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**TEST REPORT**

**Kaden Construction Limited**

**CONTRACT NO. DC/2007/18**

**YUNG SHUE WAN AND  
SOK KWU WAN VILLAGE SEWERAGE,  
STAGE 1 WORKS**

**MONTHLY IMPACT MONITORING  
REPORT NO.15**

**(AUGUST 2009)**

Prepared by:

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# Scott Wilson CDM Joint Venture

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Chief Engineer/Harbour Area Treatment Scheme  
Drainage Services Department  
5/F Western Magistracy  
2A Pok Fu Lam Road  
Hong Kong

Your reference:

Our reference: 05117/6/10/328149

Date: 15 September 2009

Attention: Mr. C K Au

**BY FAX ONLY**

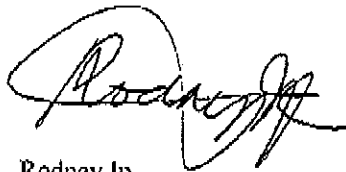
Dear Sir

Contract No. DC/2007/18  
Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works  
Monthly Impact Monitoring Report No. 15

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I refer to the Environmental Permit (EP-281/2007) and the email from the environmental team, ETS-Testconsult Limited with the revised report, dated 15 September 2009. I do not have further comment and have verified the captioned report.

Yours faithfully  
SCOTT WILSON CDM JOINT VENTURE



Rodney Ip

ANCP/anep

cc	Kaden Construction Ltd	(Attn: Mr Stephen Leung)
	ETS-Testconsult	(Attn: Ms Linda Law)
	ER/LAMMA	(Attn: Mr Ian Jones)
	CDM	(Attn: Mr Mark Sin)



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## EXECUTIVE SUMMARY

The Contractor, Kaden Construction Limited (Kaden), appointed Environmental Team of ETS-Testconsult Limited (ET) to undertake the environmental impact monitoring for "Contract No. DC/2007/18 Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works" (the Project) under the requirements and specifications of "the Environmental Permit (Application No. AEP-281/2007)" (the EP) and "the Final EM&A Manual – Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection, Treatment and Disposal Facilities" (the EM&A Manual).

This Monthly Impact Monitoring Report No.15 has been prepared by the ET of ETS-Testconsult Limited to document the impact monitoring works conducted for the Project in August 2009.

### Construction Progress

The major construction works in this monitoring period were as below:

- Sewer drainage pipe & manhole construction (include open cut & trenchless method); and
- Road reinstatement work.

### Environmental Monitoring Progress

The summary of the monitoring activities in this monitoring period is listed below:

- Noise Monitoring (Day-time): 5 Occasions at 4 designated locations;
- 24-hour TSP Monitoring: 6 Occasions at 3 designated locations;
- 1-hour TSP Monitoring: 18 Occasions at 3 designated locations.

### Impact Air Quality Monitoring

No exceedances of Action and Limit levels were recorded for 24-hr and 1-hr TSP monitoring in the reporting period.

### Impact Noise Monitoring

No exceedances of Action and Limit Levels were recorded in this reporting month.

### Waste Management

According to weekly site inspection, ET found that the Contractor followed the recommended procedures stipulated in the Waste Management Plan (WMP) on handling and disposal of wastes. In this reporting month, 35.2 m<sup>3</sup> Public Fill, 2.0 m<sup>3</sup> hard rock and large broken concrete and 0.54 tonne rubbish were generated and disposed to Sok Kwu Wan Refuse Transfer Station (SKWRTS) properly. Besides, 73.5 m<sup>3</sup> inert C&D materials reused in the Contract was recorded in this reporting month.

### Site Inspection

Environmental site inspections conducted in this reporting month are presented as follows:

#### Concerned Parties

ET  
RE / IEC / Kaden / ET

#### Dates of Audit / Inspection

03, 13, 19, 25 and 31 August 2009  
19 August 2009

According to the summary of the weekly site inspections carried out in this month, it indicated that site practices of the Kaden were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was satisfactory.

Summary of the site inspection findings in this reporting month is shown as below:



Item	Aspect	Finding	Action(s) to be taken by the Contractor	ET Verification
1	Air	Stockpiles of fill materials at S135 were found without cover during weekly site inspections on 13/08/09 and 19/08/09.	The Contractor replied to cover all stockpiles properly.	During the next weekly site inspection on 25/08/09, the stockpiles were found covered.
2	Noise	Noise label of an air compressor at S102 was found damaged during the weekly site inspection on 13/08/09.	The Contractor replied to provide new noise label immediately.	During the subsequent weekly site inspection on 19/08/09, the air compressor was removed for maintenance.
3	Noise	The construction works at S162 outside RE site office was found noisy during the weekly site inspection on 19/08/09.	The Contractor replied to provide more mitigation measures to reduce the noise impact.	During the subsequent weekly site inspection on 25/08/09, portable noise barrier was found provided during the construction work.
4	Water	The sedimentation tank at S81 was found too small during the weekly site inspection on 19/08/09.	The Contractor replied to provide a larger sedimentation tank.	During the subsequent weekly site inspection on 25/08/09, the sedimentation tank was replaced by a larger one.
5	Water	The drainage at S135 was found full of sands and debris during the weekly site inspection on 19/08/09.	The Contractor replied to clean up the sand and debris inside the drainage.	During the subsequent weekly site inspection on 25/08/09, the sands and debris inside the drainage were cleaned up.
6	Water	Rocks and soil were noted accumulated inside the sedimentation tank at S64 during the weekly site inspection on 19/08/09.	The Contractor replied to clean up the rocks and soil inside the sedimentation tank.	During the subsequent weekly site inspection on 25/08/09, the rocks and soil were cleaned up.
7	Chemical	Oil stain was noted on the ground at S73-S75 during the weekly site inspection on 03/08/09.	The Contractor replied to clean up the oil stain as chemical waste.	During the subsequent weekly site inspection on 13/08/09, no oil stain was noted on the ground.
8	Chemical	An oil drum at S73-S75 was found without drip tray during the weekly site inspection on 03/08/09.	The Contractor replied to provide drip tray for all chemicals.	During the subsequent weekly site inspection on 13/08/09, no oil drum was found at S73-S75.
9	Chemical	A diesel drum and chemical containers at S73-S75 were found without drip tray during the weekly site inspection on 31/08/09	The Contractor replied to provide drip trays for all chemicals.	Since the finding was observed in the last weekly site inspection, it will be verified in the coming month.
10	Site Inspection	C&D materials were noted accumulated at S147 without cover during the weekly site inspection on 19/08/09.	The Contractor replied to collect the C&D materials and store them properly.	During the same inspection, the C&D materials were collected and no further action was required.

### **Environmental Complaints, Notifications of Summons and Successful Prosecutions**

No complaints, notifications of summons and successful prosecutions were received in this reporting period.

### **Conclusion and Recommendations**

The monitored environmental data indicated that no unacceptable environmental impacts arising from the Project had been caused to the surrounding sensitive receivers. The environmental mitigation measures had been effective in controlling potential impacts to within acceptable sensitive receivers. Besides, the Contractor was recommended to maintain good site practice in order to minimize the environmental impacts at the site.



### **Construction Programme for Coming Month**

The Construction programme for the Project is shown in Appendix E.

As informed by the Contractor, the activities to be conducted by them in coming month included:

- Sewer drainage pipe & manhole construction (include open cut & trenchless method);
- Road reinstatement work; and
- Protection of uncommon tree species.

### **Future Key Issues**

Based on the forecast of engineering works in the coming month, key issues to be considered are as follows:

- Noise and air quality impact due to construction works; and
- Maintain good site practice to minimize environmental impacts at the site.

### **Internet Website**

The monthly EM&A report can be accessed on the web at <http://www.skwsewer.com>.



## 1.0 INTRODUCTION

The Customer, Kaden Construction Limited (Kaden), appointed Environmental Team of ETS-Testconsult Limited to undertake the environmental impact monitoring for "Contract No. DC/2007/18 Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works" (the Project) under the requirements and specifications of "the Environmental Permit (Application No. AEP-281/2007)" (the EP) and "the Final EM&A Manual – Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection, Treatment and Disposal Facilities" (the EM&A Manual).

In accordance with the Section 5 of the EP, EM&A programme as set out in the EM&A Manual is required to be implemented. In accordance with the EM&A manual, environmental monitoring of air quality and noise is required for the Project. The EM&A requirement for each parameter are described in details in subsequent sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event-Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study report;
- Environmental requirements in contract documents.

This monthly EM&A report summarizes the impact monitoring in August 2009. This monthly EM&A report can be accessed on the web at <http://www.skwsewer.com>.

## 2.0 PROJECT INFORMATION

### 2.1 Background

Under this Project, Kaden is required to construct village sewerage in Yung Shue Wan and Sok Kwu Wan, Lamma Island.

Village sewage works will undertake in this Project. These will comprise laying approximately 1.4km of sewerage pipes from 220mm to 350mm diameter in Sok Kwu Wan Village.

As the main Contractor of the captioned project contracted by, Kaden will follow the environmental monitoring recommendation stated in the EM&A Manual that was prepared with reference to the EIA Report (Register No.: AEIAR-075/2003).

According to the EP and the EM&A Manual, the environmental programme is mainly focused on the construction activities of this Project in Sok Kwu Wan. At the same time, all air quality and noise monitoring stations proposed in the EM&A Manual are located in Sok Kwu Wan. The baseline report is prepared in accordance with EP (No. EP-281/2007) for the Designated Project "Outlying Islands Sewerage Stage 1 Phase 2 – Sok Kwu Wan Sewage Collection, Treatment and Disposal Facilities" and the EM&A Manual.

### 2.2 Site Description

The general layout plan of the project in Sok Kwu Wan is shown in Drawing No. 2005/C1/2004, 2005/C1/2005 and 2005/C1/2006.

Surrounding the construction site, there are air and noise sensitive receivers at Chung Mei Village, Sok Kwu Wan and Ta Shui Wan.

### 2.3 Construction Programme

The construction programme is shown in Appendix E.





## 2.4 Project Organization and Management Structure

The organization chart with respect to the on-site environmental management and monitoring program are shown in Appendix A.

## 2.5 Contact Details of Key Personnel

The key personnel contact names and telephone numbers, and construction programme are shown in table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	Project Role	Key Staff	Tel. No.	Fax No.
Scott Wilson CDM JV	Engineer Representative	Ir Ian J Jones	2982 0240	2982 4129
Scott Wilson CDM JV	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Kaden Construction Ltd	Contractor	Ir Stephen Leung	2454 9102	2465 1207
ETS-Testconsult Ltd	Environmental Team	Mr. C L Lau	2946 7791	2695 3944

## 2.6 Construction Progress in this reporting month

A summary of the major construction activities undertaken in this monitoring month were:

- Sewer drainage pipe & manhole construction (include open cut & trenchless method); and
- Road reinstatement work.

## 3.0 IMPACT AIR QUALITY MONITORING

### 3.1 Monitoring Requirement

Both 1-hr and 24-hr TSP monitoring is required to be conducted in order to monitor the air quality of the environment during the construction period. For regular monitoring, a sampling frequency of at least one in every six days should be carried out at all designated monitoring stations.

### 3.2 Monitoring Equipment

#### 24-hour TSP Monitoring

High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets are employed for 24-hour TSP. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

#### Installation

The installation of HVS refers to the requirement stated in EM&A Manual.

#### Operation/Analytical Procedures

Operating/analytical procedures for the operation of HVS are as below:

Prior to the commencement of the air sampling, the flow rate of the high volume sampler was properly set (between 0.6m<sup>3</sup>/min and 1.7m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

- For TSP sampling, fiberglass filters (GA-55) were used.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 minutes to establish thermal equilibrium before placing any filter media at designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.



- The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The programmable timer will be set for a sampling period of 24 hours. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number.).
- After sampling, the filter was transferred from the filter holder of the HVS to a sealed plastic bag and sent to the laboratory for weighting. The elapsed time was also recorded.
- Before weighting, all filters were equilibrated in a desiccator for 24 hour with the temperature of  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and the relative humidity (RH)  $<50\% \pm 5\%$ .

#### Maintenance & Calibration

- The HVS and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- The HVSs used were calibrated before the commencement of air quality monitoring, after maintenance and every two months. Five-point calibration by using calibration kit (e.g. Tisch TE-5025A) was performed to establish a relationship between the flow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, QStd, in  $\text{m}^3/\text{min}$ .

#### **1-hour TSP Monitoring**

1-hour TSP levels were measured by using 1-hour dust meter which are capable of producing comparable results as the by high volume sampling method, to indicate short event impacts.

#### Measuring Procedures

The measuring procedures of the 1-hr dust meter are in accordance with the Manufacturer's instruction Manual as follows:

- Set POWER to ON, check the battery indicator to ensure whether the power supply is enough to conduct the TSP monitoring;
- Calibrate the dust meter by zero check;
- Set the TIME CONSTANT of the dust meter;
- Press SAMPLE to start the TSP monitoring;
- Record the maximum, minimum and average reading directly from the dust meter by press STATISTICS when monitoring complete.

#### Maintenance & Calibration

- 1-hour dust meter should be checked at 6-month intervals throughout all stages of impact air quality monitoring. Through a five-point calibration by placing the dust meter and calibrated HVS under the same environmental condition, a relationship in TSP level ( $\mu\text{g}/\text{m}^3$ ) between dust meter and HVS was established.

### **3.3 Laboratory Measurement / Analysis**

Environmental Laboratory of ETS-Testconsult which is HOKLAS accredited, carried out the laboratory analysis.

A clean filter paper with no pinholes was used for each time of monitoring. Before sampling, the filter paper of size 8" x 10" was labelled and conditioned in a humidity controlled chamber for over 24 hours and pre-weighed before use for the sampling.

After sampling, the filter paper loaded with dust was kept in a clean and tightly sealed plastic bag. The filter paper then returned to the laboratory for reconditioning in the humidity controlled chamber following by accurate weighing by an electronic balance with readout down to 0.1mg. The balance was calibrated against a traceable standard.

All the analysis results and collected samples were kept in a good condition for 6 months after completion of the monitoring exercise before disposal.



### 3.4 Monitoring Parameters, Frequency and Duration

Table 3.1 summarizes the monitoring parameters, monitoring duration and frequencies of impact air quality monitoring.

Table 3.1 Monitoring parameters, duration and frequencies of impact air quality monitoring

Parameter	Duration	Frequency
24-hr TSP	24 hr (0000-2400)	One in every six days
1-hr TSP	1 hr (0700-1900)	3 times per day in every six days

### 3.5 Monitoring Locations

As the requirement in the EM&A Manual, three designated air monitoring stations were selected. Table 3.2 tabulates the air quality monitoring locations of this Project.

Table 3.2 Air monitoring stations

Air monitoring station	Description of location
AM1	Squatter house in Chung Mei Village
AM2	Squatter house in Chung Mei Village
AM3	Football Court

### 3.6 Action and Limit Levels

Action and Limit levels for 24-hr TSP and 1-hr TSP derived as illustrated in Table 3.3.

Table 3.3 Action and Limit levels for 24-hr TSP and 1-hr TSP

Monitoring Station	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )		1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	
	Action Level	Limit Level	Action Level	Limit Level
AM1	173	260	343	500
AM2	175	260	331	500
AM3	191	260	353	500

### 3.7 Event-Action Plans

Should the results of the monitoring parameters at any designated monitoring stations indicate that the air quality criteria are exceeded, the actions in accordance with the Event and Action Plan that summarized in Appendix D should be carried out.

### 3.8 Results

Totally 6 occasions of 24-hr TSP monitoring and 18 occasions of 1-hr TSP monitoring were carried out in this reporting period. All monitoring data of 1-hr and 24-hr TSP monitoring is provided in Appendix B2. Graphical presentation of both 1-hr and 24-hr TSP monitoring results for the reporting month is shown in Appendix B3.

No exceedances of Action and Limit Level of 1-hr and 24-hr TSP monitoring results were recorded during the reporting month. Table 3.4 summaries the 1-hr and 24-hr TSP monitoring results.



Table 3.4 Summary of 1-hr and 24-hr TSP Monitoring Results

Parameter	1-hr TSP Monitoring								
	Station	AM1			AM2			AM3	
Date	Time	Result	Exceed*	Time	Result	Exceed*	Time	Result	Exceed*
03/08/09	09:15	163	X	09:20	141	X	13:00	157	X
03/08/09	10:15	193	X	10:20	163	X	14:00	185	X
03/08/09	11:15	182	X	11:20	171	X	15:00	178	X
07/08/09	09:20	166	X	09:24	161	X	13:00	163	X
07/08/09	10:20	178	X	10:24	170	X	14:00	184	X
07/08/09	11:20	146	X	11:24	142	X	15:00	148	X
13/08/09	09:22	163	X	09:27	159	X	13:00	172	X
13/08/09	10:22	161	X	10:27	146	X	14:00	135	X
13/08/09	11:22	142	X	11:27	130	X	15:00	145	X
19/08/09	13:00	183	X	13:06	170	X	09:15	154	X
19/08/09	14:00	198	X	14:06	185	X	10:15	144	X
19/08/09	15:00	155	X	15:06	151	X	11:15	131	X
25/08/09	09:18	156	X	09:30	146	X	14:00	158	X
25/08/09	10:18	184	X	10:30	197	X	15:00	163	X
25/08/09	11:18	216	X	11:30	171	X	16:00	148	X
31/08/09	13:00	180	X	13:00	176	X	09:20	168	X
31/08/09	14:00	190	X	14:00	190	X	10:20	180	X
31/08/09	15:00	151	X	15:00	160	X	11:20	148	X

Parameter	24-hr TSP Monitoring					
	Station	AM1		AM2		AM3
Date	Result	Exceed*	Result	Exceed*	Result	Exceed*
03/08/09	53	X	40	X	77	X
07/08/09	45	X	47	X	34	X
13/08/09	30	X	23	X	21	X
19/08/09	43	X	43	X	30	X
25/08/09	41	X	42	X	29	X
31/08/09	65	X	56	X	75	X

Remark (\*): L=Limit Level exceedance, A=Action Level exceedance and X=not an exceedance

#### 4.0 IMPACT NOISE MONITORING

##### 4.1 Monitoring Requirements

As the requirement in the EM&A Manual, impact noise monitoring was conducted for a weekly basis at designated monitoring locations.

##### 4.2 Monitoring Equipment

Integrating Sound Level Meters used for impact noise monitoring were Type 1 sound level meters capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level ( $L_{eq}$ ) and percentile sound pressure level ( $L_x$ ). They complied with International Electro technical Commission Publications 651:1979 (Type1) and speed in m/s was used to monitor the wind speed. Table 4.1 summarized the noise monitoring equipment model used during the impact monitoring. Copies of calibration certificates and Calibration Summary for noise meters and calibrators used are attached in Appendix C1.

Table 4.1 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL-31 Sound Level Meter
Calibrator	Rion NC-73 Sound Level Meter
Portable Wind Speed Indicator	TSI Model 8340-M Air Velocity Meter

#### 4.3 Monitoring Parameters, duration and Frequency

Impact noise monitoring for the A-weighted levels  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded once per week. Data obtained from impact noise monitoring was processed and presented as below:

- Daytime: three sets of 30-minute noise level monitored between 0700-1900 hrs on normal weekdays;
  - Evening-time\*: three sets of 5-minute noise level monitored between 1900-2300 hrs ;
  - Night-time\*: three sets of 5-minute noise level monitored between 2300-0700 hrs of next day; and
  - Holiday\*: three sets of 5-minute noise level monitored between 0700-1900 hrs on holiday.
- (\*): Noise monitoring to be conducted only when there is construction work.

Duration, frequencies and parameters of noise measurement are presented in Table 4.2.

Table 4.2 Duration, Frequencies and Parameters of Noise Monitoring

Time period	Duration/min	Parameters
Day-time: 0700-1900 hrs on normal weekday	30	$L_{eq}$ , $L_{10}$ , $L_{90}$
Evening-time: 1900-2300 hrs	5	$L_{eq}$ , $L_{10}$ , $L_{90}$
Night-time: 2300-0700 hrs of next day	5	$L_{eq}$ , $L_{10}$ , $L_{90}$
Holiday: 0700-1900 hrs	5	$L_{eq}$ , $L_{10}$ , $L_{90}$

#### 4.4 Monitoring Locations

Since the owner of 1B Sok Kwu Wan objected to set up the noise monitoring station NM3 at 1B Sok Kwu Wan (Eastern Façade), an alternative position, Sok Kwu Wan Sitting-out Area RNM3, which is just a 3m width footpath away from house 1B for the free field noise measurement, was proposed by ET. Under the approval from ER and agreement from the IEC and EPD, both baseline and impact noise monitoring was carried out at RNM3.

Hence, there were four noise monitoring locations NM1, NM2, RNM3 and NM4 required to carry out impact noise monitoring.

The details of noise monitoring stations are summarized in Table 4.3.

Table 4.3 Noise Monitoring Stations

Noise monitoring station	Description of location	Type of Measurement
NM1	1, Chung Mei Village	Façade
NM2	20, Sok Kwu Wan	Façade
RNM3	Sok Kwu Wan Sitting-out Area	Free Field
NM4	2-storey village house at Ta Shui Wan	Façade

#### 4.5 Monitoring Methodology

##### Instrumentation

Integrating Sound Level Meters were employed for noise monitoring.

