0	216.9	
12-Jan-05	WA10	2	9:51	10:51	Fine	Normal Operation	18.0	766.0	216.5	
12-Jan-05	WA10	3	10:51	11:51	Fine	Normal Operation	18.0	766.0	214.7	
12-Jan-05	WA11	1	8:52	9:52	Fine	Normal Operation	18.0	766.0	316.4	
12-Jan-05	WA11	2	9:52	10:52	Fine	Normal Operation	18.0	766.0	311.8	
12-Jan-05	WA11	3	10:52	11:52	Fine	Normal Operation	18.0	766.0	303.4	
18-Jan-05	WA3	1	8:44	9:44	Sunny	Normal Operation	20.0	765.0	209.5	
18-Jan-05	WA3	2	9:44	10:44	Sunny	Normal Operation	20.0	765.0	208.8	
18-Jan-05	WA3	3	10:44	11:44	Sunny	Normal Operation	20.0	765.0	153.7	
18-Jan-05	WA4	1	8:40	9:40	Sunny	Normal Operation	20.0	765.0	275.1	
18-Jan-05	WA4	2	9:40	10:40	Sunny	Normal Operation	20.0	765.0	275.6	
18-Jan-05	WA4	3	10:40	11:40	Sunny	Normal Operation	20.0	765.0	181.9	
18-Jan-05	WA5	1	13:00	14:00	Sunny	Normal Operation	20.0	765.0	185.2	
18-Jan-05	WA5	2	14:00	15:00	Sunny	Normal Operation	20.0	765.0	181.9	
18-Jan-05	WA5	3	15:00	16:00	Sunny	Normal Operation	20.0	765.0	192.0	
18-Jan-05	WA6	1	13:00	14:00	Sunny	Normal Operation	20.0	765.0	221.5	
18-Jan-05	WA6	2	14:00	15:00	Sunny	Normal Operation	20.0	765.0	248.0	
18-Jan-05	WA6	3	15:00	16:00	Sunny	Normal Operation	20.0	765.0	231.7	
18-Jan-05	WA7	1	8:00	9:00	Sunny	Normal Operation	20.0	765.0	251.1	
18-Jan-05	WA7	2	9:00	10:00	Sunny	Normal Operation	20.0	765.0	252.8	
18-Jan-05	WA7	3	10:00	11:00	Sunny	Normal Operation	20.0	765.0	250.6	
18-Jan-05	WA8	1	13:00	14:00	Sunny	Normal Operation	20.0	765.0	255.9	
18-Jan-05	WA8	2	14:00	15:00	Sunny	Normal Operation	20.0	765.0	206.6	
18-Jan-05	WA8	3	15:00	16:00	Sunny	Normal Operation	20.0	765.0	206.5	
18-Jan-05	WA9	1	8:34	9:34	Sunny	Normal Operation	20.0	765.0	210.0	
18-Jan-05	WA9	2	9:34	10:34	Sunny	Normal Operation	20.0	765.0	183.8	
18-Jan-05	WA9	3	10:34	11:34	Sunny	Normal Operation	20.0	765.0	174.4	
18-Jan-05	WA10	1	8:31	9:31	Sunny	Normal Operation	20.0	765.0	217.0	
18-Jan-05	WA10	2	9:31	10:31	Sunny	Normal Operation	20.0	765.0	183.0	
18-Jan-05	WA10	3	10:31	11:31	Sunny	Normal Operation	20.0	765.0	168.6	
18-Jan-05	WA11	1	13:03	14:03	Sunny	Normal Operation	20.0	765.0	250.9	
18-Jan-05	WA11	2	14:03	15:03	Sunny	Normal Operation	20.0	765.0	218.5	
18-Jan-05	WA11	3	15:03	16:03	Sunny	Normal Operation	20.0	765.0	222.2	