##### Operation/Analysis Procedures

- Sound Level Meter was set on a tripod at a height of 1.2m above the ground;
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- The battery condition was checked to ensure the correct functioning of the meter:
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - Frequency weighting : A
  - Time weighting : Fast
  - Time measurement : 5 mins

- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1.0 dB(A), the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment;
- During the monitoring period, the  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet;
- Noise measurement may be paused during periods of high intrusive noise (e.g. dog barking directly towards the receiver of noise level meter). If noise measurement was paused during high intrusive noise, the noise level meter would be resumed and continued the noise measurement and the observations would also be recorded. Any pause intervals were not included in the measurement time; and
- Noise monitoring would be cancelled in the presence of fog, rain, storm, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.

#### Maintenance and Calibration

- The microphone head of the sound level meter and calibrator are cleaned with soft cloth at quarterly intervals; and
- The meters are sent to supplier or HOKLAS laboratory to check and calibrated at yearly intervals.

#### 4.6 Actions and Limit Levels

The Action and Limit Levels (AL Levels) were established in accordance to the Clause 3.6.4 of the EM&A Manual. Table 4.4 presents the AL levels for noise monitoring.

Table 4.4 Action and Limit Levels for Noise Monitoring

Time Period	Action	Limit
0700 – 1900 hrs normal weekdays	When one documented complaint is received	75 dB(A)

#### 4.7 Event-Action Plans

Should the results of the monitoring parameters at any designated monitoring stations indicate that the noise level criteria are exceeded, the actions in accordance with the Event and Action Plan that summarized in Appendix D should be carried out.

#### 4.8 Results

Totally 5 occasions of Day-time noise monitoring were carried out at monitoring stations in this reporting month. No Evening-time, Night-time and Holiday noise monitoring were required since no construction works were processed during the night-time period.

No exceedances of Action Level of noise monitoring were recorded in this reporting month since no complaint on noise issue was received. Besides, no exceedances in Limit Level were recorded according to the results from Day-time noise monitoring. Table 4.5 summaries the noise daytime monitoring results in the reporting period.

Table 4.5 Summary of Noise Daytime Monitoring Results

Monitoring Parameter	Date	NM1		NM2		RNM3 <sup>#</sup>		NM4	
		Result	Exceedance*	Result	Exceedance*	Result	Exceedance*	Result	Exceedance*
Noise Daytime Monitoring	03/08/09	75.0	X	72.1	X	68.7	X	75.0	X
	13/08/09	74.7	X	68.4	X	65.0	X	58.1	X
	19/08/09	74.9	X	64.1	X	61.8	X	58.1	X
	25/08/09	71.8	X	65.6	X	58.9	X	63.3	X
	31/08/09	60.5	X	60.7	X	62.6	X	67.2	X

Remark (\*): L = Limit Level exceedance, A = Action Level exceedance and X = not an Exceedance

(\*): 3dB(A) correction had been added to the results since noise measurements at RNM3 were free-field.



## 5.0 SITE INSPECTION

During this reporting month, weekly site inspections were undertaken on 03, 13, 19, 25 and 31 August 2009 by ET. Monthly joint site inspection at 19 August 2009 was carried out by Engineer's Representative, IEC, Kaden and ET. A summary of implementation status of mitigation measures on site inspections is presented in Appendix F.

### 5.1 Summary of the site inspection findings and Action(s) taken by Kaden and ET

According to the summary of the weekly site inspections carried out in this month, it indicated that site practices of the Kaden were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was satisfactory. Summary of the site inspection findings in this reporting month is shown in Table 5.1.

Table 5.1 Summary of Site Inspection Findings and Action(s) taken by Kaden and ET

Item	Aspect	Finding	Action(s) to be taken by the Contractor	ET Verification
1	Air	Stockpiles of fill materials at S135 were found without cover during weekly site inspections on 13/08/09 and 19/08/09.	The Contractor replied to cover all stockpiles properly.	During the next weekly site inspection on 25/08/09, the stockpiles were found covered.
2	Noise	Noise label of an air compressor at S102 was found damaged during the weekly site inspection on 13/08/09.	The Contractor replied to provide new noise label immediately.	During the subsequent weekly site inspection on 19/08/09, the air compressor was removed for maintenance.
3	Noise	The construction works at S162 outside RE site office was found noisy during the weekly site inspection on 19/08/09.	The Contractor replied to provide more mitigation measures to reduce the noise impact.	During the subsequent weekly site inspection on 25/08/09, portable noise barrier was found provided during the construction work.
4	Water	The sedimentation tank at S81 was found too small during the weekly site inspection on 19/08/09.	The Contractor replied to provide a larger sedimentation tank.	During the subsequent weekly site inspection on 25/08/09, the sedimentation tank was replaced by a larger one.
5	Water	The drainage at S135 was found full of sands and debris during the weekly site inspection on 19/08/09.	The Contractor replied to clean up the sand and debris inside the drainage.	During the subsequent weekly site inspection on 25/08/09, the sands and debris inside the drainage were cleaned up.
6	Water	Rocks and soil were noted accumulated inside the sedimentation tank at S64 during the weekly site inspection on 19/08/09.	The Contractor replied to clean up the rocks and soil inside the sedimentation tank.	During the subsequent weekly site inspection on 25/08/09, the rocks and soil were cleaned up.
7	Chemical	Oil stain was noted on the ground at S73-S75 during the weekly site inspection on 03/08/09.	The Contractor replied to clean up the oil stain as chemical waste.	During the subsequent weekly site inspection on 13/08/09, no oil stain was noted on the ground.
8	Chemical	An oil drum at S73-S75 was found without drip tray during the weekly site inspection on 03/08/09.	The Contractor replied to provide drip tray for all chemicals.	During the subsequent weekly site inspection on 13/08/09, no oil drum was found at S73-S75.
9	Chemical	A diesel drum and chemical containers at S73-S75 were found without drip tray during the weekly site inspection on 31/08/09	The Contractor replied to provide drip trays for all chemicals.	Since the finding was observed in the last weekly site inspection, it will be verified in the coming month.



Item	Aspect	Finding	Action(s) to be taken by the Contractor	ET Verification
10	Site Inspection	C&D materials were noted accumulated at S147 without cover during the weekly site inspection on 19/08/09.	The Contractor replied to collect the C&D materials and store them properly.	During the same inspection, the C&D materials were collected and no further action was required.

## 5.2 Recommendations on site inspection findings in Site Inspections of this month

Based on the site inspection findings, the recommendations are as below:

- Providing dust suppression measures (such as water spraying) during the construction works especially excavation and earth moving operation;
- Checking and maintaining all the site machines to prevent black smoke emission;
- Providing briefing to the concerned site staff on remedial actions, such as handling method of chemicals and chemical waste;
- Maintain good waste management at the site; and
- Remove all stagnant water and applied proper treatment facilities to wastewater before discharge.

## 6.0 Status of Environmental Permits

All permits/licenses obtained in this reporting month are summarized in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Section
		From	To	
Environmental Permit	EP-281/2007	29/06/07	End of Project	Valid
Water Discharge Licence	EP890/W2/XD 026	23/05/08	31/03/12	Valid
Notification under APCO	Application had been submitted to EPD on 15 April 2008			

## 7.0 WASTE MANAGEMENT

The quantities of waste for disposal from Sok Kwu Wan in this month are summarized in Table 7.1.

Table 7.1 Summary of Quantities of Waste for Disposal in this reporting month

Type of Waste		Quantity	Disposal Location	Cumulative Quantity
Inert C&D Materials	Total Quantity Generated (in '000m <sup>3</sup> )	0.1087		1.1438
	Broken Concrete (in '000m <sup>3</sup> )	0.0020	SKWRTS	0.0358
	Reused in the Contract (in '000m <sup>3</sup> )	0.0735	For Stockpile / Reuse	0.4955
	Reused in other Projects (in '000m <sup>3</sup> )	0	N/A	0.208
	Disposal as Public Fill (in '000m <sup>3</sup> )	0.0352	SKWRTS	0.3692
C&D Waste	Metals (in '000kg)	0	N/A	0
	Paper/Cardboard Packaging (in '000kg)	0	N/A	0
	Plastics (in '000kg)	0	N/A	0
	Chemical Waste (in '000kg)	0	N/A	0
	Other, e.g. General Refuse (tonne)	0.54	SKWRTS	5.38





## 8.0 ECOLOGY

A comprehensive tree survey was carried out by Kaden in mid 2008. The two uncommon tree species (*Celtis timorensis* and *Celtis biondii*) could not be identified on site as per the Figure 4 of the EP.

A joint visit amongst EPD, AFCD, Kaden, DSD and RE was subsequently held on 24 March 2009 and some immature *Celtis timorensis* plants were identified at certain locations at Chung Mei. It was agreed that a full vegetation survey (in addition to the previous tree survey) should be conducted to identify the immature uncommon species.

Kaden had employed a landscape subcontractor "Bluet" and carried out a vegetation survey on 17 April 2009. Some immature uncommon species had been identified at Chung Mei near the Works Area. Regarding the comments from EPD, an updated vegetation survey report prepared on 07 August 2009 and attached in Appendix G.

The uncommon plants have been labelled and fenced off with safety net and notices have been posted for warning the site personnel of the presence of the uncommon tree species. Photos attached in Appendix I present the fencing and protection provided for those uncommon species.

## 9.0 ARCHAEOLOGY AND CULTURAL HERITAGE

Refer to the Section 9 of EM&A Manual, watching brief works were conducted in Chung Mei, Sok Kwu Wan by Archaeological Assessments Limited on 01 September 2008 and 12 June 2009.

The watching brief works took place along approximately 50m long alignment in two segments, MHS52 to MHS54 on 1<sup>st</sup> September 2008 and MHS50 to MHS52 on 12<sup>th</sup> June 2009. In overview, the steep lower hill slope area traversed by the MHS50 and MHS54 has seen little or no human activity prior to the 20<sup>th</sup> century and in contrast to the valley to the west, can be considered to have no archaeological potential. Details of the watching brief works present in Appendix H.

## 10.0 ENVIRONMENTAL NON-CONFORMANCE

### 10.1 Summary of Air Quality and Noise monitoring

No exceedances of Action and Limit Level of 24-hour and 1-hour TSP monitoring results were recorded during the reporting period.

No exceedances of Action Level of noise monitoring were recorded in this reporting month since no complaint on noise issue was received. Besides, no exceedances in Limit Level were recorded according to the results from Day-time noise monitoring.

No evening-time, night-time and holiday noise monitoring were required since no construction works were processed during these periods.

### 10.2 Summary of Environmental Complaints, Notifications of Summons and Successful Prosecutions

No complaints, notifications of summons and successful prosecutions were received in this reporting month. A summary of environmental complaints, notifications of summons and successful prosecutions was given Table 9.1.



Table 10.1 Statistical Summary of Environmental Complaint-log

Reporting Period	Complaint logged		Summons served		Successful Prosecution	
	Frequency	Cumulative	Frequency	Cumulative	Frequency	Cumulative
June 2008	0	0	0	0	0	0
July 2008	0	0	0	0	0	0
August 2008	0	0	0	0	0	0
September 2008	0	0	0	0	0	0
October 2008	1	1	0	0	0	0
November 2008	0	1	0	0	0	0
December 2008	0	1	0	0	0	0
January 2009	0	1	0	0	0	0
February 2009	0	1	0	0	0	0
March 2009	0	1	0	0	0	0
April 2009	0	1	0	0	0	0
May 2009	0	1	0	0	0	0
June 2009	0	1	0	0	0	0
July 2009	0	1	0	0	0	0
August 2009	0	1	0	0	0	0

## 11.0 IMPLEMENTATION STATUS

### 11.1 Implementation Status of Environmental Mitigation Measures

Kaden has been implementing the required environmental mitigation measures indicating in Appendix A of the EM&A manual. A summary of the implementation status of the mitigation measures is presented in Appendix F.

### 11.2 Implementation Status of Event and Action Plan

No exceedances of Action and limit Levels of noise air quality monitoring were recorded in this reporting month and hence no further actions were required to be taken.

### 11.3 Implementation Status of Environmental Complaint Handling

No complaints was received in this reporting month and hence no further actions were required to be handled.

### 11.4 Implementation Status of Notification of Summons and Prosecution

There were no notifications of summons respect to environmental issues registered in this reporting month.

## 12.0 Conclusion and discussion

According to the summary of noise and air quality monitoring results, no exceedances of Action and Limit Level were recorded during the reporting period.

According to the ET weekly site inspections carried out in this reporting month, it indicated that site practices of the Kaden were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was satisfactory. Summary of the site inspection findings is shown in Table 5.1.

The monitored environmental results indicated that no unacceptable environmental impacts arising from the Project had been caused to the surrounding sensitive receivers. The environmental measures had been effective in controlling potential impacts to within acceptable sensitive receivers.

No complaints, notifications of summons and successful prosecutions were received in this reporting period.

### 13.0 FUTURE KEY ISSUES

#### 13.1 Upcoming Environmental Monitoring Schedule in coming monitoring month

Proposed Environmental Monitoring program in coming month is presented as following table:

Table 13.1 Proposed Environmental Monitoring Schedule in coming month

September 2009						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4 1-hr TSP x 3 24-hr TSP	5
6	7	8	9	10 1-hr TSP x 3 24-hr TSP NM Weekly SI	11	12
13	14	15	16 1-hr TSP x 3 24-hr TSP NM Weekly SI	17	18	19
20	21	22 1-hr TSP x 3 24-hr TSP NM Weekly SI	23	24	25	26
27	28 1-hr TSP x 3 24-hr TSP NM Weekly SI	29	30			

#### 13.2 Upcoming Construction Works Schedule in coming month

Major construction works planned to be carried out in coming month are shown as below:

- Sewer drainage pipe & manhole construction (include open cut & trenchless method);
- Road reinstatement work; and
- Protection of uncommon tree species.

#### 13.3 Environmental Issues for the Coming Month

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

- Dust generated from the construction activities; and
- Noise generated from the noisy activities.

**Mitigation measures to be required in the coming month:**

##### Air Quality Impact

- To provide adequate water spraying on roads and working platform;
- To ensure implementation of the dust mitigation measures for the construction activities; and
- To provide proper maintenance for vehicles and machines on site.

##### Noise

- To switch off equipment if not in use;
- To operate silent equipment;
- To identify the noise sources inside and outside of the site; and
- To re-schedule the work activities in the event of valid noise exceedance.



## **Appendix A**

### **Organization Chart and Lines of Communication**

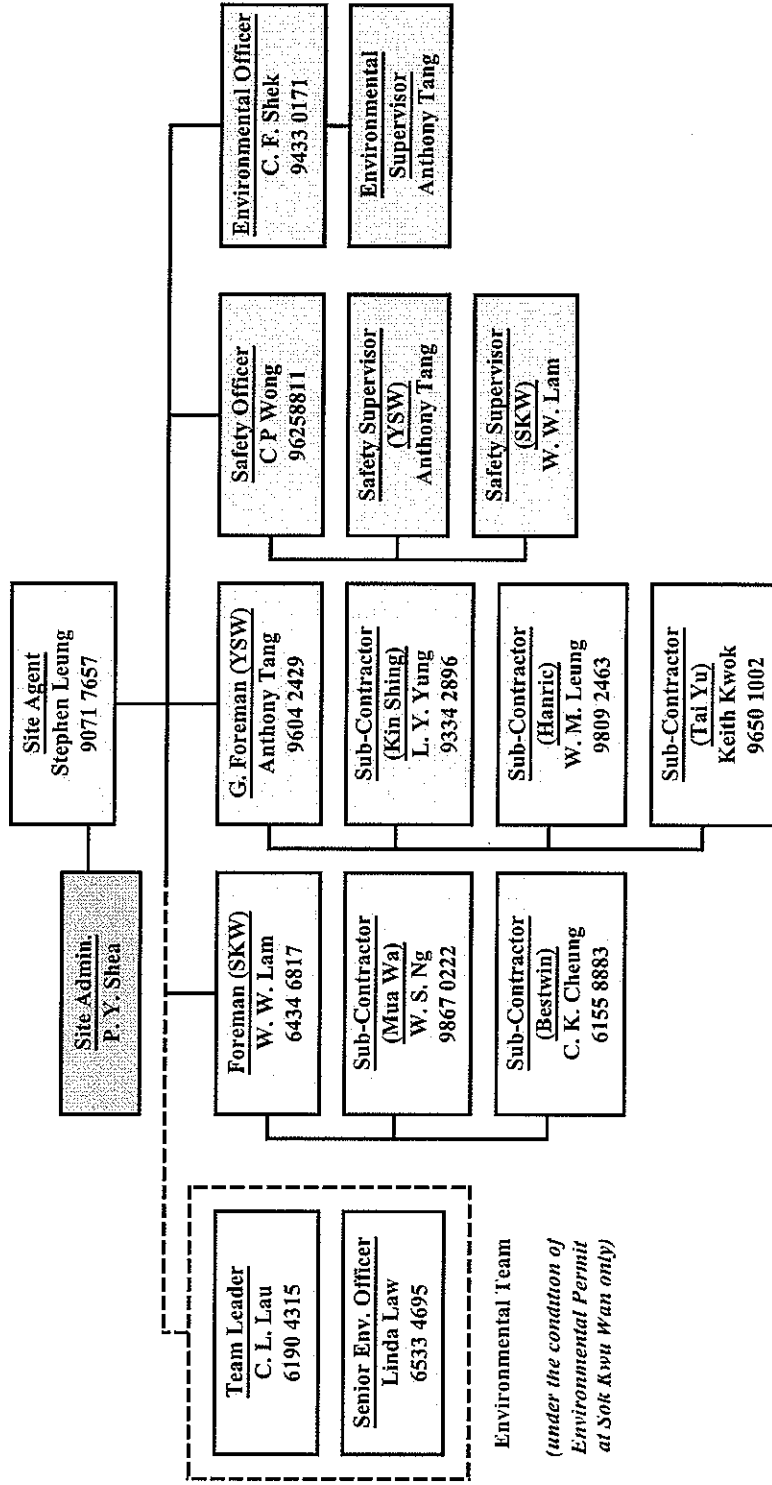
# Kaden Construction Limited



DSD Contract No. DC/2007/18

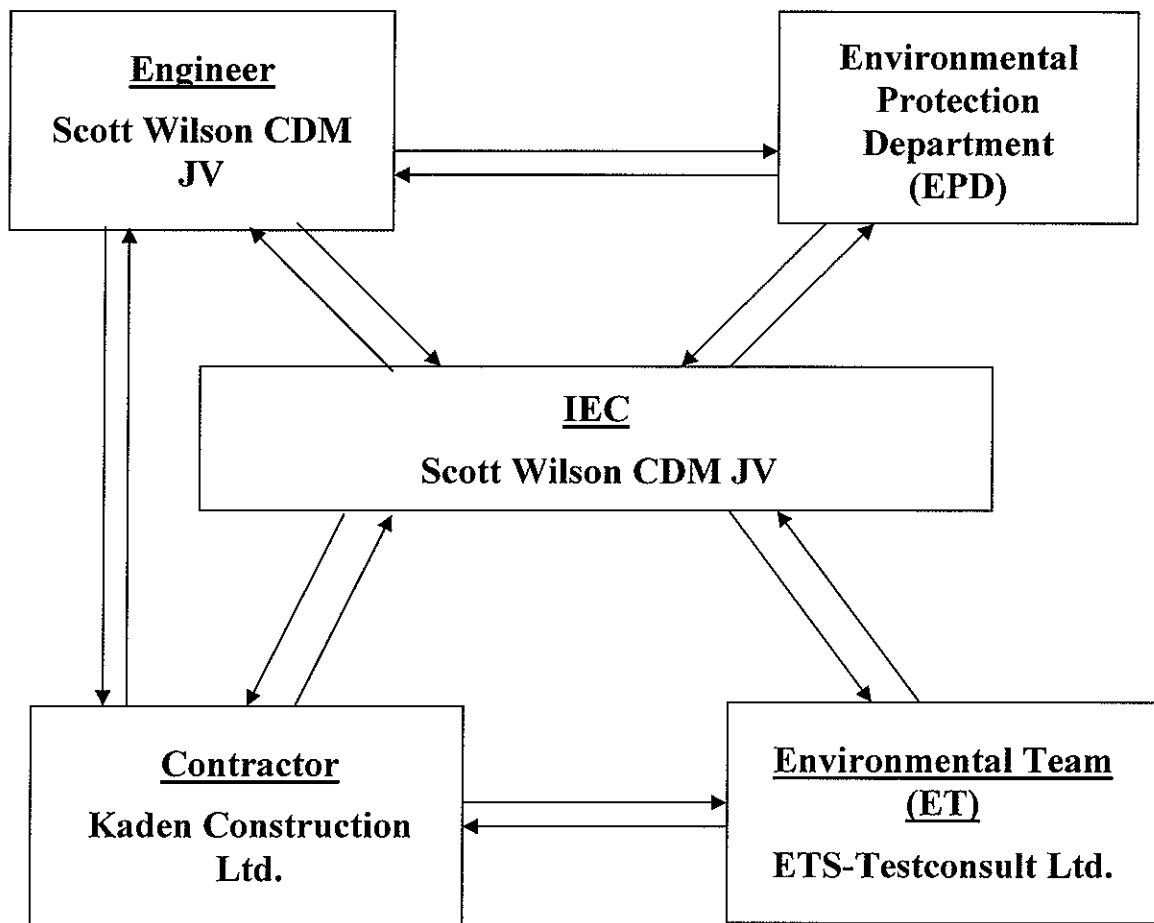
Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works

## Organization Structure for Environmental Management (EMP Rev. 18.00)





# Lines of Communication





## **Appendix B1**

# **Calibration Certificates for Impact Air Quality Monitoring Equipments**



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8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong

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E-mail : etf@ets-testconsult.com