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
25-Jan-05	WA3	1	8:48	9:48	Fine	Normal Operation	23.0	759.0	294.1	
25-Jan-05	WA3	2	9:48	10:48	Fine	Normal Operation	23.0	759.0	296.9	
25-Jan-05	WA3	3	10:48	11:48	Fine	Normal Operation	23.0	759.0	283.5	
25-Jan-05	WA4	1	8:39	9:39	Fine	Normal Operation	23.0	759.0	283.9	
25-Jan-05	WA4	2	9:39	10:39	Fine	Normal Operation	23.0	759.0	286.7	
25-Jan-05	WA4	3	10:39	11:39	Fine	Normal Operation	23.0	759.0	266.3	
25-Jan-05	WA5	1	8:42	9:42	Fine	Normal Operation	23.0	759.0	251.3	
25-Jan-05	WA5	2	9:42	10:42	Fine	Normal Operation	23.0	759.0	258.1	
25-Jan-05	WA5	3	10:42	11:42	Fine	Normal Operation	23.0	759.0	253.3	
25-Jan-05	WA6	1	8:45	9:45	Fine	Normal Operation	23.0	759.0	274.1	
25-Jan-05	WA6	2	9:45	10:45	Fine	Normal Operation	23.0	759.0	275.5	
25-Jan-05	WA6	3	10:45	11:45	Fine	Normal Operation	23.0	759.0	276.3	
25-Jan-05	WA7	1	13:10	14:10	Fine	Normal Operation	23.0	759.0	207.7	
25-Jan-05	WA7	2	14:10	15:10	Fine	Normal Operation	23.0	759.0	201.4	
25-Jan-05	WA7	3	15:10	16:10	Fine	Normal Operation	23.0	759.0	210.0	
25-Jan-05	WA8	1	13:19	14:19	Fine	Normal Operation	23.0	759.0	227.1	
25-Jan-05	WA8	2	14:19	15:19	Fine	Normal Operation	23.0	759.0	218.8	
25-Jan-05	WA8	3	15:19	16:19	Fine	Normal Operation	23.0	759.0	220.2	
25-Jan-05	WA9	1	13:14	14:14	Fine	Normal Operation	23.0	759.0	212.4	
25-Jan-05	WA9	2	14:14	15:14	Fine	Normal Operation	23.0	759.0	208.9	
25-Jan-05	WA9	3	15:14	16:14	Fine	Normal Operation	23.0	759.0	209.9	
25-Jan-05	WA10	1	8:51	9:51	Fine	Normal Operation	23.0	759.0	216.9	
25-Jan-05	WA10	2	9:51	10:51	Fine	Normal Operation	23.0	759.0	216.5	
25-Jan-05	WA10	3	10:51	11:51	Fine	Normal Operation	23.0	759.0	214.7	
25-Jan-05	WA11	1	13:15	14:15	Fine	Normal Operation	23.0	759.0	230.9	
25-Jan-05	WA11	2	14:15	15:15	Fine	Normal Operation	23.0	759.0	228.7	
25-Jan-05	WA11	3	15:15	16:15	Fine	Normal Operation	23.0	759.0	228.6	
31-Jan-05	WA3	1	8:39	9:39	Fine	Normal Operation	12.0	765.0	206.9	
31-Jan-05	WA3	2	9:39	10:39	Fine	Normal Operation	12.0	765.0	203.7	
31-Jan-05	WA3	3	10:39	11:39	Fine	Normal Operation	12.0	765.0	189.4	
31-Jan-05	WA4	1	8:46	9:46	Fine	Normal Operation	12.0	765.0	231.0	
31-Jan-05	WA4	2	9:46	10:46	Fine	Normal Operation	12.0	765.0	215.0	
31-Jan-05	WA4	3	10:46	11:46	Fine	Normal Operation	12.0	765.0	210.2	
31-Jan-05	WA5	1	8:45	9:45	Fine	Normal Operation	12.0	765.0	233.3	
31-Jan-05	WA5	2	9:45	10:45	Fine	Normal Operation	12.0	765.0	220.0	
31-Jan-05	WA5	3	10:45	11:45	Fine	Normal Operation	12.0	765.0	206.7	
31-Jan-05	WA6	1	8:46	9:46	Fine	Normal Operation	12.0	765.0	225.8	
31-Jan-05	WA6	2	9:46	10:46	Fine	Normal Operation	12.0	765.0	226.8	
31-Jan-05	WA6	3	10:46	11:46	Fine	Normal Operation	12.0	765.0	210.1	
31-Jan-05	WA7	1	13:03	14:03	Fine	Normal Operation	12.0	765.0	219.2	
31-Jan-05	WA7	2	14:03	15:03	Fine	Normal Operation	12.0	765.0	240.7	
31-Jan-05	WA7	3	15:03	16:03	Fine	Normal Operation	12.0	765.0	219.9	
31-Jan-05	WA8	1	13:00	14:00	Fine	Normal Operation	12.0	765.0	245.5	
31-Jan-05	WA8	2	14:00	15:00	Fine	Normal Operation	12.0	765.0	269.3	
31-Jan-05	WA8	3	15:00	16:00	Fine	Normal Operation	12.0	765.0	241.8	
31-Jan-05	WA9	1	13:00	14:00	Fine	Normal Operation	12.0	765.0	238.2	
31-Jan-05	WA9	2	14:00	15:00	Fine	Normal Operation	12.0	765.0	250.1	
31-Jan-05	WA9	3	15:00	16:00	Fine	Normal Operation	12.0	765.0	233.7	
31-Jan-05	WA10	1	13:01	14:01	Fine	Normal Operation	12.0	765.0	227.3	
31-Jan-05	WA10	2	14:01	15:01	Fine	Normal Operation	12.0	765.0	244.8	
31-Jan-05	WA10	3	15:01	16:01	Fine	Normal Operation	12.0	765.0	217.1	
31-Jan-05	WA11	1	8:42	9:42	Fine	Normal Operation	12.0	765.0	200.9	
31-Jan-05	WA11	2	9:42	10:42	Fine	Normal Operation	12.0	765.0	192.5	
31-Jan-05	WA11	3	10:42	11:42	Fine	Normal Operation	12.0	765.0	179.4	

APPENDIX G

**Detailed investigation
report for broken down
of WA6**

Ove Arup & Partners
奧雅納工程顧問

Our ref 23437/L369/ST/FL/ac

Date 19 January 2005

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
Tel +852 2528 3031
Fax +852 2268 3950
Direct Tel +852 2268 3208

www.arup.com

Environmental Protection Department
Local Control Office (Urban West & Islands)
8/F., Tsuen Wan Government Offices
38 Sai Lau Kok Road
Tsuen Wan, N.T.

ARUP

Attention: Mr. Joseph Leung

Dear Mr. Leung,

West Contract No. HY/99/18
Castle Peak Road Improvement between Sham Tseng and Ka Loon Tsuen
Broken Down of HVS at WA6 – Investigation Summary

We refer to your letter dated 12 January 2005 (your ref.: EP746/E2/1) regarding the captioned subject and provide below a summary of the investigation as requested:

1. Cause of Breakdown and Mitigation Measures

Malfunction of the high volume sampler (HVS) at Tin Hau Temple in Tsing Lung Tau (WA6) was first discovered on 20 December 2004 when our site staff intended to set up the HVS for a TSP sampling scheduled on 21 December 2004. During his routine HVS checking, abnormalities were noticed including strange noise generated from the motor (likely from carbon brushes), intermittent running of motor, and slight smell of burning. This incident was previously suspected to be due to wearing of carbon brushes, and after replacement of new ones, the HVS apparently functioned as usual throughout the checking. Therefore, the HVS was set up for the scheduled sampling.

On 23 December 2004 our site staff went to WA6 to collect the sampled TSP filter, but it was found that the HVS had not been properly operated, as indicated from the filter paper with no dust-laden appearance and no flow record obtainable. The HVS was then checked, but it exhibited normal operation. Consequently, it was reset for TSP monitoring on 24 December 2004 as a make-up sampling.

After Christmas holidays on 28 December 2004, our site staff went to WA6 to collect the make-up TSP filter, but the HVS was found not operating again. In this occasion, the HVS even could not be switched on though the power supply was normal. Our maintenance staff went to WA6 on 30 December 2004 for a thorough HVS examination and ultimately diagnosed that the flow controller was out of order, probably due to aging effect under constantly exposed weather conditions. Our staff attempted to repair the flow controller in order to remedy the situation, but not successful. The HVS suppliers were subsequently approached to purchase any available flow controller and parts, but they required some lead-time for shipment from overseas stocks. Ultimately, we could only repair the HVS on 7 January 2005 by replacing with an "old" flow controller temporarily borrowed from our other EM&A projects. Routine 24-h TSP monitoring has been resumed since 8 January 2005.

2. Alternative Solution for Deficiency of Monitoring

The 1-hr TSP monitoring data would be used as surrogate for the interpretation of any potential air quality impacts within the period of deficiency. Reference was made to the 24-h TSP monitoring data collected at the adjacent locations, i.e. WA5 and WA7. The relevant site activity records and our weekly inspections would also be referred. All this information would facilitate the evaluation of the dust impact at WA6 during the period of deficiency. To summarise, there were no exceedance and major non-conformance recorded.

3. Contingency Plan

The following contingency measures will be implemented in case any future breakdown of HVS happened:

- Promptly notify all relevant parties of any HVS malfunction incidents.
- Our site staff will be mobilised within 1 day after notification check and repair the HVS of concern.
- If the problem could not be rectified, our maintenance technicians will be mobilised to conduct a thorough checking and repair the HVS of concern within 2 days after notification of malfunction.
- If the problem still unable to rectify, replacement of part or whole of HVS will be accomplished within 4 days after notification of HVS malfunction. Routine monitoring will be resumed at the same time.
- Sufficient spare parts will be stocked in-house as far as practicable in case any ad hoc replacement would be required in future, so as not to interfere with the subsequent scheduled monitoring events.
- Considering the lifetime and age of all the HVS in the project, thorough maintenance checking will be undertaken more frequently (e.g. biweekly) by our site staff to ensure their normal operation and avoid re-occurrence of any unexpected malfunction in future.

We regret to have caused the inconvenience due to the unexpected malfunction of HVS. If you require any further information, please do not hesitate to contact the undersigned or our Fredrick Leong at 2268-3639.

Yours faithfully


Sam Tsoi
Associate Director

Encl.

cc:	EPD – Ms. Fiona Cheung	} (fax no: 2591 0558)
	HyD – Mr. PF Chui	} (fax no: 2714 5289)
	Mouchel Halcrow – Mr. Jeff Yu	} (fax no: 2417 0134)
	Maeda – Mr. Derek Elliott	} (fax no: 2491 9678)
	Hyder Consulting Limited – Mr. Coleman Ng	} (fax no: 2805 5028)

APPENDIX H

Detailed air quality (24-hour TSP) monitoring results

Details of 24-Hour TSP Monitoring

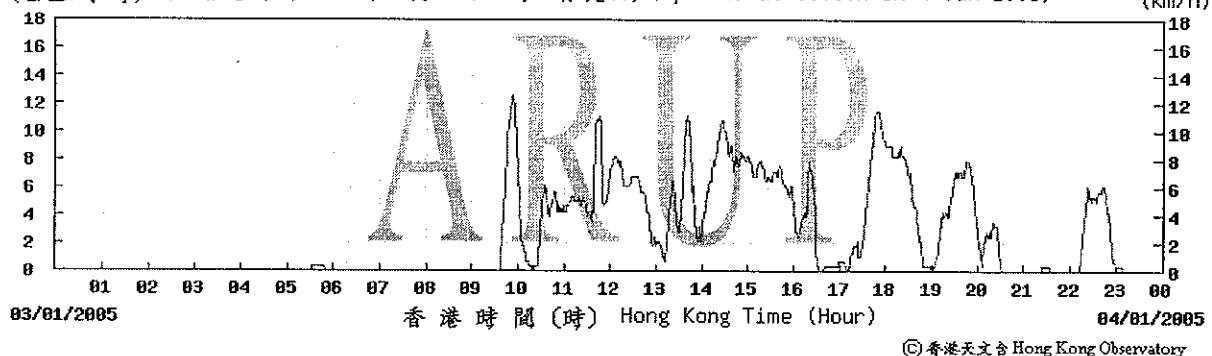
Date	Receptor No.	Weather condition	Site condition	Filter Weight (g)	TSP weight (g)	Flow Rate (m ³ /min)	Average Flow Rate (m ³ /min)	Elapse Time	Sampling Time (mins)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)	Remarks
3-Jan-05	WA3	Fine	Normal Operation	2.9035	3.1967	1.0938	1.1661	4605.27	1440.00	1679.18	174.6	
3-Jan-05	WA4	Fine	Normal Operation	2.9134	3.0207	0.4442	0.4403	4670.30	1440.00	634.03	169.2	
3-Jan-05	WA5	Fine	Normal Operation	2.9197	3.2333	1.3372	1.3206	4674.27	1440.00	1913.82	163.9	
3-Jan-05	WA6	Fine	Normal Operation	#N/A	#N/A	0.2415	0.2416		0.00	0.00	#N/A	HVS malfunction
3-Jan-05	WA7	Fine	Normal Operation	2.8575	3.1230	1.3278	1.3213	4675.22	1440.00	1902.50	139.5	
3-Jan-05	WA8	Fine	Normal Operation	2.9370	3.3098	1.6289	1.6199	4705.46	1440.00	2332.58	159.8	
3-Jan-05	WA9	Fine	Normal Operation	2.8817	3.0780	1.3359	1.3461	4742.06	1440.00	1938.38	101.3	
3-Jan-05	WA10	Fine	Normal Operation	2.8988	3.0146	1.4692	1.4608	4655.88	1440.00	2132.28	54.3	
3-Jan-05	WA11	Fine	Normal Operation	2.9154	3.2531	1.3365	1.2943	4628.10	1440.00	1963.72	181.2	
8-Jan-05	WA3	Fine	Normal Operation	2.9050	3.1181	1.0141	1.0205	4629.27	1440.00	1465.52	145.4	
8-Jan-05	WA4	Fine	Normal Operation	2.8851	3.1140	0.9007	0.9071	4694.30	1440.00	1301.52	175.9	
8-Jan-05	WA5	Fine	Normal Operation	2.8691	3.2251	1.4848	1.4892	4698.27	1440.00	2144.45	166.0	
8-Jan-05	WA6	Fine	Normal Operation	2.8991	3.3515	1.6372	1.6454	4522.38	1440.00	2363.47	191.4	
8-Jan-05	WA7	Fine	Normal Operation	2.8824	3.2061	1.2968	1.2898	4598.22	1440.00	1857.31	174.3	
8-Jan-05	WA8	Fine	Normal Operation	2.9100	3.0982	1.2448	1.2481	4729.46	1440.00	1787.19	104.7	
8-Jan-05	WA9	Fine	Normal Operation	2.9078	3.0405	1.1092	1.1132	4766.06	1440.00	1602.94	82.8	
8-Jan-05	WA10	Fine	Normal Operation	2.9064	3.1292	1.3468	1.3505	4853.10	1440.00	1944.65	114.5	
8-Jan-05	WA11	Fine	Normal Operation	2.9116	3.1750	1.2163	1.2201	4853.10	1440.00	1756.94	149.9	
14-Jan-05	WA3	Fine	Normal Operation	2.9004	3.1573	1.1589	1.1567	4653.28	1440.00	1665.65	154.2	
14-Jan-05	WA4	Fine	Normal Operation	2.8909	3.1201	1.0742	1.0720	4718.30	1440.00	1543.61	148.5	
14-Jan-05	WA5	Fine	Normal Operation	2.8928	3.2680	1.5071	1.5044	4712.27	1440.00	2166.26	172.3	
14-Jan-05	WA6	Fine	Normal Operation	2.8954	3.3775	1.6579	1.6554	4061.20	1440.00	2383.78	202.2	
14-Jan-05	WA7	Fine	Normal Operation	2.8635	3.2022	1.3284	1.3265	4723.22	1440.00	1910.16	161.6	
14-Jan-05	WA8	Fine	Normal Operation	2.8606	3.0770	1.6913	1.5046	4753.46	1440.00	2166.91	99.9	
14-Jan-05	WA9	Fine	Normal Operation	2.8804	2.9401	0.6255	0.6217	4790.06	1440.00	1185.98	50.3	
14-Jan-05	WA10	Fine	Normal Operation	2.9023	3.3249	1.6151	1.6125	4703.89	1440.00	2321.93	182.0	
14-Jan-05	WA11	Fine	Normal Operation	2.8695	3.1680	1.2696	1.2672	4877.10	1440.00	1824.70	163.6	
20-Jan-05	WA3	Fine	Normal Operation	2.8918	3.0535	0.9849	0.9869	4677.28	1440.00	1421.06	127.9	
20-Jan-05	WA4	Fine	Normal Operation	2.8559	2.9840	0.5923	0.5938	4742.30	1440.00	855.00	149.8	
20-Jan-05	WA5	Fine	Normal Operation	2.8684	3.2176	1.3214	1.3239	4736.27	1440.00	1906.42	183.2	
20-Jan-05	WA6	Fine	Normal Operation	2.8997	2.9940	0.7503	0.7513	4065.20	1440.00	1081.80	87.2	
20-Jan-05	WA7	Fine	Normal Operation	2.8782	3.1162	1.2892	1.2911	4747.22	1440.00	1859.18	126.0	
20-Jan-05	WA8	Fine	Normal Operation	2.8679	3.1940	1.6117	1.6144	4777.46	1440.00	2324.74	140.3	
20-Jan-05	WA9	Fine	Normal Operation	2.8657	3.0851	1.3373	1.3403	4814.06	1440.00	1929.96	113.7	
20-Jan-05	WA10	Fine	Normal Operation	2.8842	3.1660	1.4732	1.4758	4727.89	1440.00	2125.08	132.6	
20-Jan-05	WA11	Fine	Normal Operation	2.8683	3.0875	1.1858	1.1892	4801.10	1440.00	1711.01	128.1	
26-Jan-05	WA3	Fine	Normal Operation	2.8999	3.0950	1.1280	1.1321	4701.28	1440.00	1627.27	119.9	
26-Jan-05	WA4	Fine	Normal Operation	2.8973	3.1236	0.9197	0.9235	4766.30	1440.00	1327.66	170.5	
26-Jan-05	WA5	Fine	Normal Operation	2.8814	3.1934	1.3039	1.3062	4760.27	1440.00	1880.86	165.9	
26-Jan-05	WA6	Fine	Normal Operation	2.9235	3.0902	1.1452	1.0972	4760.27	1440.00	1542.53	108.1	
26-Jan-05	WA7	Fine	Normal Operation	2.8649	3.0696	1.3016	1.3052	4771.22	1440.00	1875.90	119.7	
26-Jan-05	WA8	Fine	Normal Operation	2.8977	3.1849	1.2930	1.2969	4801.45	1440.00	1864.73	154.0	
26-Jan-05	WA9	Fine	Normal Operation	2.8935	3.0851	1.4275	1.4305	4838.06	1440.00	2059.92	93.0	
26-Jan-05	WA10	Fine	Normal Operation	2.8905	2.9777	1.3335	1.3366	4751.89	1440.00	1923.26	50.5	
26-Jan-05	WA11	Fine	Normal Operation	2.8916	3.0807	1.1380	1.1382	4925.10	1440.00	1638.94	115.4	