Fax : 2695 3944

Web site : www.ets-testconsult.com

**TEST REPORT**

**Calibration Report**  
of  
**High Volume Air Sampler**

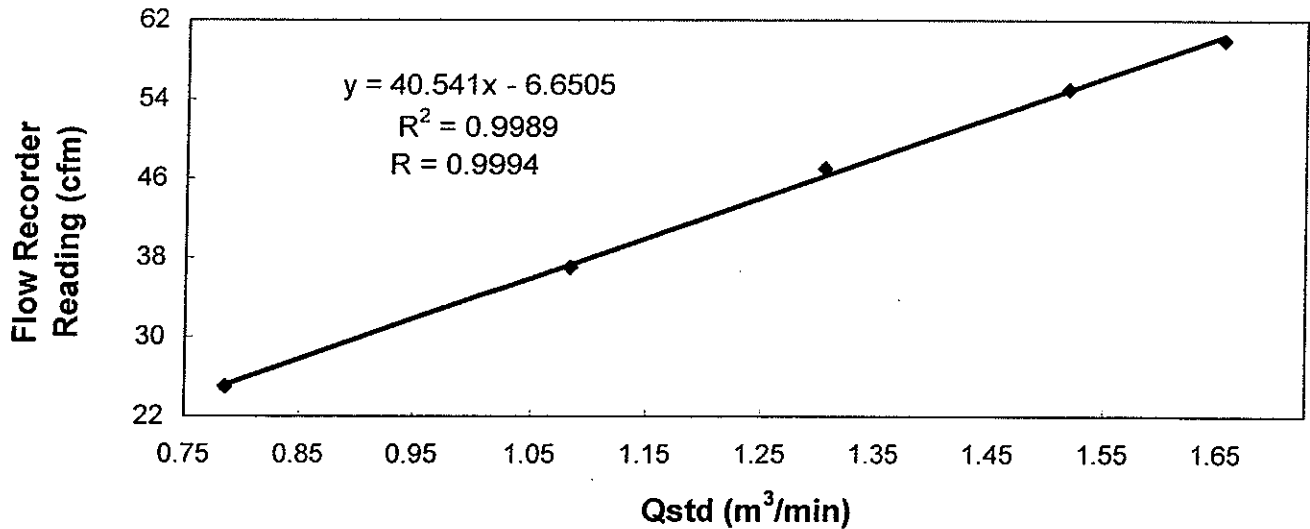
Manufacturer : Graseby GMW Date of Calibration : 18 June 2009

Serial No. : 1173 (ET/EA/003/17) Calibration Due Date : 17 August 2009

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	60	55	47	37	25
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.65	1.52	1.31	1.08	0.78
Pressure :		753.06 mmHg		Temp. :		306 K

**Sampler 1173 Calibration Curve**  
Site: Sok Kwu Wan (AM-1)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after 5-point calibration

The high volume sampler complies\* / ~~does not comply\*~~ with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by :   
LI, Wan Lung  
(Environmental Technician)

Approved by :   
CHOW, Hoi Tat  
(Assistant Environmental Officer)





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Fax : 2695 3944 Web site : www.ets-testconsult.com

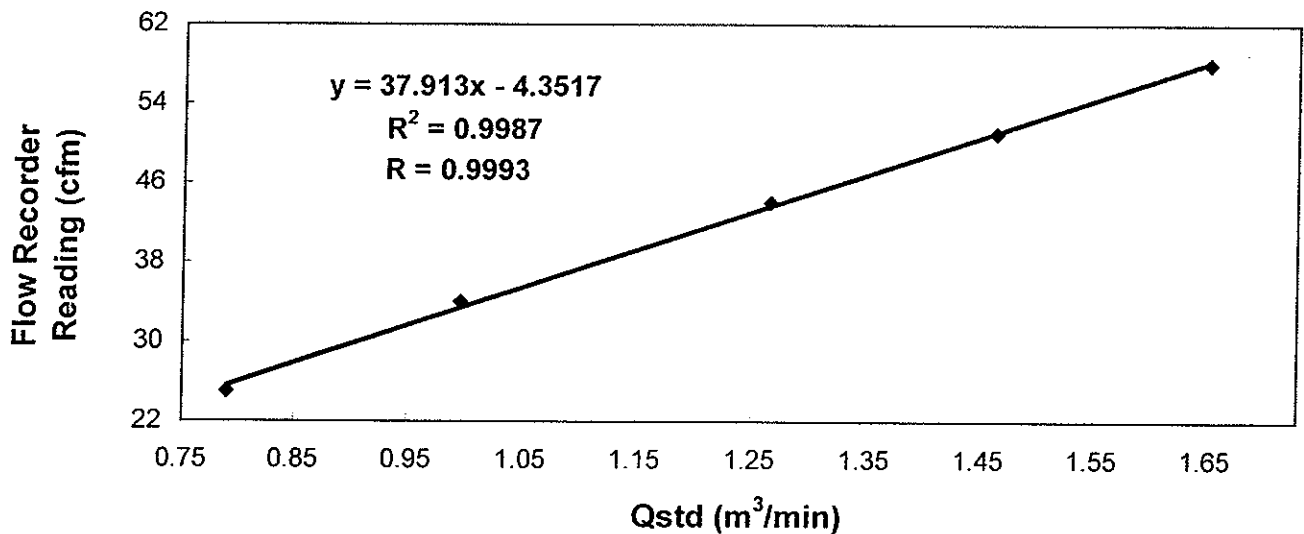
**TEST REPORT**

**Calibration Report**  
of  
**High Volume Air Sampler**

Manufacturer : Graseby GMW Date of Calibration : 13 August 2009  
Serial No. : 1173 (ET/EA/003/17) Calibration Due Date : 12 October 2009  
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	58	51	44	34	25
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.65	1.46	1.27	1.00	0.79
	Pressure : 753.06 mmHg	Temp. : 302 K				


**Sampler 1173 Calibration Curve**  
Site: Sok Kwu Wan (AM-1)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after 5-point calibration

The high volume sampler complies\* / ~~does not comply\*~~ with the specified requirements and is deemed acceptable\* / ~~unacceptable\*~~ for use.

Calibrated by :   
LEUNG, Ka Chun  
(Assistant Environmental Officer)

Approved by :   
CHOW, Hoi Tat  
(Assistant Environmental Officer)



# 東業德勤測試顧問有限公司 ETS-TESTCONSULT LIMITED

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## TEST REPORT

### Calibration Report of High Volume Air Sampler

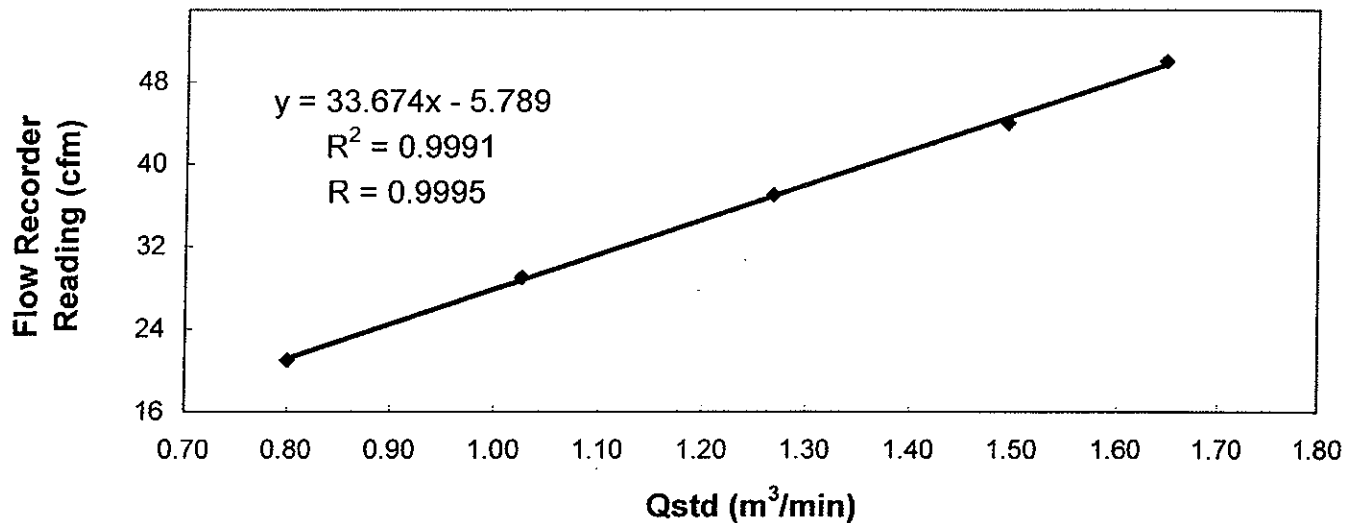
Manufacturer : Graseby GMW Date of Calibration : 18 June 2009

Serial No. : 9865 (ET / EA / 003 / 14) Calibration Due Date : 17 August 2009

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	50	44	37	29	21
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.65	1.49	1.27	1.03	0.80
	Pressure : 753.06 mm Hg	Temp. : 306 K				

Sampler 9865 Calibration Curve  
Site: Sok Kwu Wan (AM-2)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies\* / does not comply\* with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by : LI, Wan Lung  
(Environmental Technician)

Approved by : CHOW, Hoi Tat  
(Assistant Environmental Officer)



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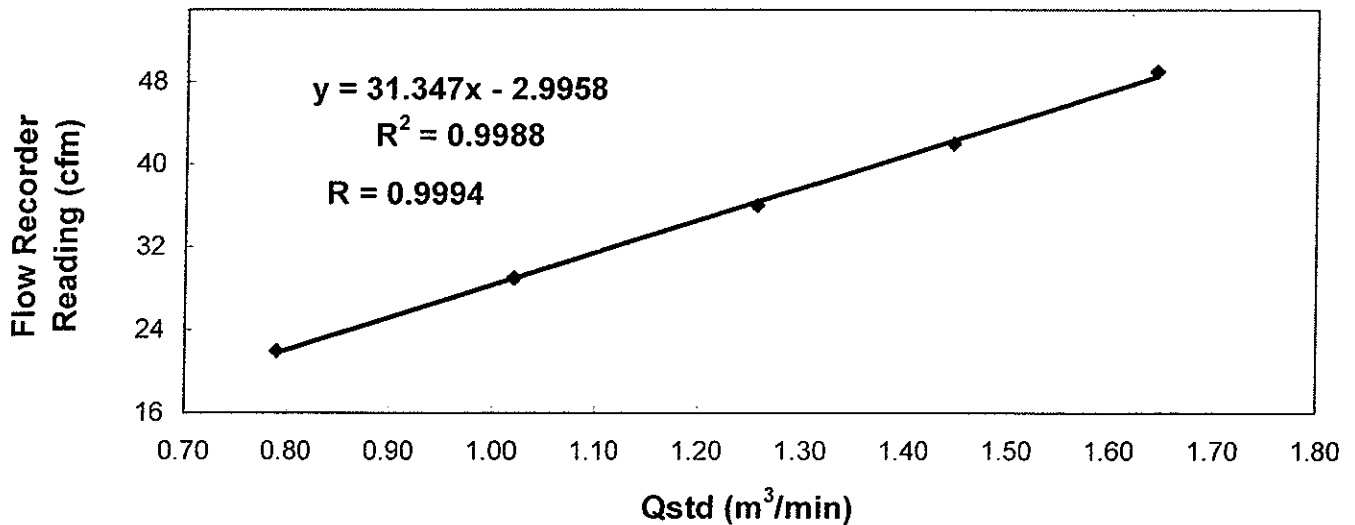
**TEST REPORT**

**Calibration Report  
of  
High Volume Air Sampler**

**Manufacturer** : Graseby GMW **Date of Calibration** : 13 August 2009  
**Serial No.** : 9865 (ET / EA / 003 / 14) **Calibration Due Date** : 12 October 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

<b>Results</b>	Flow recorder reading (cfm)	49	42	36	29	22
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.64	1.45	1.26	1.02	0.79
	Pressure : 753.06 mm Hg	Temp. : 302 K				


**Sampler 9865 Calibration Curve  
Site: Sok Kwu Wan (AM-2)**

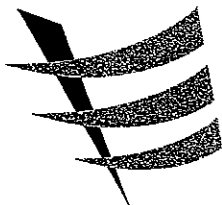


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies\* / ~~does not comply\*~~ with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by :   
LEUNG, Ka Chun  
(Assistant Environmental Officer)

Approved by :   
CHOW, Hoi Tat  
(Assistant Environmental Officer)



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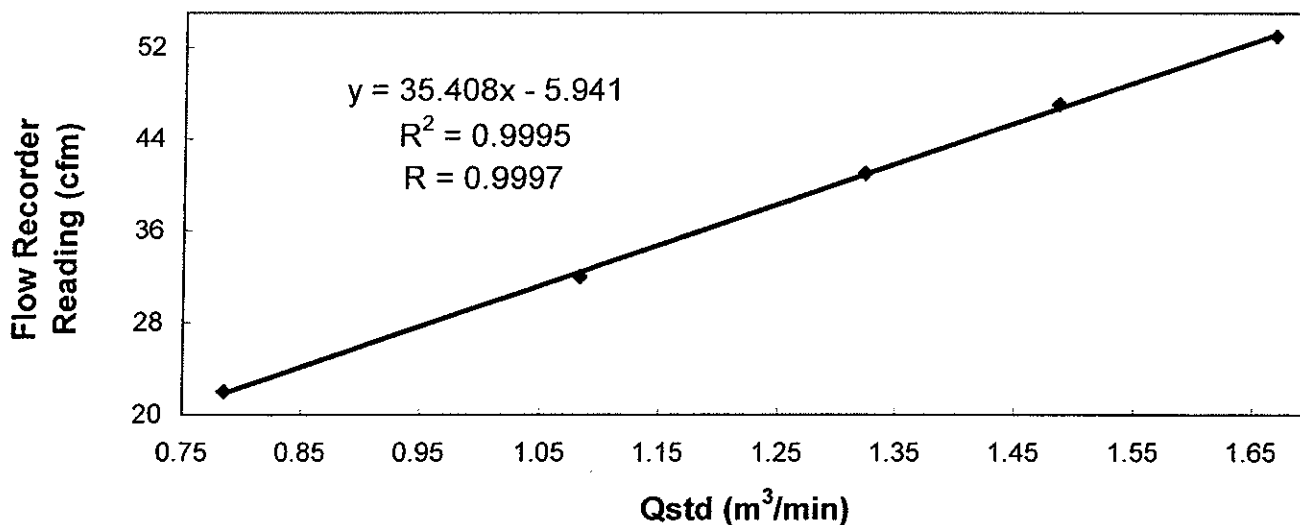
**TEST REPORT**

**Calibration Report**  
of  
**High Volume Air Sampler**

**Manufacturer** : Graseby GMW **Date of Calibration** : 18 June 2009  
**Serial No.** : 9912 (ET / EA / 003 / 15) **Calibration Due Date** : 17 August 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

<b>Results</b>	Flow recorder reading (cfm)	53	47	41	32	22
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.67	1.49	1.32	1.08	0.78
	Pressure : 753.06 mm Hg	Temp. : 306 K				

**Sampler 9912 Calibration Curve**  
Site: Sok Kwu Wan (AM-3)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies\* / does not comply\* with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by : LI, Wan Lung  
(Environmental Technician)

Approved by : CHOW, Hoi Tat  
(Assistant Environmental Officer)



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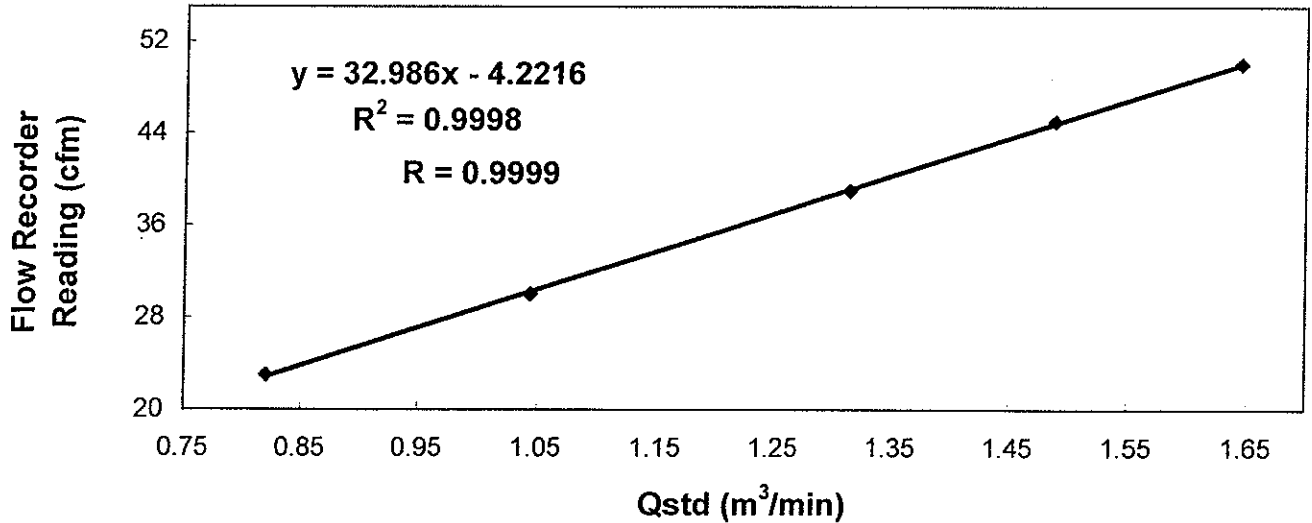
**TEST REPORT**

Calibration Report  
of  
High Volume Air Sampler

**Manufacturer** : Graseby GMW Date of Calibration : 13 August 2009  
**Serial No.** : 9912 (ET / EA / 003 / 15) Calibration Due Date : 12 October 2009  
**Method** : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

<b>Results</b>	Flow recorder reading (cfm)	50	45	39	30	23
	Qstd (Actual flow rate, m <sup>3</sup> /min)	1.64	1.49	1.31	1.04	0.82
	Pressure : 753.06 mm Hg	Temp. : 302 K				

**Sampler 9912 Calibration Curve**  
Site: Sok Kwu Wan (AM-3)

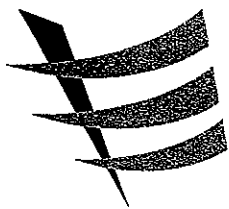


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies\* / ~~does not comply\*~~ with the specified requirements and is deemed acceptable\* / unacceptable\* for use.