APPENDIX I

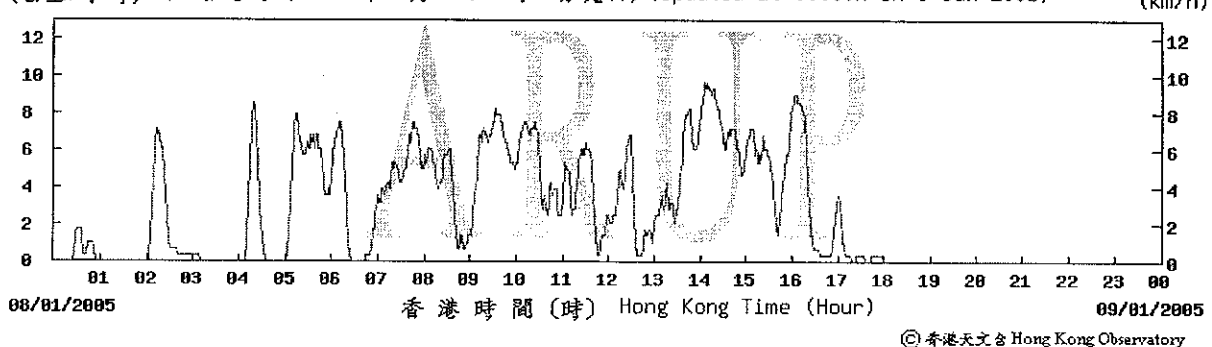
**Detailed wind
monitoring data for the
air quality monitoring
period**

Wind Monitoring Data – Wind Speed during air quality monitoring in January 2005

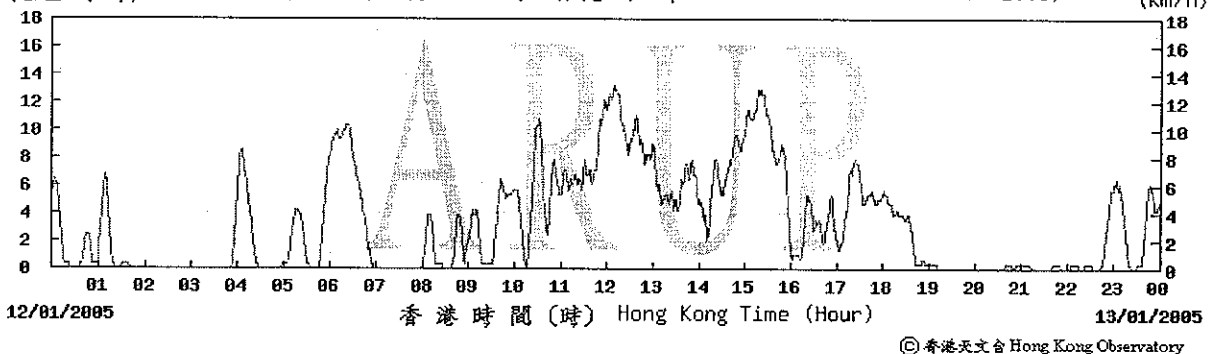
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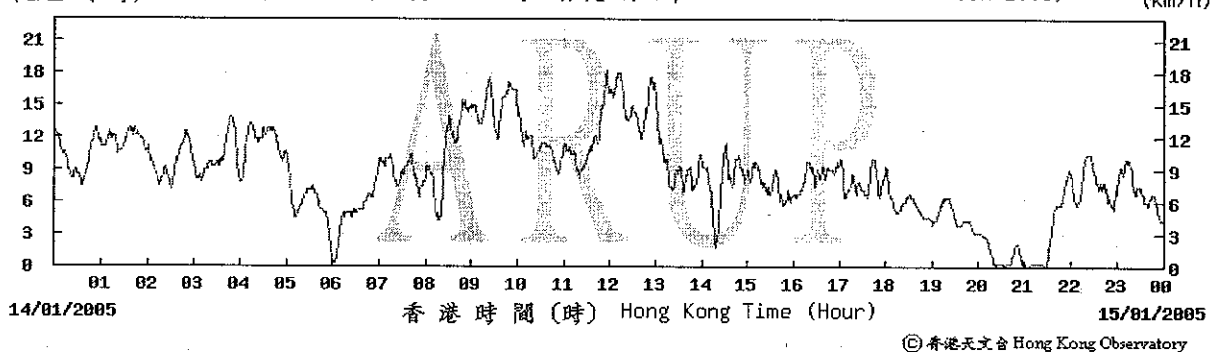
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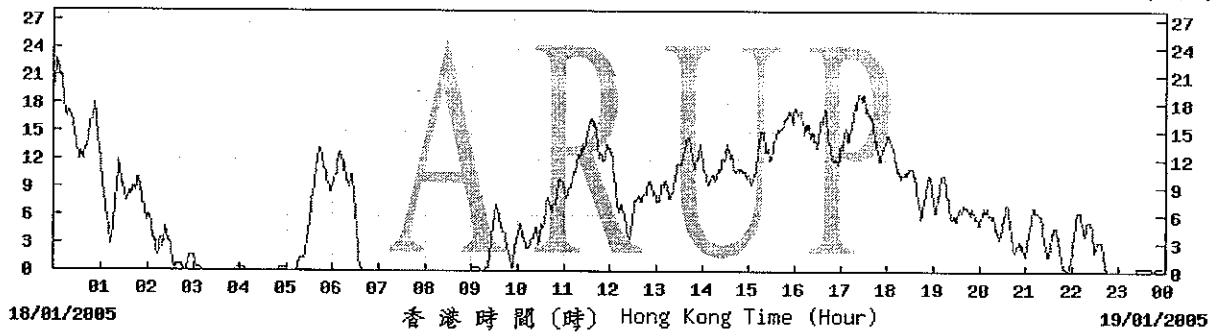
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(公里/小時) (於香港時間 2005 年 1 月 15 日 0 時 0 分更新) (Updated at 00:00H on 15 Jan 2005)

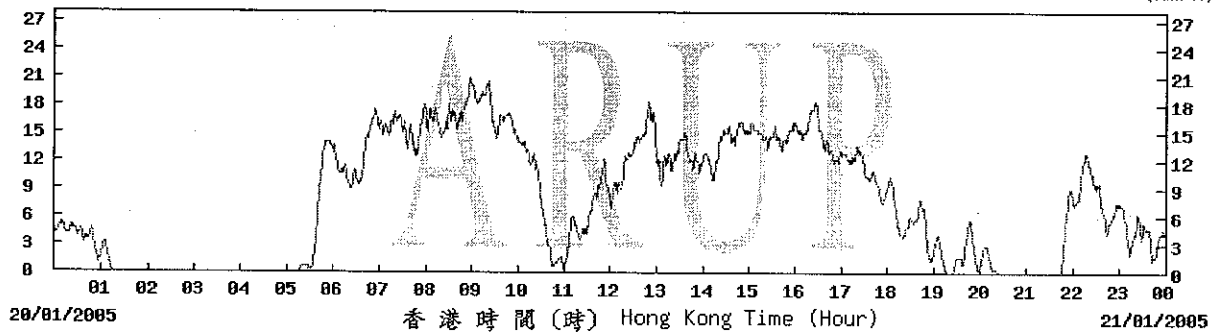


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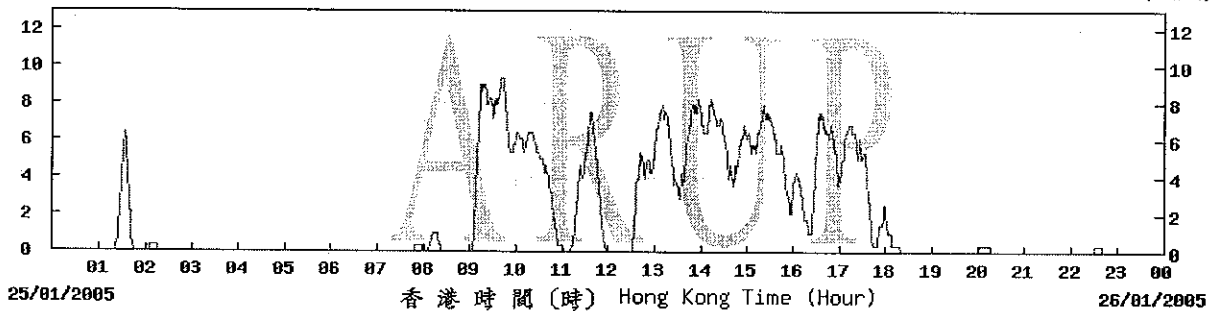
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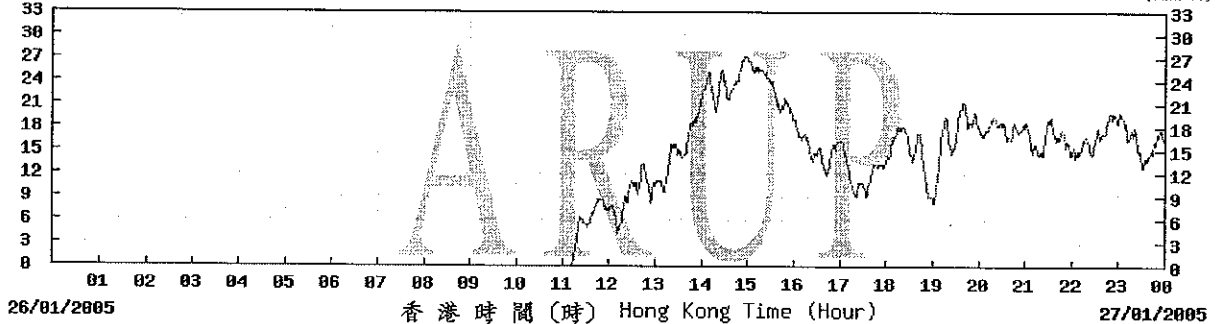
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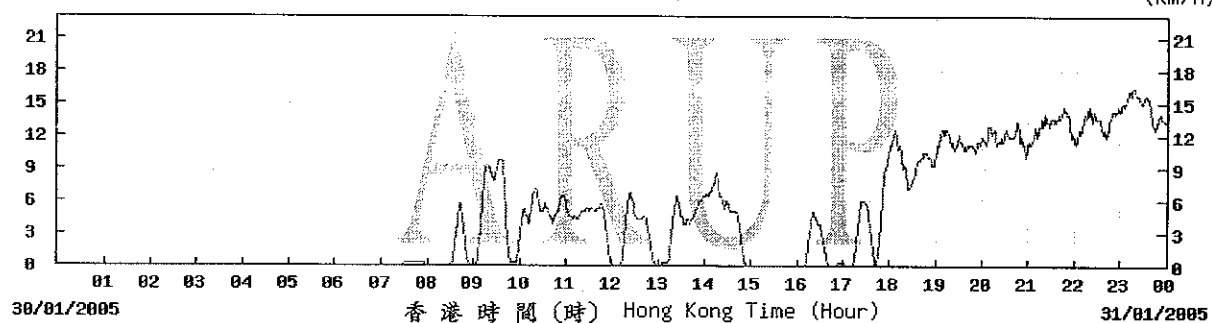
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(公里/小時) (於香港時間 2005 年 1月27日 0時 0分更新) (Updated at 00:00H on 27 Jan 2005) (km/h)