Calibrated by :   
LEUNG, Ka Chun  
(Assistant Environmental Officer)

Approved by :   
CHOW, Hoi Tat  
(Assistant Environmental Officer)



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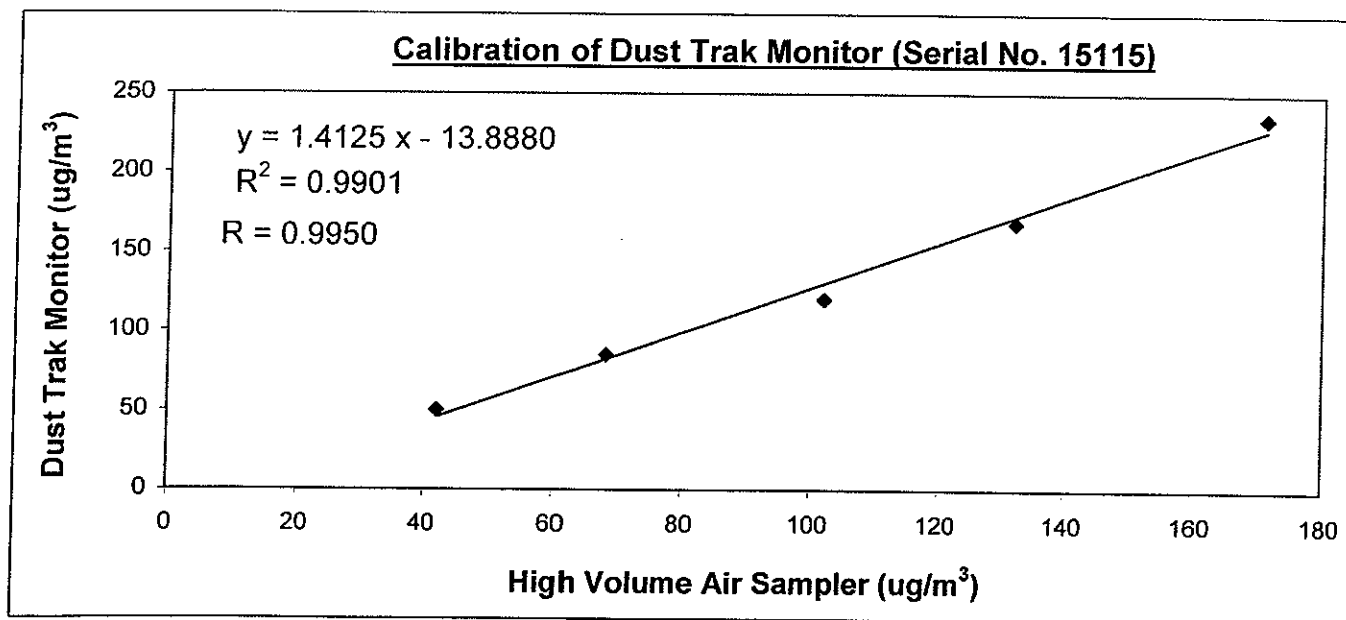
**TEST REPORT**

**Internal Calibration Report**  
of  
**Dust Trak Monitor**

**Manufacturer** : TSI - 8520 Dust Trak Date of Calibration : 10 July 2009  
**Serial No.** : 15115 (ET/EA/001/02) Calibration Due Date : 09 January 2010  
**Method** : Parallel measurement (five-point calibration) by placing the Dust Trak Monitor and High Volume Air Samper together under the same environmental condition

**Results** :

Dust Trak Monitor ( $\mu\text{g}/\text{m}^3$ )	50	85	120	168	235
High Volume Air Sampler ( $\mu\text{g}/\text{m}^3$ )	42	68	102	132	171
Serail No of High Volume Air Sampler : 1178			Calibration Due Date: 29 August 2009		



Acceptance Criteria :

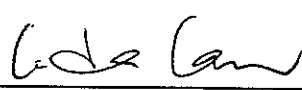
Correlation coefficient ( $r$ ) of the calibration curve greater than 0.990 after a five point calibration

**The Dust Trak Monitor complies \* / does-not-comply \* with the internal calibration procedures and is deemed acceptable \* / unacceptable \* for use.**

Calibrated by :

  
CHOW, Hoi Tat  
(Assistant Environmental Officer)

Approved by :

  
LAW, Sau Yee  
(Senior Environmental Officer)



東業德勤測試顧問有限公司  
ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong

Tel : 2695 8318

E-mail : etl@ets-testconsult.com

Fax : 2695 3944

Web site : www.ets-testconsult.com

**TEST REPORT**

**Internal Calibration Report**  
of  
**Dust Trak Monitor**

Manufacturer : TSI - 8520 Dust Trak

Date of Calibration : 10 July 2009

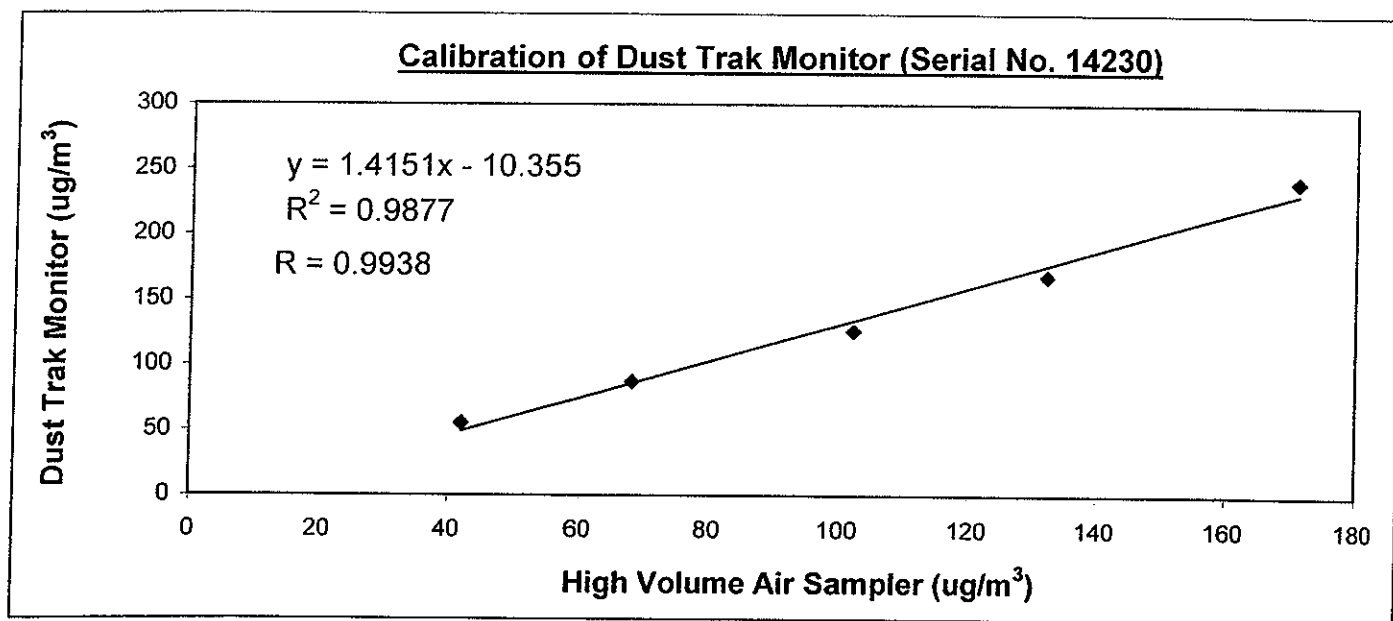
Serial No. : 14230 ( ET/EA/001/04 )

Due Date : 09 January 2010

Method : Parallel measurement (five-point calibration) by placing the Dust Trak Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Trak Monitor ( $\mu\text{g}/\text{m}^3$ )	55	87	126	168	241
High Volume Air Sampler ( $\mu\text{g}/\text{m}^3$ )	42	68	102	132	171
High Volume Air Sampler Serial No.: 1178			Calibration Due Date: 29 August 2009		



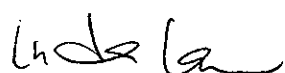
Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a five point calibration

The Dust Trak Monitor complies \* / ~~does not comply~~ \* with the internal calibration procedures and is deemed acceptable \* / unacceptable \* for use.

Calibrated by :

  
CHOW, Hoi Tat  
(Assistant Environmental Officer)

Approved by :

  
LAW, Sau Yee  
(Senior Environmental Officer)



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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 18, 2009 Rootsometer S/N 9833620 Ta (K) - 293  
 Operator Tisch Orifice I.D. - 1560 Pa (mm) - 765.81

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4310	3.2	2.00
2	NA	NA	1.00	1.0060	6.3	4.00
3	NA	NA	1.00	0.8990	7.9	5.00
4	NA	NA	1.00	0.8580	8.7	5.50
5	NA	NA	1.00	0.7070	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0205	0.7132	1.4317	0.9958	0.6959	0.8748
1.0164	1.0104	2.0247	0.9918	0.9859	1.2371
1.0142	1.1281	2.2637	0.9896	1.1008	1.3831
1.0132	1.1809	2.3742	0.9886	1.1522	1.4506
1.0078	1.4255	2.8633	0.9834	1.3909	1.7495
Qstd slope (m) = 2.01170			Qa slope (m) = 1.25969		
intercept (b) = -0.00455			intercept (b) = -0.00278		
coefficient (r) = 0.99998			coefficient (r) = 0.99998		
y axis = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

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

$$\text{Qstd} = \text{Vstd} / \text{Time}$$

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

$$\text{Qa} = \text{Va} / \text{Time}$$

For subsequent flow rate calculations:

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

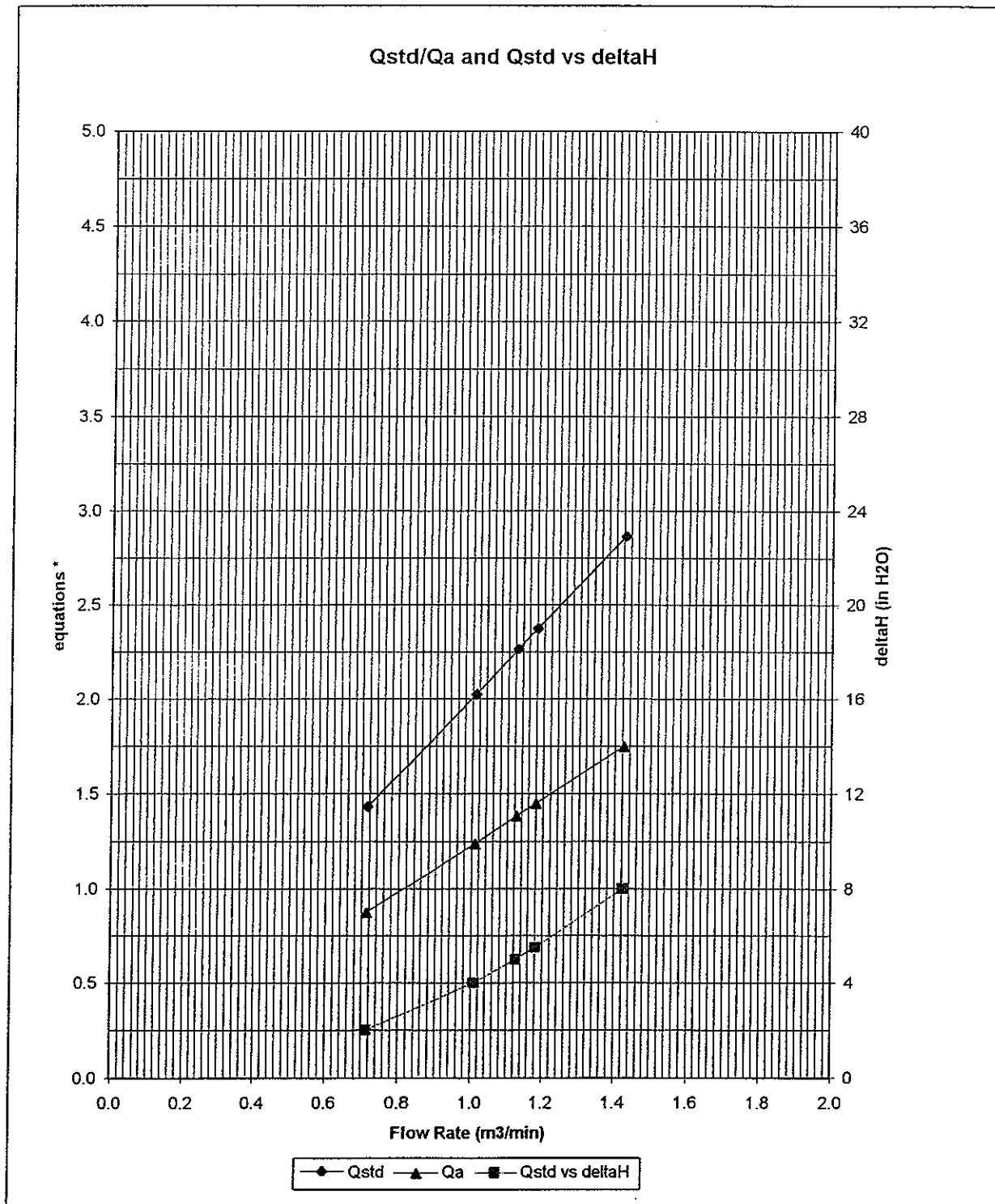
$$\text{Qa} = 1/m \{ [\text{SQRT} \text{H2O}(\text{Ta}/\text{Pa})] - b \}$$





TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE.  
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 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



\* y-axis equations:

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

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

# 1560



## **Appendix B2**

### **Impact Air Quality Monitoring Results**

## Summary of 24-hr TSP Monitoring Results

Monitoring Station : AM1

Start Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min.)		Average (m <sup>3</sup> /min.)	Filter Weight (g)		Conc. (µg/m <sup>3</sup> )	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
03/08/09	09:25	04/08/09	09:25	14495.35	14519.35	24.00	1.0274	1.0274	1.0274	2.8332	2.9109	53	Cloudy
07/08/09	13:00	08/08/09	13:00	14519.35	14543.35	24.00	1.0027	1.0027	1.0027	2.8521	2.9164	45	Sunny
13/08/09	13:00	14/08/09	13:00	14543.35	14567.35	24.00	1.0643	1.0643	1.0643	2.8257	2.8719	30	Rainy
19/08/09	13:00	20/08/09	13:00	14567.35	14591.35	24.00	1.3078	1.3078	1.3078	2.7912	2.8573	43	Sunny
25/08/09	12:20	26/08/09	12:20	14591.35	14615.35	24.00	1.0907	1.0907	1.0907	2.8568	2.9206	41	Sunny
31/08/09	10:44	01/09/09	10:44	14615.35	14639.35	24.00	1.0907	1.0907	1.0907	2.8571	2.9598	65	Fine

Monitoring Station : AM2

Start Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min.)		Average (m <sup>3</sup> /min.)	Filter Weight (g)		Conc. (µg/m <sup>3</sup> )	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
03/08/09	09:33	04/08/09	09:33	18531.24	18555.24	24.00	1.1816	1.1816	1.1816	2.8123	2.8801	40	Cloudy
07/08/09	13:00	08/08/09	13:00	18555.24	18579.24	24.00	1.0628	1.0628	1.0628	2.8647	2.9359	47	Sunny
13/08/09	13:00	14/08/09	13:00	18579.24	18603.24	24.00	1.3716	1.3716	1.3716	2.8226	2.8682	23	Rainy
19/08/09	13:00	20/08/09	13:00	18603.24	18627.24	24.00	1.3078	1.3078	1.3078	2.8045	2.8850	43	Sunny
25/08/09	12:35	26/08/09	12:35	18627.24	18651.24	24.00	1.2440	1.2440	1.2440	2.8716	2.9473	42	Sunny
31/08/09	10:47	01/09/09	10:47	18651.24	18675.24	24.00	1.2759	1.2759	1.2759	2.8486	2.9510	56	Fine

Monitoring Station : AM3

Start Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min.)		Average (m <sup>3</sup> /min.)	Filter Weight (g)		Conc. (µg/m <sup>3</sup> )	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
03/08/09	09:08	04/08/09	09:08	2591.51	2615.51	24.00	0.9021	0.9021	0.9021	2.8271	2.9271	77	Cloudy
07/08/09	13:00	08/08/09	13:00	2615.51	2639.51	24.00	1.1280	1.1280	1.1280	2.8249	2.8802	34	Sunny
13/08/09	09:58	14/08/09	09:58	2639.51	2663.51	24.00	1.2800	1.2800	1.2800	2.8432	2.8825	21	Rainy
19/08/09	13:00	20/08/09	13:00	2663.51	2687.51	24.00	1.1890	1.1890	1.1890	2.8471	2.8982	30	Sunny
25/08/09	17:04	26/08/09	17:04	2687.51	2711.51	24.00	1.2194	1.2194	1.2194	2.8351	2.8858	29	Sunny
31/08/09	09:25	01/09/09	09:25	2711.51	2735.51	24.00	1.1890	1.1890	1.1890	2.8312	2.9594	75	Fine

## Summary of 1-hr TSP Monitoring Results

Monitoring Station : AM1

Date	Monitoring Period		1-hr TSP ( $\mu\text{g}/\text{m}^3$ )			Weather
	Start	Finish	Minimum	Maximum	Average	
03/08/09	09:15	10:15	82	427	163	Sunny
03/08/09	10:15	11:15	97	456	193	Sunny
03/08/09	11:15	12:15	106	382	182	Sunny
07/08/09	09:20	10:20	92	462	166	Sunny
07/08/09	10:20	11:20	89	423	178	Sunny
07/08/09	11:20	12:20	100	500	146	Sunny
13/08/09	09:22	10:22	62	326	163	Rainy
13/08/09	10:22	11:22	70	317	161	Rainy
13/08/09	11:22	12:22	82	289	142	Rainy
19/08/09	13:00	14:00	102	587	183	Fine
19/08/09	14:00	15:00	97	524	198	Fine
19/08/09	15:00	16:00	85	480	155	Fine
25/08/09	09:18	10:18	86	419	156	Sunny
25/08/09	10:18	11:18	104	435	184	Sunny
25/08/09	11:18	12:18	121	568	216	Sunny
31/08/09	13:00	14:00	100	422	180	Sunny
31/08/09	14:00	15:00	97	447	190	Sunny
31/08/09	15:00	16:00	92	416	151	Sunny

Monitoring Station : AM2

Date	Monitoring Period		1-hr TSP ( $\mu\text{g}/\text{m}^3$ )			Weather
	Start	Finish	Minimum	Maximum	Average	
03/08/09	09:20	10:20	96	429	141	Sunny
03/08/09	10:20	11:20	85	472	163	Sunny
03/08/09	11:20	12:20	89	396	171	Sunny
07/08/09	09:24	10:24	86	469	161	Sunny
07/08/09	10:24	11:24	92	512	170	Sunny
07/08/09	11:24	12:24	87	482	142	Sunny
13/08/09	09:27	10:27	65	335	159	Rainy
13/08/09	10:27	11:27	75	328	146	Rainy
13/08/09	11:27	12:27	86	316	130	Rainy
19/08/09	13:06	14:06	110	592	170	Fine
19/08/09	14:06	15:06	106	581	185	Fine
19/08/09	15:06	16:06	95	521	151	Fine
25/08/09	09:30	10:30	95	472	146	Sunny
25/08/09	10:30	11:30	138	615	197	Sunny
25/08/09	11:30	12:30	124	543	171	Sunny
31/08/09	13:00	14:00	107	436	176	Sunny
31/08/09	14:00	15:00	92	459	190	Sunny
31/08/09	15:00	16:00	87	397	160	Sunny

## Summary of 1-hr TSP Monitoring Results

Monitoring Station : AM3

Date	Monitoring Period		1-hr TSP ( $\mu\text{g}/\text{m}^3$ )			Weather
	Start	Finish	Minimum	Maximum	Average	
03/08/09	13:00	14:00	106	506	157	Sunny
03/08/09	14:00	15:00	116	452	185	Sunny
03/08/09	15:00	16:00	107	418	178	Sunny
07/08/09	13:00	14:00	86	416	163	Sunny
07/08/09	14:00	15:00	104	428	184	Sunny
07/08/09	15:00	16:00	97	378	148	Sunny
13/08/09	13:00	14:00	72	327	172	Sunny
13/08/09	14:00	15:00	83	316	135	Rainy
13/08/09	15:00	16:00	80	330	145	Rainy
19/08/09	09:15	10:15	89	417	154	Rainy
19/08/09	10:15	11:15	92	472	144	Fine
19/08/09	11:15	12:15	78	398	131	Fine
25/08/09	14:00	15:00	92	396	158	Sunny
25/08/09	15:00	16:00	97	359	163	Sunny
25/08/09	16:00	17:00	86	313	148	Sunny
31/08/09	09:20	10:20	106	406	168	Sunny
31/08/09	10:20	11:20	112	318	180	Sunny
31/08/09	11:20	12:20	99	305	148	Sunny

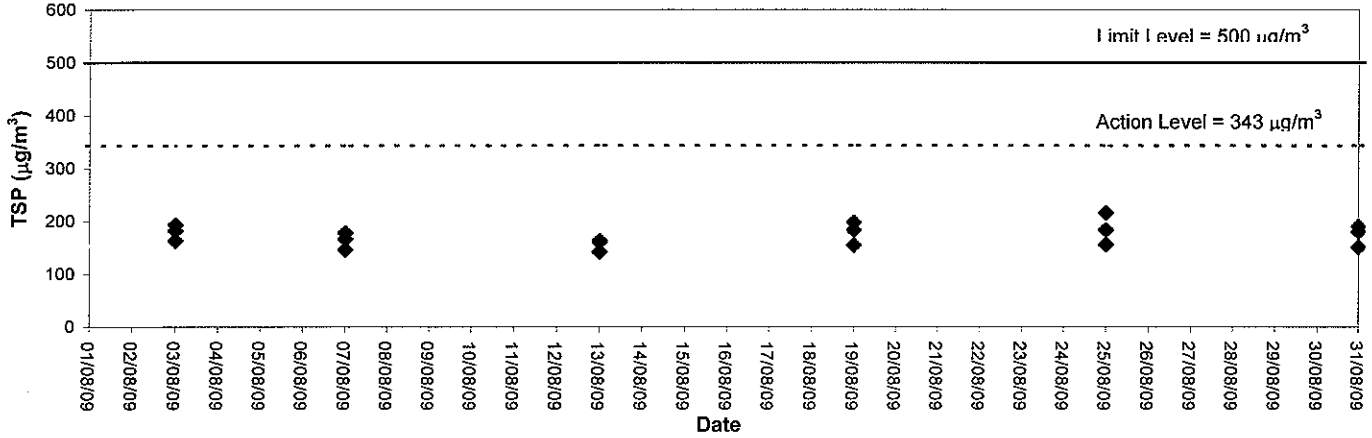


## **Appendix C3**

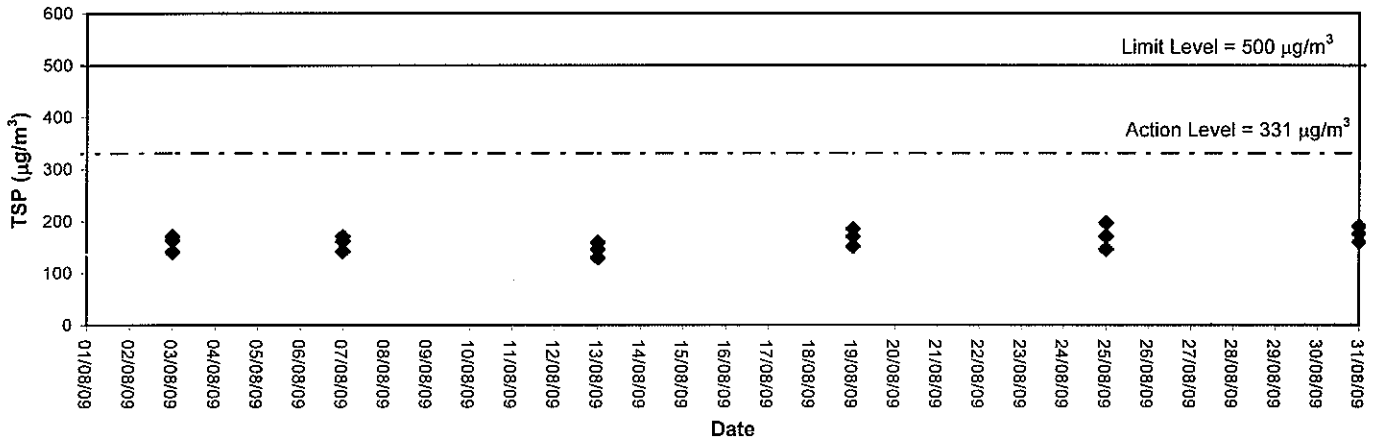
### **Graphical Plots of Impact Air Quality Monitoring Data**