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(公里/小時) (於香港時間 2005 年 1月31日 0時 0分更新) (Updated at 00:00H on 31 Jan 2005) (km/h)



30/01/2005

香港時間 (時) Hong Kong Time (Hour)

31/01/2005

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APPENDIX J

Calibration certificates of noise monitoring equipment

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

AAc Certificate No. 2004001

Tel: +852 2268 3216

Fax: +852 2268 3950

CERTIFICATE OF CONFORMITYDescription of Test InstrumentType NoSerial No

Bruel & Kjaer Acoustic Calibrator

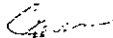
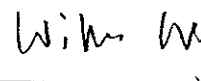
4230

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.

Description of Reference CalibratorType NoSerial No

Brüel & Kjær Multi Frequency Calibrator
Brüel & Kjær Coupler

4226
UA0915

1531372
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.

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 CONFORMITYDescription of Test Instrument

Brüel & Kjær Acoustic Calibrator

Type No

4231


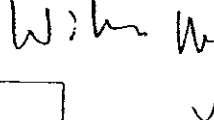
Serial No

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.

Description of Reference CalibratorType NoSerial No

Brüel & Kjær Multi Frequency Calibrator
Brüel & Kjær Coupler

4226
UA0915

1531372
1531372

Certificate of Calibration Serial No.

12701

By Brüel & Kjær (UK) Ltd Calibration Date:

20 April 2004

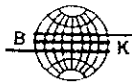
NAMAS Accredited Calibration Laboratory No.

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.

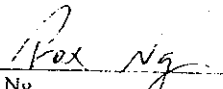
The measurements has been performed with the assistance of :
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain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

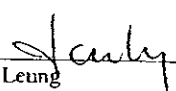
Test Result :

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
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.: 2KS040905-5

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.

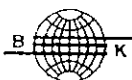
Test :	Subtest :	Status :
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 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 :

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	HKSL (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 : *Pax*
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:

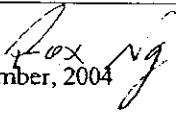
"OK" Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

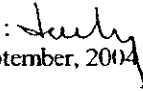
" - " Means the result of the (sub)test is Outside these tolerances.

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	HKSL (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1452949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

 Calibrated By : 
 Date : 10 September, 2004

 Checked By : 
 Date : 10 September, 2004



CERTIFICATE OF CALIBRATION

Certificate No. : 2KS040905-3

Page 1 of 2

Calibration of :

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

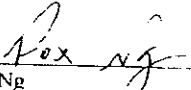
The measurements has been performed with the assistance of :
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain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

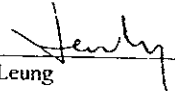
Test Result :

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

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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 :

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	HKSL (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 : *Bob Ng*
 Date : 10 September, 2004

 Checked By : *Janey*
 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.

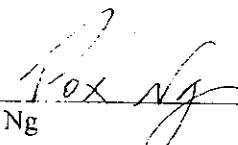
The measurements has been performed with the assistance of :
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 C2231_10, Ver.03.11.1995
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

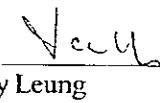
Test Result :

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
Calibrated By :

Certificate issued: 10 September, 2004
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	HKSLC(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 : *Paul 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-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	HKSLC(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 : *[Signature]*
 Date : 10 September, 2004