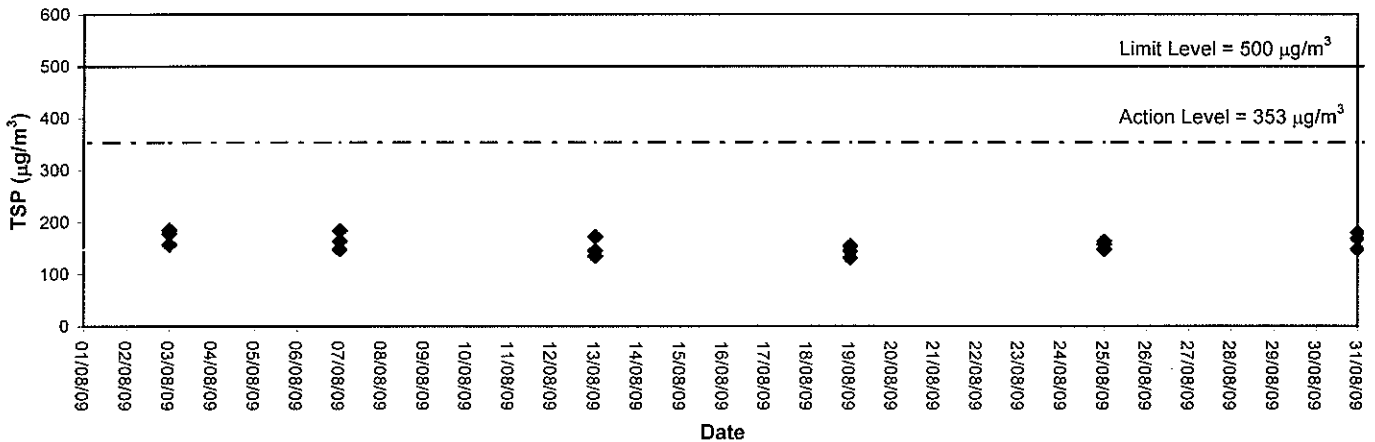
### 1-hour TSP level at AM1



### 1-hour TSP level at AM2

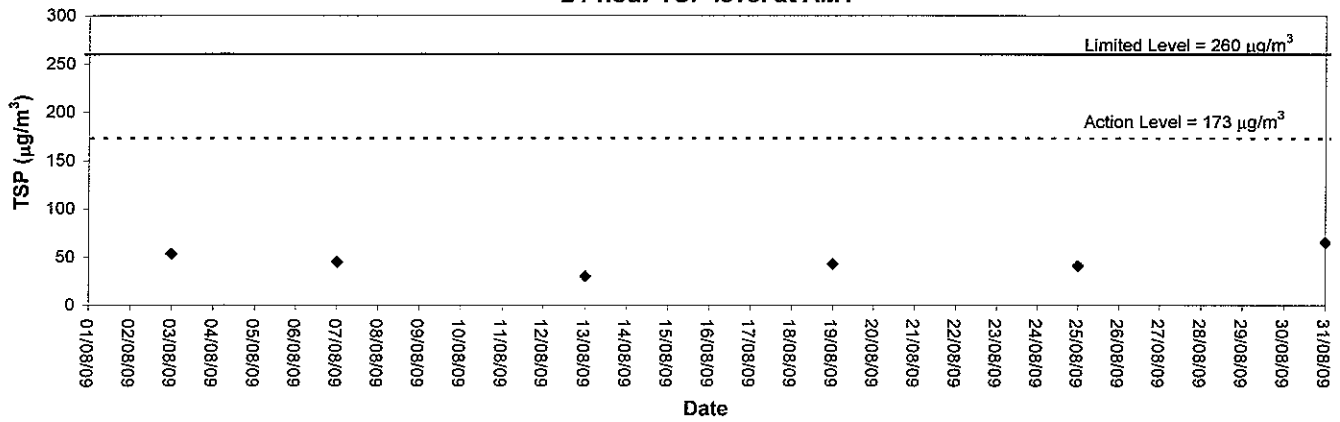


### 1-hour TSP level at AM3

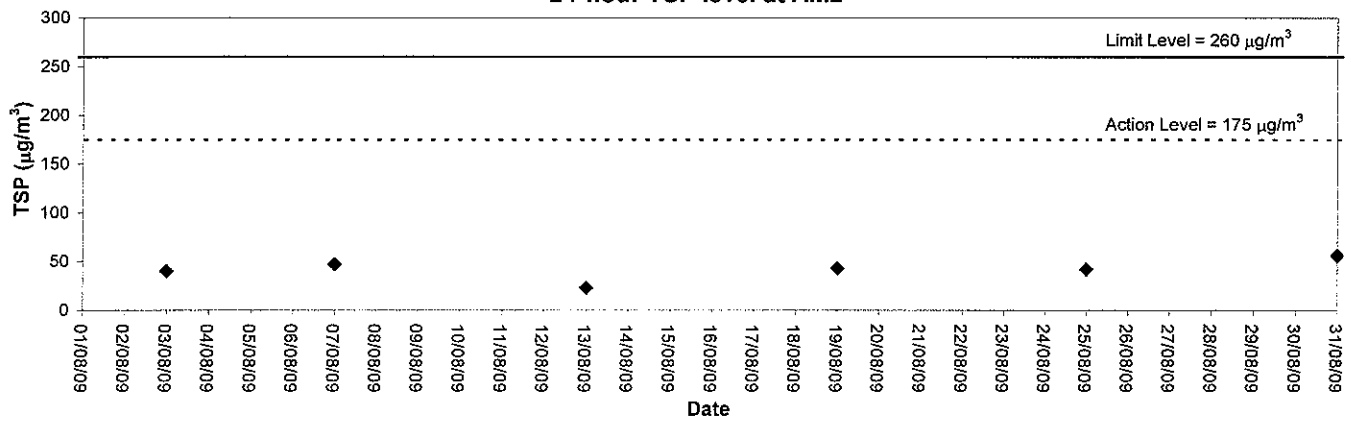




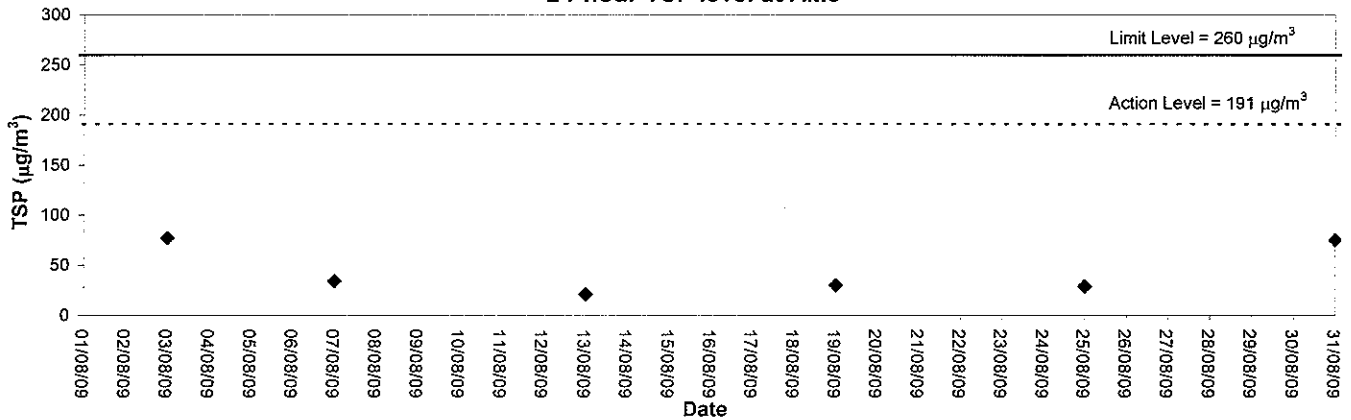
24-hour TSP level at AM1



24-hour TSP level at AM2



24-hour TSP level at AM3







## **Appendix C1**

### **Calibration Certificates for Impact Noise Monitoring Equipments**



# Calibration Certificate

Certificate No. 91495

Page 1 of 4 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90663

Date of receipt : 1-Apr-09

## Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model : NL-31

Serial No. : 00110024

## Test Conditions

Date of Test : 15-Apr-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure : Z01.

## Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

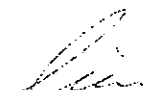
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S017A	Multi-Function Generator	86228	11-Dec-09	SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

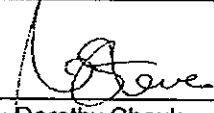
The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by :

  
P.F. Wong

Approved by :

  
for Dorothy Cheuk

Date: 16-Apr-09

This Certificate is issued by:  
Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.  
Tel: 2425 8801 Fax: 2425 8646



# Calibration Certificate

Certificate No. 91495

Page 2 of 4 Pages

Results :

## 1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L <sub>A</sub>	Fast	94.03	93.7
		Slow		93.7
	L <sub>C</sub>	Fast		93.7
		L <sub>p</sub>		Fast
30 – 120	L <sub>A</sub>	Fast	94.03	93.6
		Slow		93.6
	L <sub>C</sub>	Fast		93.6
	L <sub>p</sub>	Fast		93.6
30 – 120	L <sub>A</sub>	Fast	113.97	113.6
		Slow		113.6
	L <sub>C</sub>	Fast		113.6
	L <sub>p</sub>	Fast		113.6

IEC Type 1 Spec. :  $\pm 0.7$  dB

Uncertainty :  $\pm 0.1$  dB

## 2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. :  $\pm 0.3$  dB

Uncertainty :  $\pm 0.01$  dB



# Calibration Certificate

Certificate No. 91495

Page 3 of 4 Pages

## 3. Linearity

### 3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
130	114.0	113.8	+0.2	± 0.7 dB
130	104.0	103.7	+0.1	
120	94.0	93.6 (Ref.)	--	
110	84.0	83.6	0.0	
100	74.0	73.6	0.0	
90	64.0	63.7	+0.1	
80	54.0	53.8	+0.2	

Uncertainty : ± 0.1 dB

### 3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.7	+0.1	± 0.4 dB
	94.0	93.6 (Ref.)	--	
	95.0	94.7	+0.1	± 0.2 dB
	104.0	103.6	0.0	± 0.3 dB
	105.0	104.6	0.0	± 1.0 dB

Uncertainty : ± 0.1 dB

## 4. Frequency Weighting

### A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.8	- 39.4 dB, ± 1.5 dB
63 Hz	-26.5	- 26.2 dB, ± 1.5 dB
125 Hz	-16.5	- 16.1 dB, ± 1 dB
250 Hz	-8.9	- 8.6 dB, ± 1 dB
500 Hz	-3.4	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	0 dB, ± 1 dB
2 kHz	+1.5	+ 1.2 dB, ± 1 dB
4 kHz	+1.4	+ 1.0 dB, ± 1 dB
8 kHz	-0.8	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	-6.4	- 6.6 dB, + 3 dB ~ ∞

Uncertainty : ± 0.1 dB



# Calibration Certificate

Certificate No. 91495

Page 4 of 4 Pages

## 5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.8	± 0.5 dB
1/10 <sup>2</sup>	40.0	39.8	
1/10 <sup>3</sup>	40.0	40.0	± 1.0 dB
1/10 <sup>4</sup>	40.0	40.3	

Uncertainty : ± 0.1 dB

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1 002 hPa.

----- END -----



Hong Kong Calibration Ltd.

香港校正有限公司

# Calibration Certificate

Certificate No. 91496

Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90663

Date of receipt : 1-Apr-09

## Item Tested

Description : Acoustic Calibrator

Manufacturer : Castle

Model : GA607

Serial No. : 038641

## Test Conditions

Date of Test : 15-Apr-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure : F06, F20, Z02.

## Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	83240	30-Jun-09	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR
S041	Universal Counter	84077	22-Aug-09	SCL-HKSAR
S206	Sound Level Meter	83964	13-Aug-09	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 

P.F. Wong

Approved by : 

Dorothy Cheuk

Date: 16-Apr-09

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

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# Calibration Certificate

Certificate No. 91496

Page 2 of 2 Pages

Results :

## 1. Level Accuracy (at 1 kHz)

UUT Setting (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	93.92	$\pm 0.3$ dB

Uncertainty :  $\pm 0.1$  dB

## 2. Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 942 Class 1 Spec.
1	1.001	$\pm 2$ %

Uncertainty :  $\pm 3.6 \times 10^{-6}$

3. **Level Stability** : 0.0 dB  
IEC 942 Class 1 Spec. :  $\pm 0.1$  dB  
Uncertainty :  $\pm 0.01$  dB
4. **Total Harmonic Distortion** :  $< 2.8$  %  
IEC 942 Class 1 Spec. :  $< 3$  %  
Uncertainty :  $\pm 2.3$  % of rdg.

Remark : 1. UUT : Unit-Under-Test

2. The above measured values are the mean of 3 measurements.

3. The uncertainty claimed is for a confidence probability of not less than 95%.

4. Atmospheric Pressure : 1 002 hPa

----- END -----



## Appendix C2

### Impact Noise Monitoring Results





## Day-time Noise Monitoring

### Monitoring Station: NM1

Date	Weather Condition	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at the monitoring point, dB (A)			Wind Speed (m/s)
				Leq (30min)	L10	L90	
03/08/09	Cloudy	14:16	14:46	75.0	77.8	69.7	0.8
13/08/09	Cloudy	15:20	15:50	74.7	78.0	58.4	0.6
19/08/09	Fine	13:32	14:02	74.9	76.8	68.7	0.2
25/08/09	Sunny	16:10	16:40	71.8	74.1	67.0	1.2
31/08/09	Fine	10:53	11:23	60.5	60.9	47.2	0.5

### Monitoring Station: NM2

Date	Weather Condition	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at the monitoring point, dB (A)			Wind Speed (m/s)
				Leq (30min)	L10	L90	
03/08/09	Cloudy	10:22	10:52	72.1	74.5	64.0	0.7
13/08/09	Cloudy	16:00	16:30	68.4	69.8	58.9	0.5
19/08/09	Fine	14:10	14:40	64.1	65.8	59.6	0.2
25/08/09	Sunny	15:30	16:00	65.6	68.4	61.9	1.0
31/08/09	Fine	13:00	13:30	60.7	61.2	58.0	0.4

### Monitoring Station: RNM3

Date	Weather Condition	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at the monitoring point, dB (A)			Wind Speed (m/s)
				Leq (30min)	L10	L90	
03/08/09	Cloudy	15:10	15:40	68.7	70.6	62.4	0.5
13/08/09	Cloudy	14:35	15:05	65.0	67.2	59.2	1.0
19/08/09	Fine	11:33	12:03	61.8	63.6	56.6	0.0
25/08/09	Sunny	14:52	15:22	58.9	59.9	56.3	0.4
31/08/09	Fine	10:06	10:36	62.6	63.2	59.2	0.5

Remark: 3dB(A) correction had been added to the results since noise measurements at RNM3 were free-field.

### Monitoring Station: NM4

Date	Weather Condition	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at the monitoring point, dB (A)			Wind Speed (m/s)
				Leq (30min)	L10	L90	
03/08/09	Cloudy	11:13	11:43	75.0	78.2	68.6	0.8
13/08/09	Cloudy	16:45	17:15	58.1	59.5	52.1	0.7
19/08/09	Fine	11:00	11:30	58.1	60.3	50.2	0.0
25/08/09	Sunny	14:10	14:40	63.3	67.2	59.8	0.6
31/08/09	Fine	09:29	09:59	67.2	69.1	49.3	0.7



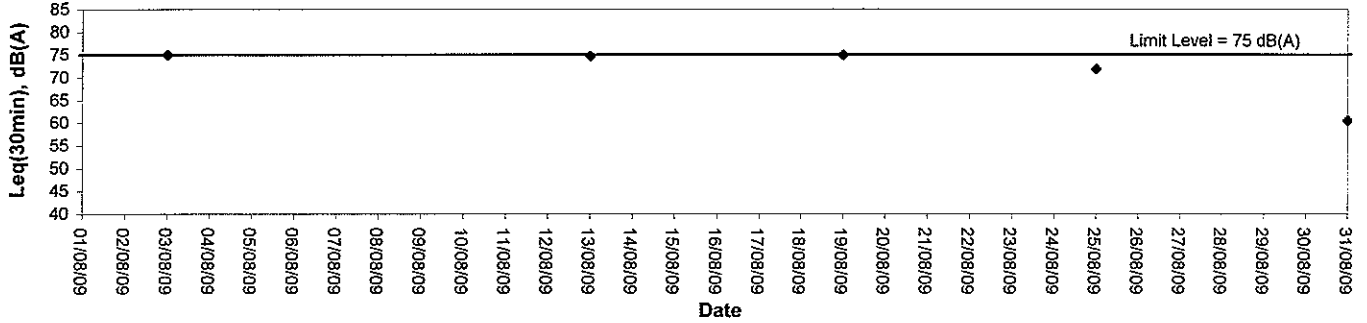
## **Appendix C3**

### **Graphical Plots of Impact Noise Monitoring Data**

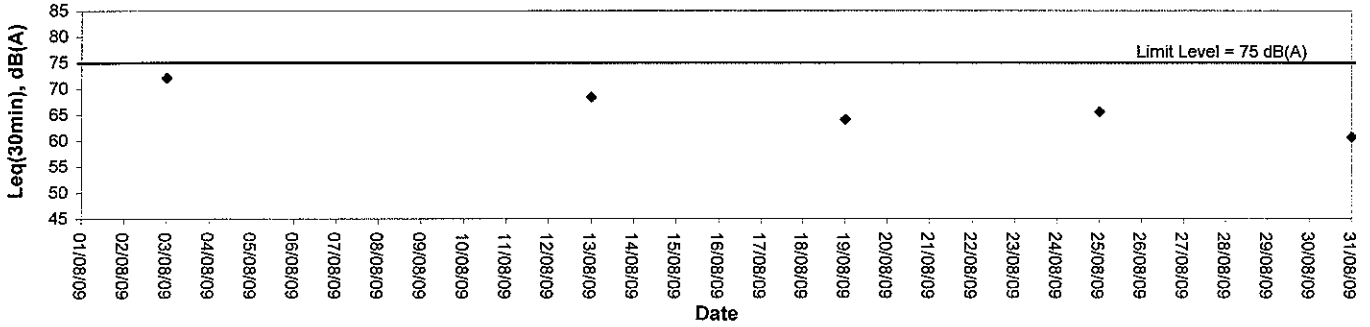


## Noise Monitoring (Day-time)

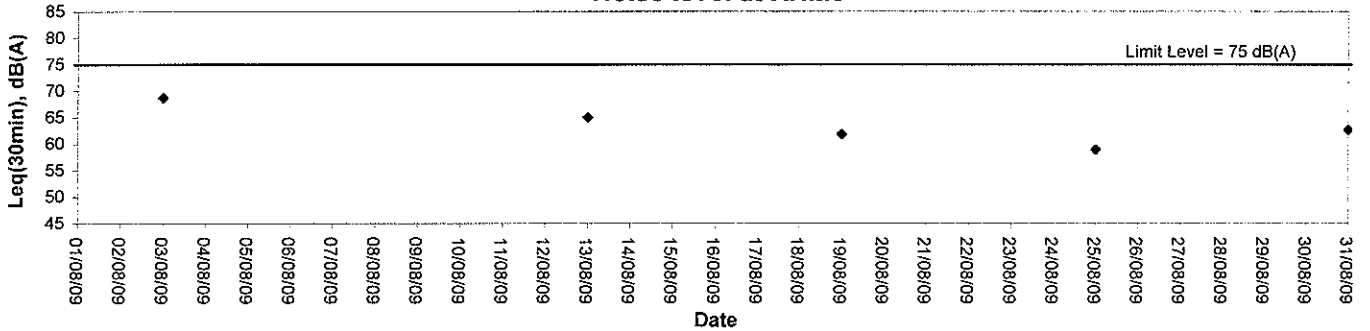
### Noise level at NM1



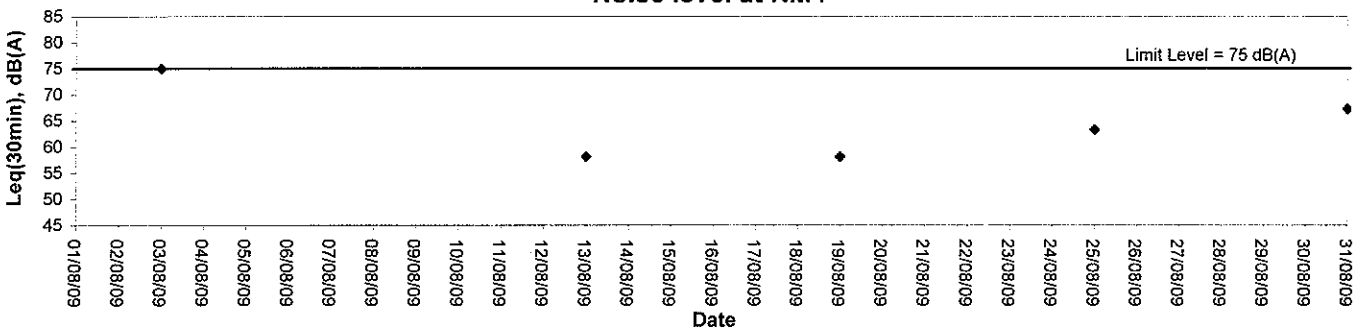
### Noise level at NM2



### Noise level at RNM3



### Noise level at NM4



## **Appendix D**

### **Event-Action Plans**



### Event / Action Plan for Air Quality

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

### Event / Action Plan for Construction Noise

EVENT	ACTION				CONTRACTOR
	ET	IC(E)	ER	CONTRACTOR	
<b>Action level</b>	<ol style="list-style-type: none"> <li>1. Notify IC(E) and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IC(E), ER and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures ;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review and investigation results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure proper implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposal to IC(E);</li> <li>2. Implement noise mitigation proposals.</li> </ol>	
<b>Limit level</b>	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IC(E), ER, EPD and Contractor;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IC(E), ER and EPD the causes and actions taken for the exceedances;</li> <li>7. Assess the effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions to ensure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Same as above;</li> <li>2. If exceedances continue, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IC(E);</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still out of control;</li> <li>5. Stop the relevant portion of works as determined by ER, until the exceedance is abated.</li> </ol>	