APPENDIX K
Detailed noise
monitoring results

Details of Noise Impact Monitoring

Date	NSR No.	Time periods		Weather condition	Avg. wind speed (m/s)	Noise Level dB(A)			Influencing factors/ Site condition
		Start	Finish			L _{eq}	L ₁₀	L ₉₀	
3-Jan-05	WN1	16:30	17:00	Fine	1.3	69.8	72.5	68.5	Normal Operation
3-Jan-05	WN2	17:10	17:40	Fine	1.6	70.2	73.0	69.0	Normal Operation
3-Jan-05	WN6	14:15	14:45	Fine	1.9	69.9	73.0	68.5	Normal Operation
3-Jan-05	WN7	13:15	13:45	Fine	1.8	69.3	72.0	68.0	Normal Operation
3-Jan-05	WN8	11:15	11:45	Fine	1.8	68.9	72.0	68.0	Normal Operation
3-Jan-05	WN9	10:15	10:45	Fine	1.7	70.9	73.0	69.0	Normal Operation
3-Jan-05	WN10	9:30	10:00	Fine	1.2	70.2	72.5	69.0	Normal Operation
3-Jan-05	WN11	14:30	15:00	Fine	1.0	70.6	73.0	69.0	Normal Operation
3-Jan-05	WN12	13:45	14:15	Fine	1.5	69.9	72.5	68.5	Normal Operation
3-Jan-05	WN13	13:00	13:30	Fine	1.8	70.1	73.0	69.0	Normal Operation
3-Jan-05	WN14	11:00	11:30	Fine	1.5	69.4	72.5	68.5	Normal Operation
3-Jan-05	WN15	10:15	10:45	Fine	2.1	70.5	73.0	69.0	Normal Operation
3-Jan-05	WN16	9:30	10:00	Fine	2.2	73.2	74.5	71.5	Normal Operation
12-Jan-05	WN1	16:30	17:00	Fine	1.2	70.7	72.0	69.5	Normal Operation
12-Jan-05	WN2	15:45	16:15	Fine	1.0	70.4	71.5	69.0	Normal Operation
12-Jan-05	WN6	14:45	15:15	Fine	2.5	66.3	68.0	65.0	Normal Operation
12-Jan-05	WN7	14:00	14:30	Fine	2.1	67.8	69.0	66.0	Normal Operation
12-Jan-05	WN8	13:15	13:45	Fine	2.3	67.4	68.5	66.5	Normal Operation
12-Jan-05	WN9	16:50	17:20	Fine	0.8	69.8	71.5	68.5	Normal Operation
12-Jan-05	WN10	15:45	16:15	Fine	0.7	69.4	71.0	67.5	Normal Operation
12-Jan-05	WN11	15:00	15:30	Fine	0.9	70.0	71.5	68.5	Normal Operation
12-Jan-05	WN12	14:00	14:30	Fine	2.0	68.2	69.5	67.0	Normal Operation
12-Jan-05	WN13	11:00	11:30	Fine	0.7	67.6	69.0	66.0	Normal Operation
12-Jan-05	WN14	10:00	10:30	Fine	0.9	68.4	69.0	67.0	Normal Operation
12-Jan-05	WN15	11:00	11:30	Fine	1.0	70.1	71.0	68.5	Normal Operation
12-Jan-05	WN16	10:00	10:30	Fine	0.6	65.8	66.5	64.5	Normal Operation
18-Jan-05	WN1	14:30	15:00	Sunny	1.3	68.8	69.5	67.0	Normal Operation
18-Jan-05	WN2	15:10	15:40	Sunny	1.5	69.0	71.0	68.0	Normal Operation
18-Jan-05	WN6	9:30	10:00	Sunny	2.4	70.3	72.0	69.5	Normal Operation
18-Jan-05	WN7	10:15	10:45	Sunny	2.1	69.7	71.5	68.0	Normal Operation
18-Jan-05	WN8	11:00	11:30	Sunny	1.9	69.3	71.0	67.5	Normal Operation
18-Jan-05	WN9	13:00	13:30	Sunny	0.9	71.8	73.0	70.5	Normal Operation
18-Jan-05	WN10	13:40	14:10	Sunny	1.3	70.7	72.5	69.0	Normal Operation
18-Jan-05	WN11	14:30	15:00	Sunny	1.5	69.9	72.0	69.5	Normal Operation
18-Jan-05	WN12	13:45	14:15	Sunny	1.3	69.8	72.5	69.0	Normal Operation
18-Jan-05	WN13	13:00	13:30	Sunny	1.6	70.4	73.0	68.5	Normal Operation
18-Jan-05	WN14	10:55	11:25	Sunny	1.0	69.2	72.5	68.0	Normal Operation
18-Jan-05	WN15	10:15	10:45	Sunny	1.9	70.2	72.5	67.5	Normal Operation
18-Jan-05	WN16	9:30	10:00	Sunny	2.2	72.8	74.5	70.5	Normal Operation
25-Jan-05	WN1	13:30	14:00	Fine	1.4	69.2	72.0	68.5	Normal Operation
25-Jan-05	WN2	14:15	14:45	Fine	1.6	69.0	71.0	68.5	Normal Operation
25-Jan-05	WN6	9:00	9:30	Fine	1.9	70.1	72.5	69.0	Normal Operation
25-Jan-05	WN7	9:45	10:15	Fine	1.8	69.8	72.5	68.0	Normal Operation
25-Jan-05	WN8	10:30	11:00	Fine	1.8	70.5	73.0	68.5	Normal Operation
25-Jan-05	WN9	11:15	11:45	Fine	1.9	71.9	74.0	69.5	Normal Operation
25-Jan-05	WN10	11:30	12:00	Fine	1.0	70.5	73.5	69.0	Normal Operation
25-Jan-05	WN11	13:15	13:45	Fine	1.1	69.9	72.5	68.0	Normal Operation
25-Jan-05	WN12	14:00	14:30	Fine	1.6	69.8	72.5	68.0	Normal Operation
25-Jan-05	WN13	14:45	15:15	Fine	1.1	70.3	73.5	67.5	Normal Operation
25-Jan-05	WN14	15:30	16:00	Fine	0.8	69.2	72.5	68.0	Normal Operation
25-Jan-05	WN15	16:15	16:45	Fine	1.8	70.4	73.5	68.5	Normal Operation
25-Jan-05	WN16	17:00	17:30	Fine	2.2	72.3	75.0	70.0	Normal Operation
31-Jan-05	WN1	14:30	15:00	Fine	1.2	69.6	72.0	67.5	Normal Operation
31-Jan-05	WN2	15:10	15:40	Fine	1.4	69.9	72.0	68.0	Normal Operation
31-Jan-05	WN6	9:30	10:00	Fine	1.6	70.5	73.0	68.0	Normal Operation
31-Jan-05	WN7	10:15	10:45	Fine	1.9	70.2	73.5	68.5	Normal Operation
31-Jan-05	WN8	11:00	11:30	Fine	1.9	70.7	73.5	69.0	Normal Operation
31-Jan-05	WN9	13:00	13:30	Fine	1.8	72.2	75.5	70.0	Normal Operation
31-Jan-05	WN10	13:35	14:05	Fine	1.7	70.9	73.5	69.0	Normal Operation
31-Jan-05	WN11	15:00	15:30	Fine	1.5	68.9	70.5	67.0	Normal Operation
31-Jan-05	WN12	14:15	14:45	Fine	2.1	70.2	73.0	68.0	Normal Operation
31-Jan-05	WN13	13:30	14:00	Fine	1.9	70.4	73.5	67.5	Normal Operation
31-Jan-05	WN14	11:30	12:00	Fine	1.3	69.7	72.5	67.0	Normal Operation
31-Jan-05	WN15	10:30	11:00	Fine	2.4	70.8	72.5	67.5	Normal Operation
31-Jan-05	WN16	9:45	10:15	Fine	2.2	71.8	74.5	69.5	Normal Operation

APPENDIX L

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. 35

(January 2005)

Prepared by

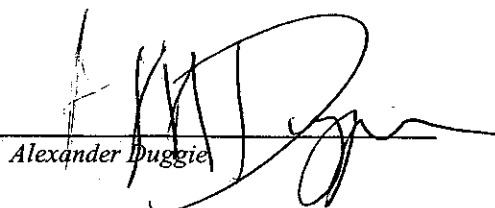
URBIS LIMITED

Prepared by :


Tran Tuan Huy

1st February 2005

Approved by :


Alexander Duggie

1st February 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 – 6th January 2005

3.1.1 Matters Arising from Previous Inspections

- The Contractor had cleared away the scrap-wood and garbage piles at retaining wall RW-01 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 garbage found at the temporary garbage collection area at Slope 6. The Contractor was reminded to keep the area clean and tidy.
- The Contractor had cleared away the garbage pile at the slope area behind noise enclosure NM-02 area. However, new garbage pile was found, the Contractor was requested to clear it away as soon as possible.
- The Contractor had cleared away the construction waste pile at ramp entrance of footbridge FB-01 area.
- The Contractor had tidied up the site area and cleared away the scrap-wood piles at Seawall 'C' area. However, new construction waste pile was found and the Contractor was requested to clear it away as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler's Beach was outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently.
- Dry surface conditions were observed at retaining wall RW13 area and footbridge FB-03 area. The Contractor was reminded to carry out more frequent watering of the site to prevent dust nuisance.

3.1.2 Site Clearance and Formation Works

- Existing tree bark at Slope 6SW-D/C186 was found damaged. The Contractor was reminded to carry out proper tree protection of existing tree as soon as possible.
- Waste container bin at Seawall 'B' area was found to be full. The Contractor was requested to clear it away as soon as possible.
- Exposed soil slope surface was found at BPRW14 area. The Contractor was requested to provide temporary cover 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.

- The Contractor was reminded to carry out more frequent watering of the site during dry periods to prevent dust nuisance.

3.2 Summary of Inspection – 20th January 2005

3.2.1 Matters Arising from Previous Inspections

- The Contractor had emptied the waste container bin at retaining wall RW-01 area.
- The Contractor had cleared away the garbage pile at the slope area behind noise enclosure NM-02 area.
- The Contractor had cleared away the construction waste pile at Seawall 'C' area. However, the waste container bin was found to be full, and the Contractor was requested to clear it away as soon as possible.
- Root pruning of the damaged tree root for the retained tree (T44) at Angler's Beach was outstanding. The Contractor was reminded to properly pruned back the root and carry out tree protection urgently.
- 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 emptied the waste container bin at Seawall 'B' area.
- Dry surface conditions were observed at noise enclosure NM-02 area, Seawall 'C', and footbridge FB-03 area. 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

- Scattered construction waste piles was found at RW-01 area. The Contractor was requested to clear it away as soon as possible.
- Garbage piles were found at footbridge FB-02 area. The Contractor was requested to clear it away as soon as possible.
- Scattered empty cement bags were found at BPRW14 area. The Contractor was requested to clear it away as soon as possible.
- Construction waste pile was found opposite Lido Garden 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 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.

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 January is 100%.

5.0 AUDIT SCHEULE

5.1 Audit Schedule for February 2005

The next audits are schedule to be conducted on 3rd and 17th February 2005.

APPENDIX M

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	

Log Record on Environmental Complaints

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	

MAEDA CORPORATION

Enquiry / Complaint Follow Up Form

Contract: HY/99/18 - Castle Peak Road between Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Call Details

Log No	172	Type	Complaint	<input checked="" type="checkbox"/> Environmental Complaint
Received by	Simon Li	Date	05-Jan-2005	Time 10:00 AM

Call Details

Name	Mr. Raymond Chan	Organisation	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Organization
Tel	24912239	Fax	E-mail

Address Sea Crest Villa Phase III Management Office

Details of Enquiry / Complaint

Location Area between Sea Crest Villa Phase III and the Contractor's site office.

Description

A resident of Sea Crest Villa Phase III complaint that daytime construction noise started 7:30 AM over the past few days.

Details of Action Taken

Report to RE	Sidney Ng	Date	05-Jan-2005	Report Time	11:00 AM	Report By
Action by	C.F. Kwong	Date	05-Jan-2005	Action Time	02:30 PM	C.F. Kwong

Details

Mr. C.F. Kwong called Mr. Raymond Chan to clarify the details of the complaint.

Mr. Chan noted that construction work at 7:30 was within regulation guidelines, but suggested that the use of heavy equipments such as rock breakers be carried out starting 8:00 AM instead. Mr. Kwong agreed to follow-up on on this suggestion and make the appropriate arrangements.

Follow up by	C.F. Kwong	Follow up date	5 Jan 05	Follow up time
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Follow up

Arranged to make sure that noisy activities such as rock breaking be carried out at or after 8:00 AM.

Remarks

The complaint was forwarded to the Contractor's Office by Mr. Sidney Ng of the RE's office. Mr. C.F. Kwong processed the complaint.

MAEDA CORPORATION

Enquiry / Complaint Follow Up Form

Contract: HY/99/18 - Castle Peak Road between Sham Tseng and Ka Loon Tsuen, Tsuen Wan

Call Details

Log No	175	Type	Complaint	<input checked="" type="checkbox"/> Environmental Complaint
Received by	Vivian Wong	Date	28-Jan-2005	Time 08:20 AM

Call Details

Name	Mr. Kan	Organisation	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Organization
Tel	91503008	Fax	E-mail
Address Sea Crest Villa Phase 3			

Details of Enquiry / Complaint

Location Opposite Sea Crest Villa Phase II and Phsae III at the finished RERW slopes and finished portion of Outfall I adjacent bus stops.

Description

Requested that the rubbish discarded at the concerned locations be removed. In addition, to clean leaves and moss accumulated in the outfall (i.e. general maintenance of facilities).

Details of Action Taken

Report to RE	Sidney Ng	Date	28-Jan-2005	Report Time	03:00 AM	Report By
Action by	C.F. Kwong	Date	28-Jan-2005	Action Time	02:45 AM	C.F. Kwong

Details

Inspected the concerned area and taken photographs; called Mr. Kan to confirm nature of complaint/request; notified the concerned section engineer to carry out the work requested.

Follow up by	Raymond Kwok	Follow up date		Follow up time	
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Follow up

Arrange to carry out the maintenance works.

Remarks