## **Appendix E**

### **Construction Programme**

**Project Key Dates**

Contract Date of Commencement	0	2 JAN 08	15 JAN 08	19 APR 10	19 APR 10
Contract Date of Completion	0				

**Commencement of Works Order**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 001	Y251-2514	16 JUN 08	12 MAR 09		
WO 002	Y251-2515	16 JUN 08	12 MAR 09		
WO 003	Y251-2516	16 JUN 08	12 MAR 09		
WO 004	Y251-2517	16 JUN 08	12 MAR 09		
WO 005	Y251-2518	16 JUN 08	12 MAR 09		
WO 006	Y251-2519	16 JUN 08	12 MAR 09		
WO 007	Y251-2520	16 JUN 08	12 MAR 09		
WO 008	Y251-2521	16 JUN 08	12 MAR 09		
WO 009	Y251-2522	16 JUN 08	12 MAR 09		
WO 010	Y251-2523	16 JUN 08	12 MAR 09		
WO 011	Y251-2524	16 JUN 08	12 MAR 09		
WO 012	Y251-2525	16 JUN 08	12 MAR 09		
WO 013	Y251-2526	16 JUN 08	12 MAR 09		
WO 014	Y251-2527	16 JUN 08	12 MAR 09		
WO 015	Y251-2528	16 JUN 08	12 MAR 09		
WO 016	Y251-2529	16 JUN 08	12 MAR 09		
WO 017	Y251-2530	16 JUN 08	12 MAR 09		

**Completion of Works Order**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 001	Y251-2514	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 002	Y251-2515	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 003	Y251-2516	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 004	Y251-2517	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 005	Y251-2518	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 006	Y251-2519	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 007	Y251-2520	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 008	Y251-2521	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 009	Y251-2522	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 010	Y251-2523	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 011	Y251-2524	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 012	Y251-2525	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 013	Y251-2526	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 014	Y251-2527	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 015	Y251-2528	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 016	Y251-2529	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09
WO 017	Y251-2530	16 JUN 08	12 MAR 09	26 MAY 09	26 MAY 09

**General and Preparation**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 018	Approval of ITA for up to XP Application	30 JUN 08	14 MAR 09	02 MAR 09	14 APR 10
WO 019	Survey of MG for Sewerage Works	0	1700	16 MAR 09	28 SEP 09
WO 020	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 021	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 022	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 023	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 024	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 025	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 026	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 027	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 028	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 029	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 030	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 031	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 032	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 033	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 034	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 035	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 036	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 037	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 038	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 039	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09
WO 040	Survey of ICE Can for Temporary Works Design	0	1000	16 MAR 09	28 SEP 09

**Works by Utilities Undertakers**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 041	16.1 Construction of 150mm dia. SW 1000	0	2	31 OCT 08	31 OCT 08
WO 042	Completion of WSD works at W21/W22	0	31 OCT 08	31 OCT 08	31 OCT 08
WO 043	Temp. Diversion of AC. Works at W21/W22	0	1200	28 APR 09	28 APR 09

**Site Works at Works Area W1A/W1B/W2A/W2B**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 044	Excavation of 150mm dia. SW 1000 at W1	15	0	01 MAR 09	17 APR 09
WO 045	Excavation of 150mm dia. SW 1000 at W2	15	0	01 APR 09	01 MAY 09
WO 046	Excavation of 150mm dia. SW 1000 at W3	15	0	01 APR 09	01 MAY 09

**WO 005 (Yung Shue Wan Main Street & Clinic)**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 047	Inspection P/I. Liaison with UDU Division	16	16	28 FEB 09	14 MAR 09
WO 048	Y252-2521	16	16	28 FEB 09	14 MAR 09
WO 049	Y252-2522	16	16	28 FEB 09	14 MAR 09
WO 050	Y252-2523	16	16	28 FEB 09	14 MAR 09
WO 051	Y252-2524	16	16	28 FEB 09	14 MAR 09
WO 052	Y252-2525	16	16	28 FEB 09	14 MAR 09
WO 053	Y252-2526	16	16	28 FEB 09	14 MAR 09
WO 054	Y252-2527	16	16	28 FEB 09	14 MAR 09
WO 055	Y252-2528	16	16	28 FEB 09	14 MAR 09
WO 056	Y252-2529	16	16	28 FEB 09	14 MAR 09
WO 057	Y252-2530	16	16	28 FEB 09	14 MAR 09

**WO 006 (PWY M/H Y21&23 Upstream)**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 058	Inspection P/I. Liaison with UDU Division	16	16	28 FEB 09	14 MAR 09
WO 059	Y21-2101	16	16	28 FEB 09	14 MAR 09
WO 060	Y21-2102	16	16	28 FEB 09	14 MAR 09
WO 061	Y21-2103	16	16	28 FEB 09	14 MAR 09
WO 062	Y21-2104	16	16	28 FEB 09	14 MAR 09
WO 063	Y21-2105	16	16	28 FEB 09	14 MAR 09
WO 064	Y21-2106	16	16	28 FEB 09	14 MAR 09
WO 065	Y21-2107	16	16	28 FEB 09	14 MAR 09
WO 066	Y21-2108	16	16	28 FEB 09	14 MAR 09
WO 067	Y21-2109	16	16	28 FEB 09	14 MAR 09
WO 068	Y21-2110	16	16	28 FEB 09	14 MAR 09

**WO 007 (PWY M/H Y21&23 Upstream)**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 069	Inspection P/I. Liaison with UDU Division	16	16	28 FEB 09	14 MAR 09
WO 070	Y21-2111	16	16	28 FEB 09	14 MAR 09
WO 071	Y21-2112	16	16	28 FEB 09	14 MAR 09
WO 072	Y21-2113	16	16	28 FEB 09	14 MAR 09
WO 073	Y21-2114	16	16	28 FEB 09	14 MAR 09
WO 074	Y21-2115	16	16	28 FEB 09	14 MAR 09
WO 075	Y21-2116	16	16	28 FEB 09	14 MAR 09
WO 076	Y21-2117	16	16	28 FEB 09	14 MAR 09
WO 077	Y21-2118	16	16	28 FEB 09	14 MAR 09
WO 078	Y21-2119	16	16	28 FEB 09	14 MAR 09
WO 079	Y21-2120	16	16	28 FEB 09	14 MAR 09

**WO 008 (PWY M/H Y21&23 Upstream)**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 080	Inspection P/I. Liaison with UDU Division	16	16	28 FEB 09	14 MAR 09
WO 081	Y21-2121	16	16	28 FEB 09	14 MAR 09
WO 082	Y21-2122	16	16	28 FEB 09	14 MAR 09
WO 083	Y21-2123	16	16	28 FEB 09	14 MAR 09
WO 084	Y21-2124	16	16	28 FEB 09	14 MAR 09
WO 085	Y21-2125	16	16	28 FEB 09	14 MAR 09
WO 086	Y21-2126	16	16	28 FEB 09	14 MAR 09
WO 087	Y21-2127	16	16	28 FEB 09	14 MAR 09
WO 088	Y21-2128	16	16	28 FEB 09	14 MAR 09
WO 089	Y21-2129	16	16	28 FEB 09	14 MAR 09
WO 090	Y21-2130	16	16	28 FEB 09	14 MAR 09

**WO 009 (PWY Y21-Y48 & Y83&118 Upstream)**

WO No.	Description	Start Date	End Date	Start Date	End Date
WO 091	Inspection P/I. Liaison with UDU Division	16	16	28 FEB 09	14 MAR 09
WO 092	Y21-2131	16	16	28 FEB 09	14 MAR 09
WO 093	Y21-2132	16	16	28 FEB 09	14 MAR 09
WO 094	Y21-2133	16	16	28 FEB 09	14 MAR 09
WO 095	Y21-2134	16	16	28 FEB 09	14 MAR 09
WO 096	Y21-2135	16	16	28 FEB 09	14 MAR 09
WO 097	Y21-2136	16	16	28 FEB 09	14 MAR 09
WO 098	Y21-2137	16	16	28 FEB 09	14 MAR 09
WO 099	Y21-2138	16	16	28 FEB 09	14 MAR 09
WO 100	Y21-2139	16	16	28 FEB 09	14 MAR 09

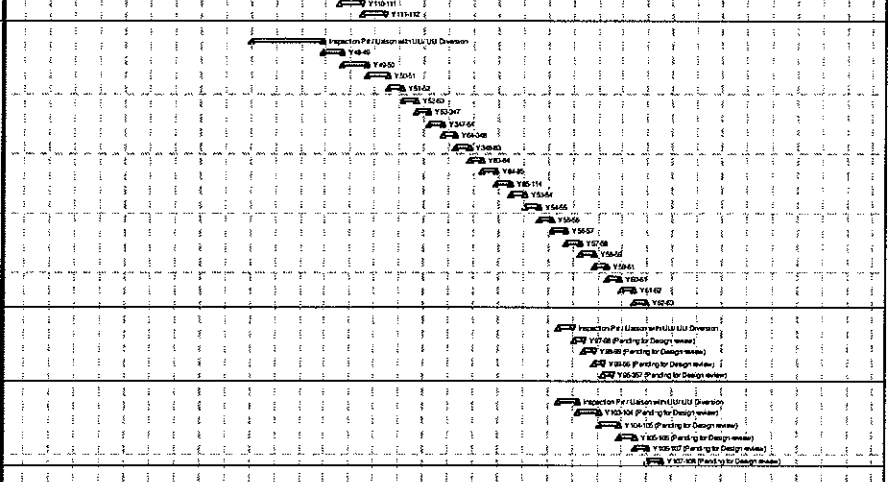


Main activity calendar grid with columns for months (SEP to JUN) and rows for activity codes (e.g., Y120-Y140, Y150-Y170, Y180-Y200) and descriptions. Includes progress bars and completion dates.

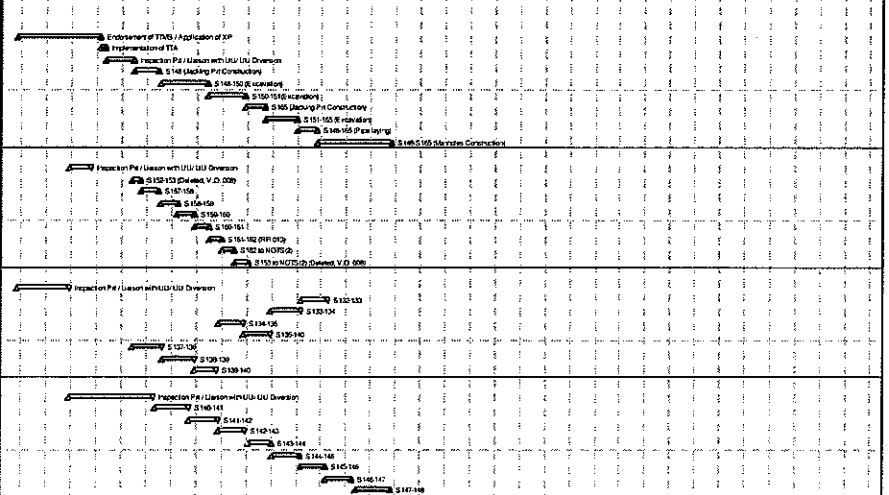
Legend for activity types: Early start point, Early finish point, Progress bar, etc. Project Name: Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works. Date: 02/08/08. Revision: 5.



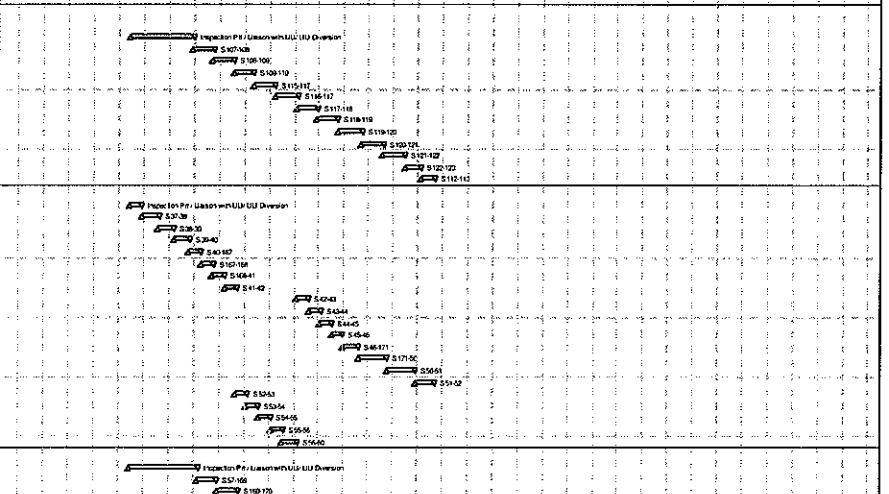
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Y86-Y87	Y116-118	24	19 MAR 09	21 AUG 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09
Y86-Y87	Y116-118	24	19 MAR 09	21 AUG 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09
Y86-Y87	Y116-118	24	19 MAR 09	21 AUG 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09	18 JUN 09



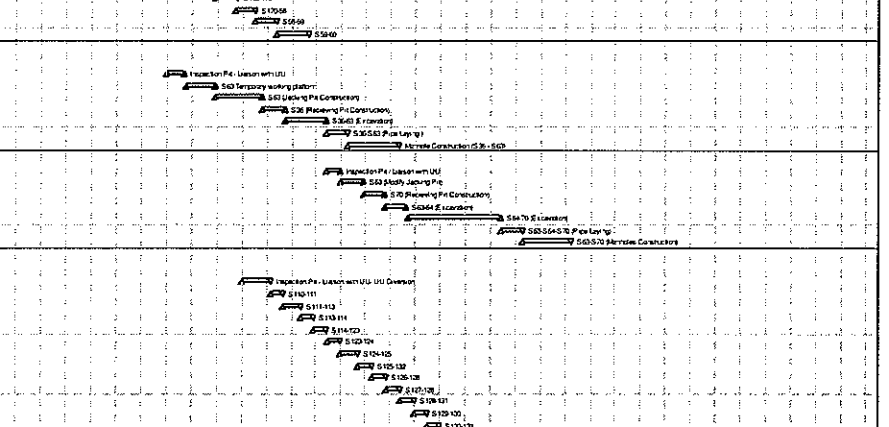
Act ID	Activity Description	Start	End	Start	End	Start	End	Start	End	Start	End
WO 006 (S148-S165 Trenchless and SKW2nd SL)	S148-S165 Trenchless	0	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08
WO 006 (S148-S165 Trenchless and SKW2nd SL)	S148-S165 Trenchless	0	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08
WO 006 (S148-S165 Trenchless and SKW2nd SL)	S148-S165 Trenchless	0	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08	26 FEB 08



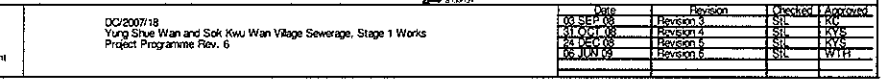
Act ID	Activity Description	Start	End	Start	End	Start	End	Start	End	Start	End
WO 010 (SKW 3rd Branches & CM S37-S60-S57)	S107-S110, S115-S123, S112-S113	52	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08
WO 010 (SKW 3rd Branches & CM S37-S60-S57)	S107-S110, S115-S123, S112-S113	52	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08
WO 010 (SKW 3rd Branches & CM S37-S60-S57)	S107-S110, S115-S123, S112-S113	52	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08	20 JUL 08

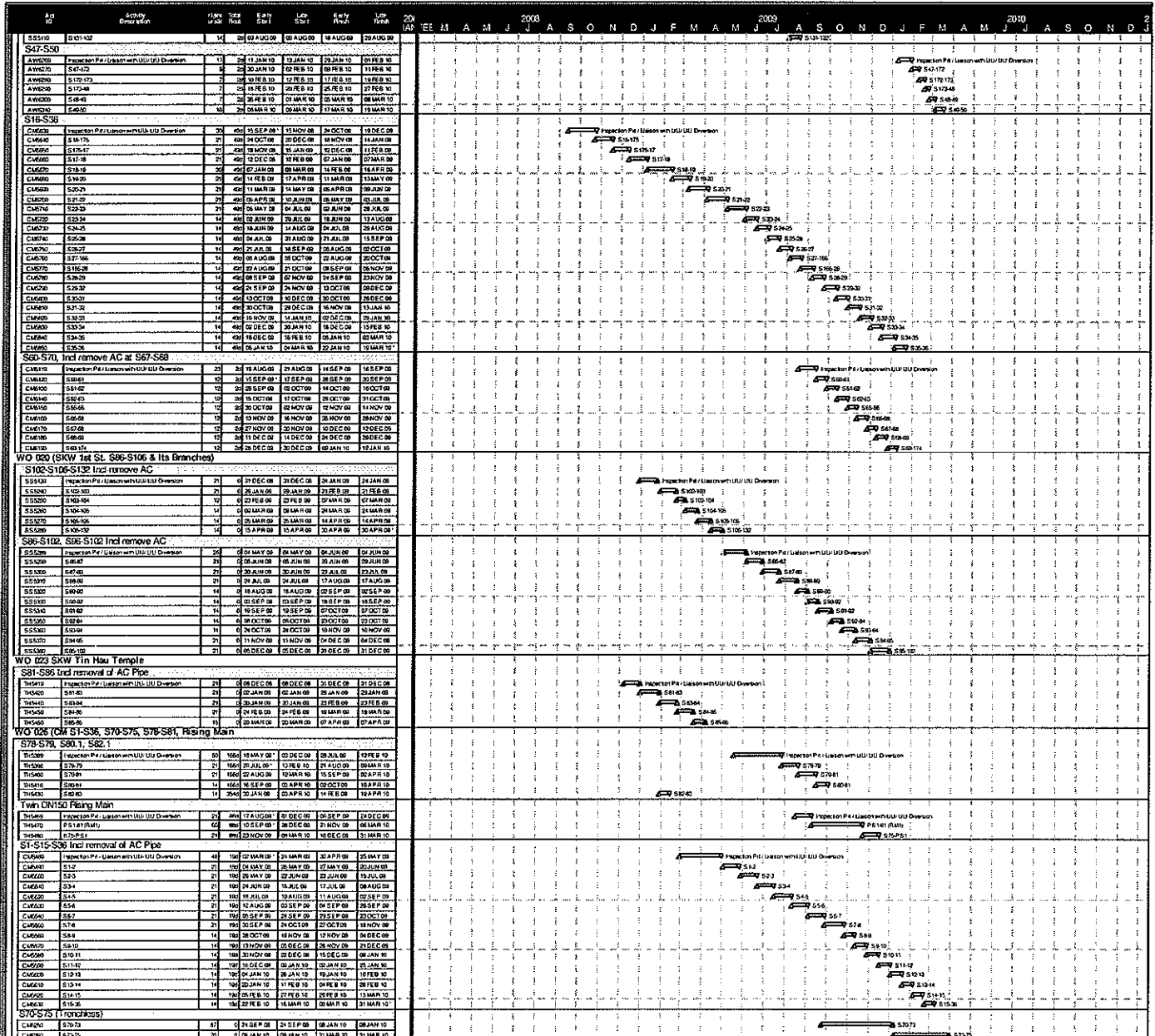


Act ID	Activity Description	Start	End	Start	End	Start	End	Start	End	Start	End
WO 015 (Trenchless S36-S70)	S36-S53, S56A-S63A (Trenchless)	4	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08
WO 015 (Trenchless S36-S70)	S36-S53, S56A-S63A (Trenchless)	4	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08
WO 015 (Trenchless S36-S70)	S36-S53, S56A-S63A (Trenchless)	4	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08	01 SEP 08



Act ID	Activity Description	Start	End	Start	End	Start	End	Start	End	Start	End
WO 017 (SKW2nd Branches to 3rd St & CM)	S110-S121, S127-S132	30	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08
WO 017 (SKW2nd Branches to 3rd St & CM)	S110-S121, S127-S132	30	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08
WO 017 (SKW2nd Branches to 3rd St & CM)	S110-S121, S127-S132	30	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08	01 DEC 08





- ▲ Early start point
- ▲ Early finish point
- ▲ Summary bar
- Critical bar
- ▲ Summary bar
- ▲ Progress point
- Start milestone point
- Finish milestone point

DC/2007/18  
 Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works  
 Project Programme Rev. 6

Date	Revision	Checked	Approved
01 SEP 08	Revision 1	SIL	RC
01 OCT 08	Revision 2	SIL	KYS
01 DEC 08	Revision 3	SIL	KYS
06 JAN 09	Revision 4	SIL	WTH
06 JAN 09	Revision 5	SIL	WTH
06 JAN 09	Revision 6	SIL	WTH



**Appendix F**

**Summary of Implementation Status**

**of**

**Mitigation Measures during Site Inspection**



## Environmental Mitigation Implementation Schedule

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
<b>Air Quality</b>					
<ul style="list-style-type: none"> <li>▪ Stockpiles of imported material kept on site should be contained within hoarding, dampened and / or covered during dry and windy weather.</li> <li>▪ Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses.</li> <li>▪ Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.</li> <li>▪ Any vehicle used for moving sands, aggregates and construction waste should have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.</li> <li>▪ Unpaved areas should be watered regularly to avoid dust generation.</li> <li>▪ The enclosures should be around the main dust-generating activities.</li> <li>▪ All plant and equipment should be well maintained e.g. without black smoke emission.</li> <li>▪ Open burning should be prohibited.</li> </ul>	All areas		√		
<b>Noise Impact</b>					
<ul style="list-style-type: none"> <li>▪ Quite powered mechanical equipment (PME) or method should be used.</li> <li>▪ The number plant should be restricted (1 item for each type of plant).</li> <li>▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.</li> <li>▪ Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> <li>▪ Plant known to emit noise strongly should be orientated so that the noise is directed away from nearby NSRs.</li> <li>▪ The constructions works should be scheduled to minimize noise nuisance.</li> <li>▪ Air compressors and hand held breakers should have noise labels.</li> <li>▪ Compressors and generators should operate with door closed.</li> </ul>	All areas	√			
<b>Water Quality</b>					
<b>General Construction Works</b>					
<ul style="list-style-type: none"> <li>▪ Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal water and stormwater drains.</li> <li>▪ All fuel tanks and storage areas should be provided with locks and be sited on sealed area, within bunds of a capacity equal to 110% of the storage capacity of the largest tank.</li> <li>▪ Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.</li> </ul>	All areas		√		
	All areas	√			
	All areas		√		
	All areas			√	
	All areas				√



Environmental Protection Measures		Location	Implementation Status				
			Implemented	Partially implemented	Not implemented	Not Applicable	
<b>Waste Management</b>							
<b>General Site Wastes</b>							
•	Appropriate measures, such as transporting wastes in enclosed containers, should be taken to minimize windblown litter and dust to nearby environment.	All areas	√				
•	Sufficient waste disposal points and regular waste collection for disposal should be provided.	All areas	√				
•	A collection area for construction site waste should be provided where waste can be stored prior to removal from site.	All areas	√				
•	Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	All areas	√				
•	Records of the quantities of waste generated, recycled and disposed should be kept and maintained.	All areas	√				
•	Different types of waste should be segregated and stored in different container, skips or stockpiles to enhance reuse or recycling of material and their proper disposal.	All areas	√				
<b>Chemical Wastes</b>							
•	After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes.	All areas	√				
•	Any unused chemicals or those with remaining functional capacity should be recycled.	All areas	√				
•	Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordinance.	All areas	√				
•	Any service shop and minor maintenance facilities should be located on hard standing within a bunded area, and sumps and oil interceptors should be provided.	All areas	√				
•	Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges.	All areas	√				
<b>Construction and Demolition (C&amp;D) Wastes</b>							
•	C&D waste should be separated on site before disposal.	All areas	√				
•	Inert material, such as concrete and rubble, should be re-used on site.	All areas	√				
•	Steel and other metals should be separated for re-use and / or recycling prior to disposal of C&D material.	All areas	√				
<b>Ecological Impact</b>							
•	Labelling and fencing of the uncommon tree species.	All areas	√				
•	Avoidance of use of woodland habitats as Works Area, in particular where trees located.	All areas	√				



Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
<b>Landscape and Visual Impact</b>					
<ul style="list-style-type: none"> <li>Existing trees should be retained.</li> <li>Damage to vegetation should be minimized by close coordination and on site alignment adjusted of rising main and gravity sewer pipelines.</li> <li>Short excavation and immediate backfilling section upon completion of works should be performed to reduce active site area.</li> </ul>	All areas	√			
<b>Site Practice</b>					
<ul style="list-style-type: none"> <li>The Contractor assigned worker is responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.</li> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>All generators, fuel and oil storage are within bundle areas.</li> <li>Oil leakage from machinery, vehicle and plant should be prevented.</li> <li>The Environmental Permit should be displaced conspicuously on site.</li> </ul>	All areas	√			
	All areas		√		
	All areas		√		
	All areas		√		
	All areas	√			





**Appendix G**

**Vegetation Survey Report**

**and**

**Photographic Records of the Uncommon Tree Species**

Our Ref.: K0801/01.01.00.00/2303/L  
Date: 7 August 2009



Scott Wilson CDM Joint Venture  
38/F, Metroplaza Tower 1  
223 Hing Fong Road  
Kwai Fong, N.T.  
Hong Kong

Attn: Ir. Ian J. Jones

By Hand

Dear Sir,

**Drainage Services Department**  
**Contract No. DC/2007/18**  
**Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works**  
**Y.O. No. 016 – Vegetation and Plant Species Survey Report**

We refer to our letter ref. K0801/01.01.00.00/1876/L dated 2 June 2009 and the tele-conversations between your Ms. Fairy Wang (ARE) and the undersigned on 24 July 09 regarding the comments from EPD on the VEP application.

Enclosed please find herewith the photographic records showing the whole plant and a close-up with numbering for each plant and revised figure with correct locations for your action.

Thank you for your kind attention.

Yours faithfully,  
For and on behalf of  
**Kaden Construction Limited**

**Stephen Leung**  
**Site Agent**

StL/pys

Encl.

c.c. IBC  
ETS  
Kaden – CFS/JC/IS

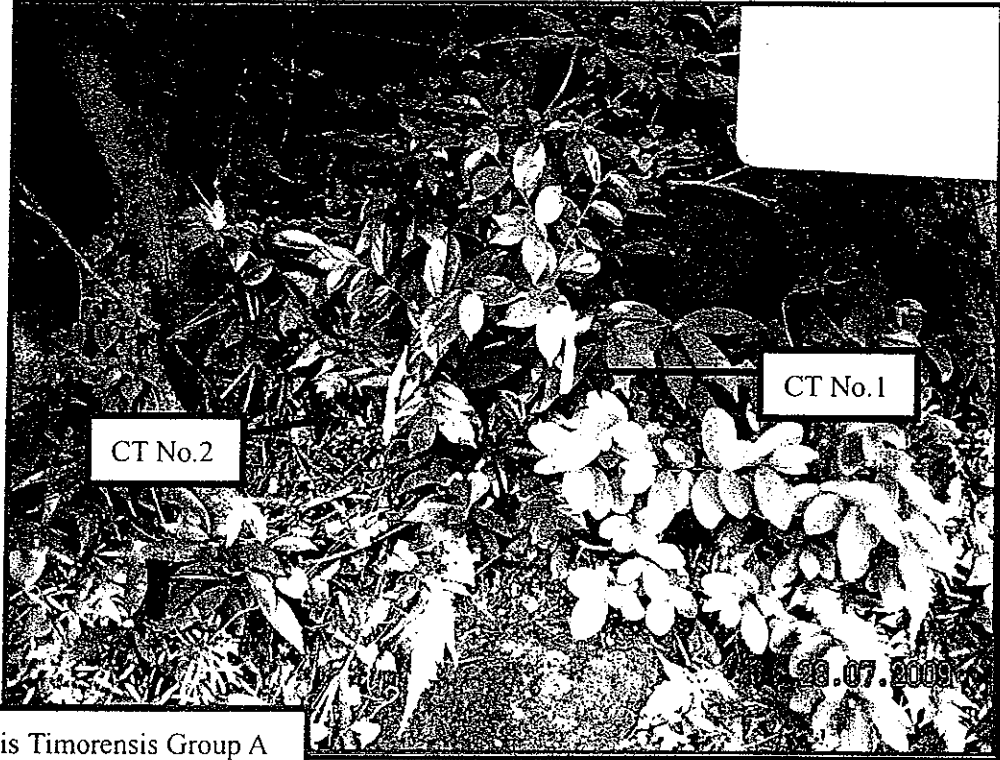
Attn: Mr. Rodney Ip  
Attn: Mr. C. L. Lau

(By Fax only: 2428 9922)  
(By Fax only: 2695 3944)

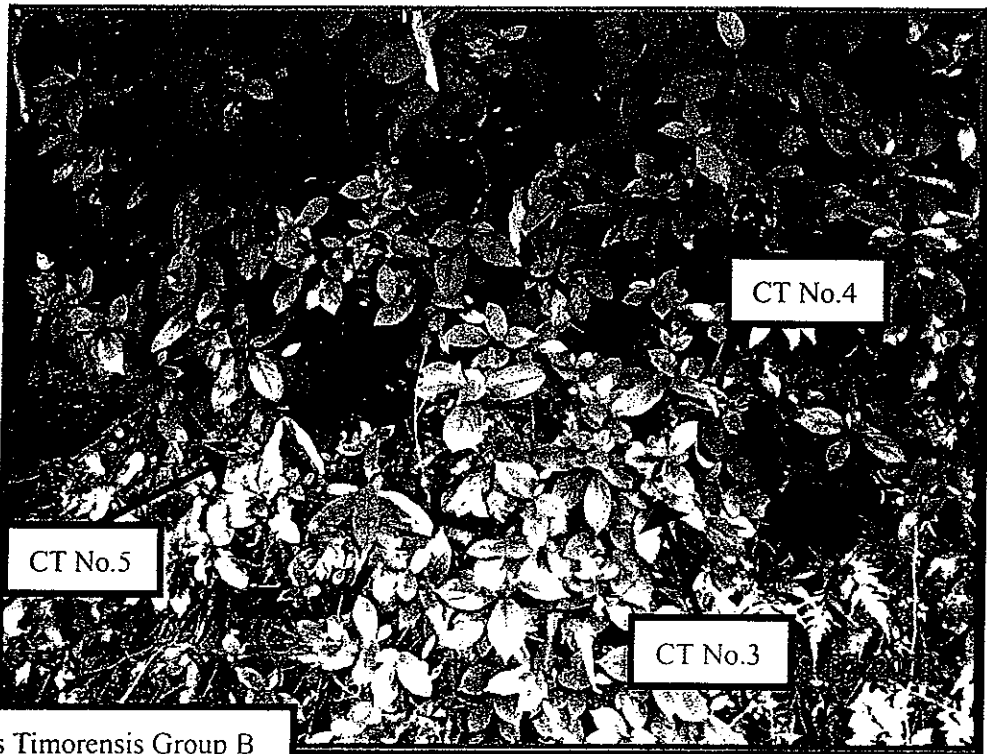
**Kaden Construction Limited**

Units 1001 - 1015, 10/F Grand Central Plaza, Tower 1, 138 Shatin Rural Committee Road, Sha Tin, N.T., Hong Kong  
Tel (852) 2272 3670 Fax (852) 2528 1751  
A MEMBER OF BUILD KING HOLDINGS 利基控股集團成員

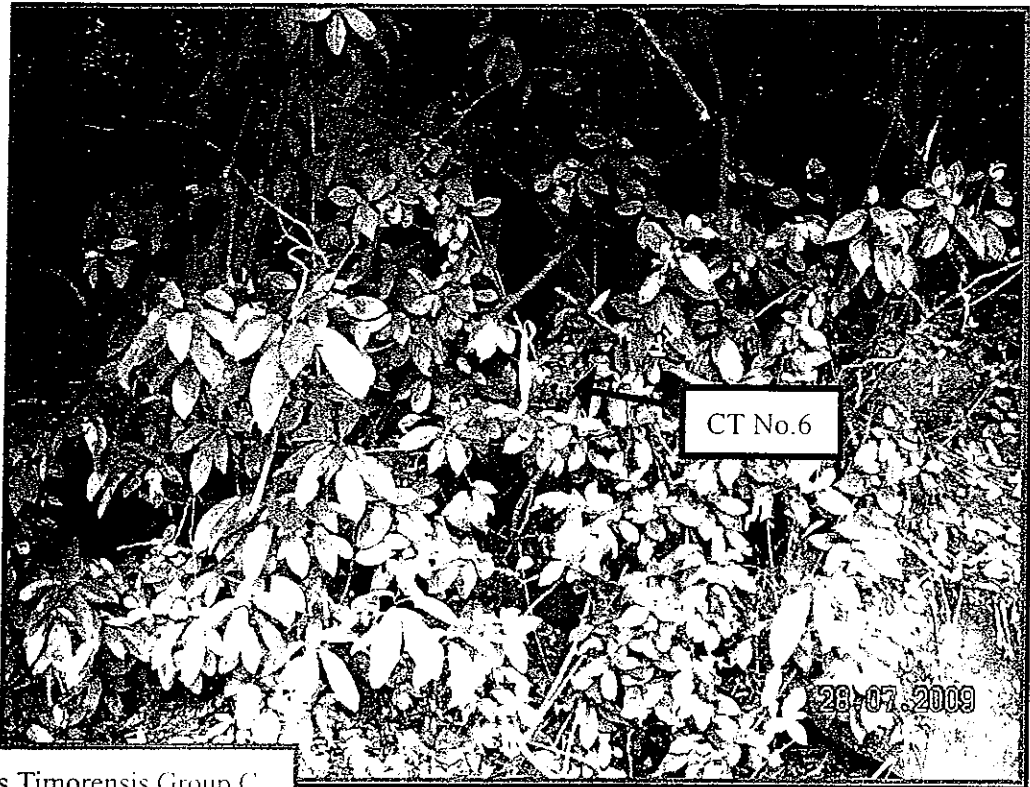




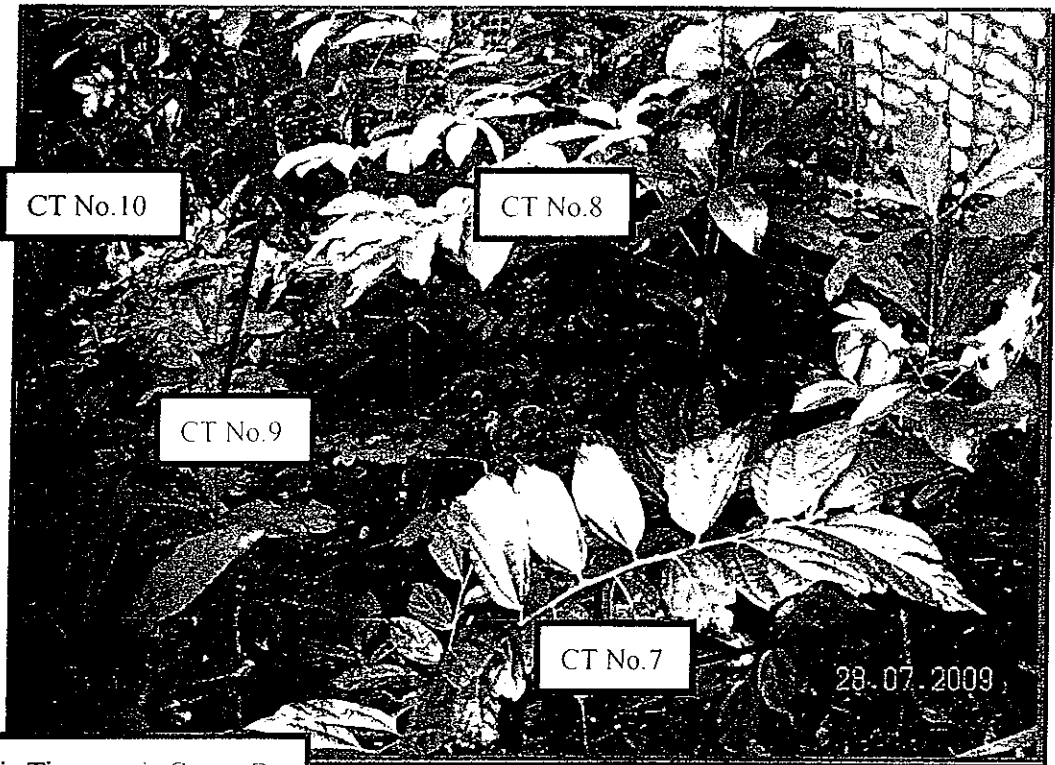
Celtis Timorensis Group A



Celtis Timorensis Group B

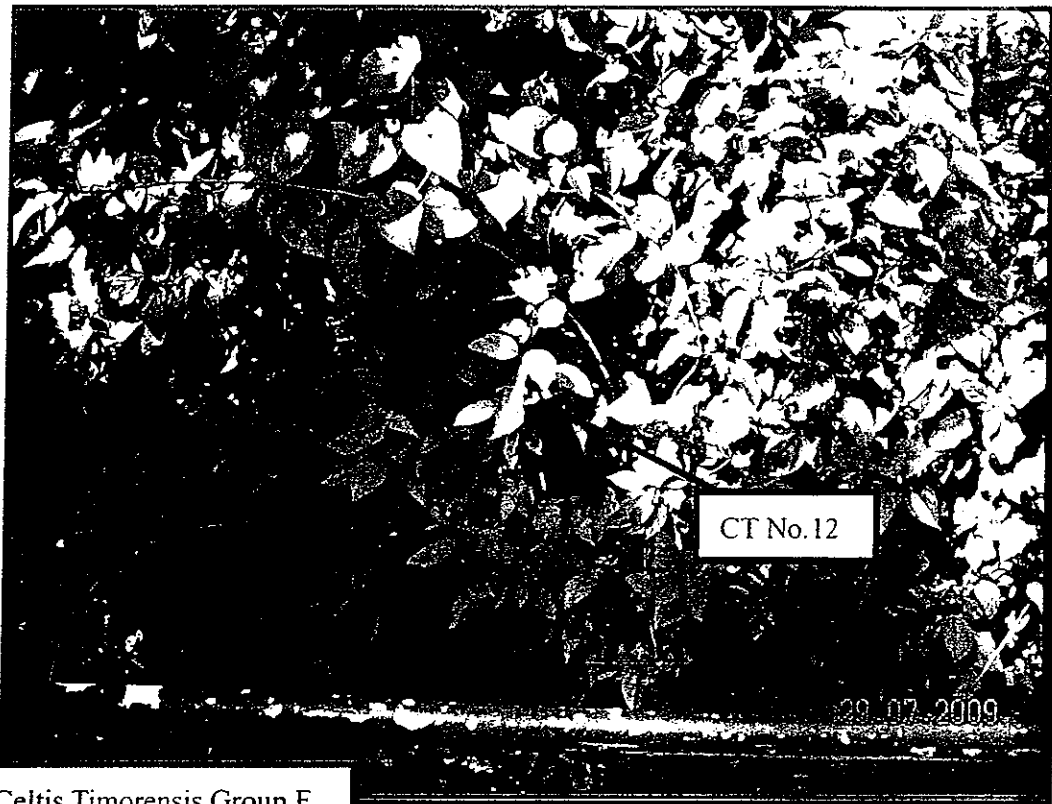
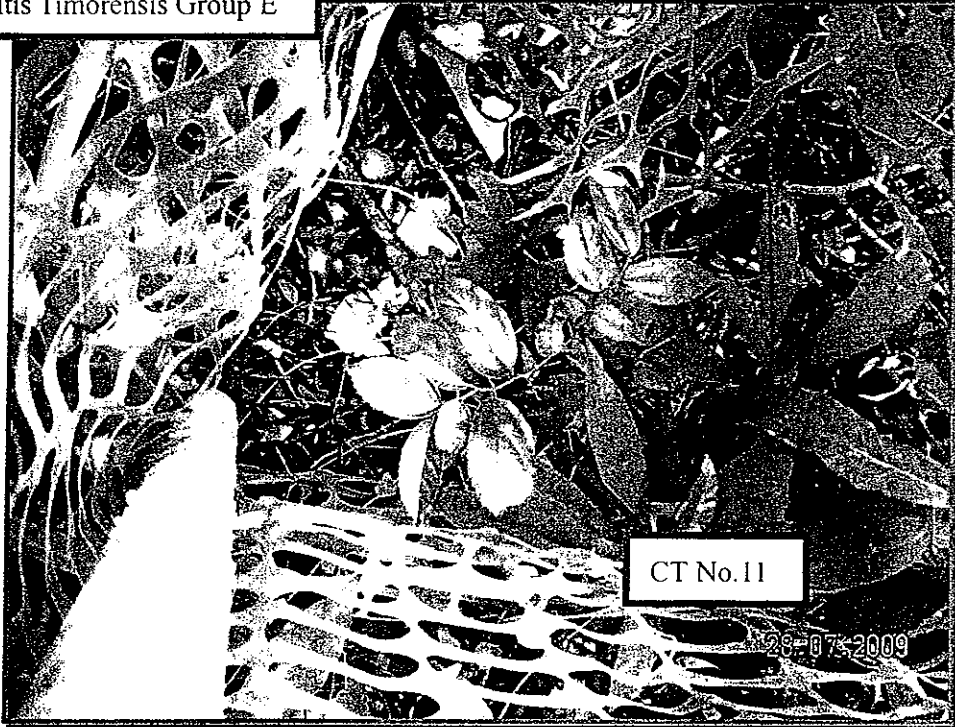


Celtis Timorensis Group C



Celtis Timorensis Group D

Celtis Timorensis Group E



Celtis Timorensis Group F



Close up of CT No.1



Close up of CT No.2





Close up of CT No.7



Close up of CT No.8





Close up of CT No.9



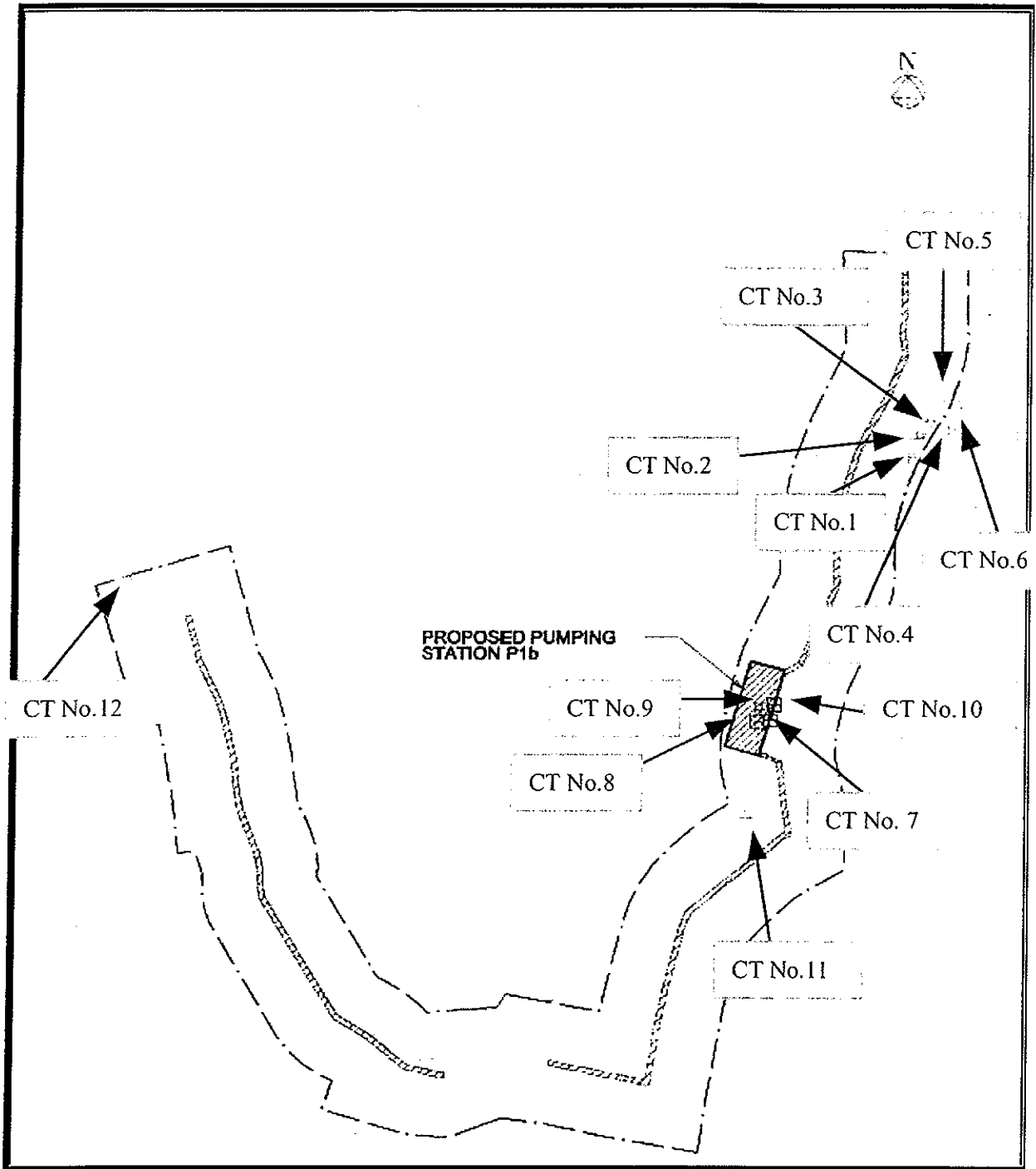
Close up of CT No.10







Close up of CT No.11



Close up of CT No.12



LEGEND	
	CELTIS TIMORENSIS TO BE LABELLED, FENCED AND PROTECTED AND TO BE TRANSPLANTED IN ADVANCE OF PUMPING STATION CONSTRUCTION
	CELTIS TIMORENSIS TO BE LABELLED, FENCED AND PROTECTED
	VEGETATION SURVEY BOUNDARY (10m OFFSET FROM SEWERAGE ALIGNMENT)
	PROPOSED SEWERAGE ALIGNMENT AND PUMPING STATION AREAS

CT No.	Page
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3,4,5,6,	P.5
7,8	P.6
9,10	P.7
11,12	P.8



**Appendix H**

**Draft Report of**

**Archaeological Watching Brief**

**at Chung Mei, Sok Kwu Wan**

**DSD Contract No. DC/2007/18  
Yung Shue Wan & Sok Kwu Wan  
Village Sewerage,  
Stage 1 Works**

**Archaeological Watching Brief  
at Chung Mei, Sok Kwu Wan**

**Draft Report**

**Prepared for Kaden Construction Ltd.  
By Archaeological Assessments Ltd.**

**July 2009**

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## **1. Non-Technical Summary**

As part of the above captioned project, an archaeological watching brief was conducted in Chung Mei, Sok Kwu Wan on 1<sup>st</sup> September 2008 and 12<sup>th</sup> June 2009 (Figure 1). The monitoring works were required as a result of previous findings of kiln-oven debris and Tang Dynasty pottery in the small valley to the west (AAL 2003).

The alignment in question ran across the west facing slope of a steep, wooded hillside – the southern half following an existing concrete-surfaced footpath, while the northern half crossed the natural slope. The contractor's groundworks consisted of a c.0.6m wide by c.1.2m deep machine-excavated pipe trench, which was monitored over a total length of approximately 50m.

No cultural layers were found and there was just one surface find of undiagnostic pottery.

由於2003年進行的考古調查在西面的小山谷發現了一些窯具及唐代陶片，因此，是次污水管敷設工程須在索罟灣涌尾進行考古監察。索罟灣涌尾之考古監察分別在2008年9月1日及2009年6月12日進行。

是次涉及之污水管敷設路線是源著西向、樹木茂盛之陡坡而建。南半部路線依現有之石屎小徑而行；

而北半部路線則繞過自然山坡。是次考古監察範圍包括：承建商用機挖掘約0.6米闊、1.2米深之地溝，而監察範圍長約50米。

是次考古監察並未發現文化層，只在地面採集到一片無斷定年份之陶片。

## **2. Introduction**

As part of the Drainage Services Department's Contract No. DC/2007/18 – Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works – it was required that an archaeological watching brief be undertaken in the village of Chung Mei, which lies approximately 0.5km south of Sok Kwu Wan on the eastern side of Lamma Island (Figure 1). The archaeological monitoring works were required following findings of kiln-oven debris and Tang Dynasty pottery in an adjoining area during an earlier archaeological survey (AAL 2003). The watching brief works on the approximately 50m long alignment were conducted in two segments, the first on 1st September 2008 and the second on 12th June 2009 (Figure 2).

## **3. Project Aims**

The aim of this project was to ensure that any archaeological remains encountered during construction works within the study area alignment were properly identified, recorded and recovered whilst, at the same time, minimising delays to the engineering schedule.



The objectives of the study were as follows:

- To implement a monitoring strategy designed to fulfil the above aim;
- To process and analyse the results in light of previous findings;
- To report on the results of the fieldwork; and
- If required, to recommend mitigation measures.

#### **4. Topographical, Geological, Historical and Archaeological background**

##### **4.1 Topography**

The Chung Mei area comprises a small flat valley surrounded by steep wooded hillsides to the west, south and east, the latter reaching up to the peak of Ling Kok Shan at 250m PD. To the north, the ground falls gradually away to the sandy shallows of Picnic Bay (Sok Kwu Wan). The sewer alignment in question traversed the lower west facing hill slope overlooking the small valley mentioned above. The c.50m long alignment ran downhill from manhole (MH) S50 (surface level 10.06mPD) at its southern end to manhole S54 (surface level 5.75mPD) at its northern end.

##### **4.2 Geology**

In the following short discussion, the codes in brackets are those used for the various rocks/sediments depicted on the geological map (Figure 3). The solid geology at Chung Mei consists of fine to medium grained granite (gfm) with east-west running feldsparphyric rhyolite (rf) dykes. In terms of drift geology, the small valley of Chung Mei, to the west of and below the study alignment, is filled with alluvium (Qa), while debris flow deposits (Qd) are recorded in a narrow valley to the northeast of the study area (Hong Kong Government 1987). The monitored alignment was located as shown on Figure 3, crossing the western edge of the granite bedrock close to where sank beneath the alluvial fill of the valley bottom.

##### **4.3 History**

According to Hase (2002, 7), although the sheltered anchorage at Sok Kwu Wan was used by generations of boat-people, there were just seven residents on land in 1911 and it was not until the 1950s and 1960s that the settlement expanded to the landward side. The few houses dotted across the hillside at Chung Mei appear to be later 20<sup>th</sup> century in date.

##### **4.4 Archaeology**

The one previous campaign of archaeological fieldwork in the Chung Mei area was centred on the aforementioned small alluvium-filled valley just below the present study area. Eight 2x2m test pits were excavated and two of their number (TP1 and TP2) revealed evidence for historical kiln-oven debris and Tang Dynasty pottery, whilst a lower layer produced a single sherd of Bronze Age hard geometric pottery (AAL 2003).

## **5. Methodology**

The watching brief was in general conducted following the specification as set out in Section 11.1, but further details of the field implementation are provided below. As previously mentioned, the watching brief on the c.50m long alignment was conducted in two segments to fit in with the contractor's work programme – the lower segment first spanning MH S54 and S52, followed by the uphill segment from MH S52 and up to and including MH S50 (see Figure 2). Between MH S54 and S52 the trench was machine excavated forming a c.0.60m wide square-sectioned slot down to between 1-1.2m below the modern surface when measured at the downhill side of the trench and 2m+ on the uphill side. A sketch profile in the environs of MH S53, where the trench was locally stepped to avoid a lighting cable, is shown in Figure 4. At the southern end of the downhill half of the alignment on the site of MH S52, a locally deeper area was excavated to approximately 2.4m below surface, which further confirmed the depth of the completely decomposed granite (CDG) beneath the alignment. Between MH S52 and S50 the trench followed the existing concrete raft-surfaced footpath, the construction of which had necessitated the terracing of the hillside. Here, the trench was machine excavated to form a c.0.60 wide slot with sides c.1.2m deep (when measured from the modern footpath surface). Given that the alignment between MH S54 and S52 was off the main footpath, it was possible to excavate that length as one continuous open cut. In contrast, the length between MH S52 and S50 effectively closed the footpath in that area for the duration of the works, and the client therefore requested that the trench be dug, monitored and recorded, and then backfilled. During the monitoring works a full written, video and photographic record was taken, which will form the core of the project archive.

## **6. Results**

### **6.1 Introduction**

The results of the watching brief are presented in two sub-sections: one for the length of trench excavated in September 2008 (MH S54 to S52), and the other for the length excavated in June 2009 (MH S52 to S50). For each length of alignment, the sequence of deposits is introduced and then the various layers are interpreted with reference to any finds recovered.

In the text below, the following conventions should have been used: the alphanumeric codes used in deposit descriptions are taken from the Munsell system of soil colour charts (Gretagmacbeth 2000) and deposit depths are maximum values. During the discussion below reference should be made to the following illustrations: Figures 2 and 4, which respectively show the overall alignment and sketch section; Figures 5 & 6 showing the surveyors' plans of the watching brief alignment; Plates 1 and 2 respectively offering pre-excavation overviews of the alignment between MH S54 and MH S52 and between MH S51A to MH S50; and Plate 3 showing a post-excavation overview of the MH S54 to S52 alignment. NB: no post-excavation overview of the MH S51A to S50 alignment is available as the trench was excavated, recorded and immediately backfilled (but see photographs recording this process below).

### **6.2 Alignment between MH S54 and S52**

The excavation of the down-slope half of the sewer trench revealed a simple sequence of three naturally-formed deposits (see Plates 4-6), the lowest of which was a 0.20-0.30m thick band reddish yellow (7.5YR 6/8) clayey gravel (103), which extended beyond the 1.2m below surface general limit of excavation (l.o.e.) and, in the 2.4m deep sondage excavated at MH S52, was shown to be at least 1.5m thick and continuing beyond the sondage l.o.e. Over 103 there was a 0.70-0.80m thick layer of strong brown (7.5YR 5/6) gravelly clay (102), which was sealed by an approximately 0.1m thick greyish brown (10YR 5/2) slightly sandy, clayey silt (101). A modern electricity cable trench was noted running along the eastern side of the sewer trench, but was not allocated a context number.

The lower two deposits were completely sterile and can be interpreted as *in situ* decaying granite (103), overlain by an associated clay-rich layer (102), which had all the appearances of mass-transported decayed granite (slope deposits). Sealing the above granite-derived layers was a naturally-accumulating forest soil (101). No cultural horizons/deposits were identified, but one undiagnostic sherd of village ware pottery was recovered from the surface of 101 (see Plate 7).

### **6.3 Alignment between MH S52 and S50**

The excavation of the up-slope half of the sewer trench alignment also revealed a sequence of naturally-formed deposits, which exhibited some variation moving downhill from south to north.

Broadly between MHs S50 and S51, the sequence was as follows: a lower layer of c.0.40m thick (at l.o.e.) strong brown (7.5YR 5/6) slightly gravelly clay (204), overlain by a c.0.80m thick layer of reddish yellow (7.5YR 6/8) very gravelly clay (203), which was then sealed by a thin raft of concrete forming the temporary path surface (201) – see Plates 8-10.

Between MH S51 and S52 – in the environs of MH S51A, the sequence was as follows: c.0.60m thick (at l.o.e.) strong brown (7.5YR 5/6) slightly gravelly clay (204); overlain by a c.0.50m thick layer of reddish yellow (7.5YR 6/8) very gravelly clay (203); which was covered by an approximately 0.1m thick greyish brown (10YR 5/2) slightly sandy, clayey silt (202), which was in turn sealed by the concrete raft surfacing of the footpath (201) – see Plates 11 and 12. A modern water pipe was noted running along the eastern side of the sewer trench and an electricity cable along the west, but neither was allocated a context number.

The lower two deposits (204 & 203) were completely sterile and can be interpreted as mass-transported decayed granite, with clay-rich layer 204 perhaps reflecting water-borne finer material and layer 203 a more gravelly debris flow-type component. Layer 202 can be interpreted as a thin forest soil equivalent to 101 above. On the upper portion of the alignment, between MH S50 and S51, Layer 202 had apparently been removed during levelling works for the path. No finds were recovered and no cultural horizons/deposits were therefore identified.

## **7. Conclusions**

In summary, it can be concluded that the steep lower hill slope area traversed by the MH S50 to MH S54 sewer trench at Chung Mei has seen little or no human activity prior to the 20<sup>th</sup> century and, in contrast to the valley to the west, can be considered to have no archaeological potential.

## **8. References**

AAL 2003 *Agreement No. CE 20/96 Outlying Islands Sewerage Stage 1 Phase II Package J – Sok Kwu Wan Sewage Collection, Treatment & Disposal Facilities, Archaeological Investigation*. Unpublished excavation report.

Gretagmacbeth 2000 *Munsell Soil Colour Charts*. Gretagmacbeth: New Windsor, NY.

## 9. Supporting Illustrations

### 9.1 Figures

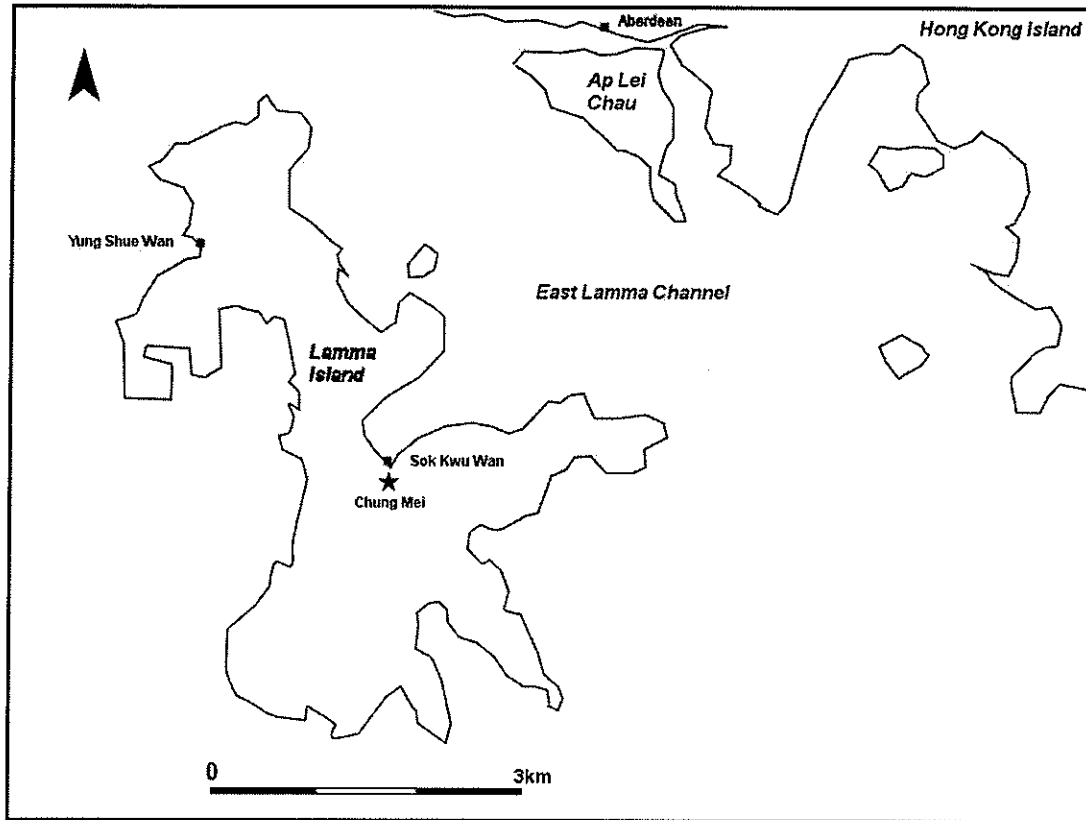


Figure 1: Study Area location – Chung Mei site marked with star

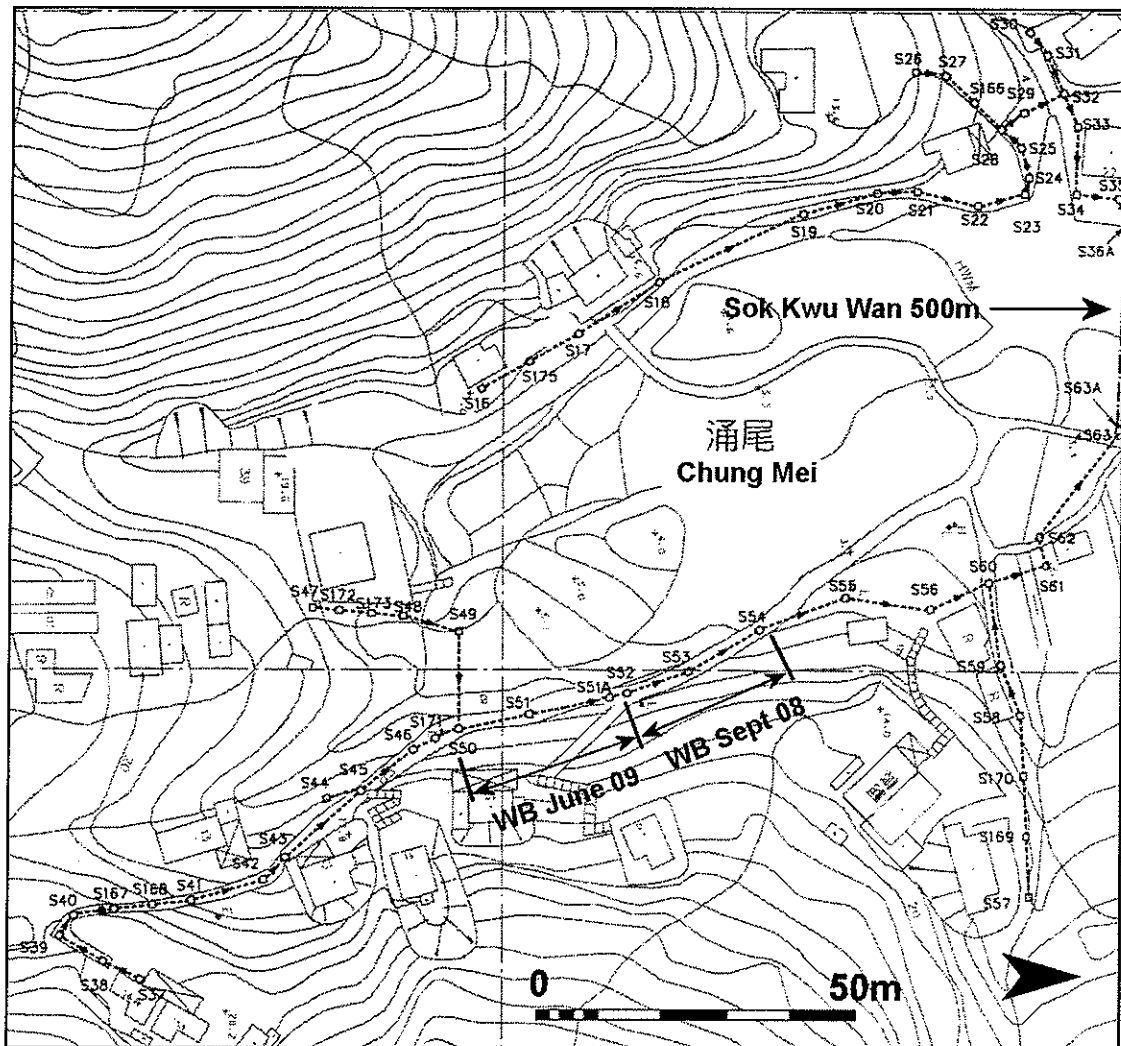


Figure 2: Plan showing location of sewer trench alignment at Chung Mei, with September 2008 and June 2009 watching brief areas highlighted

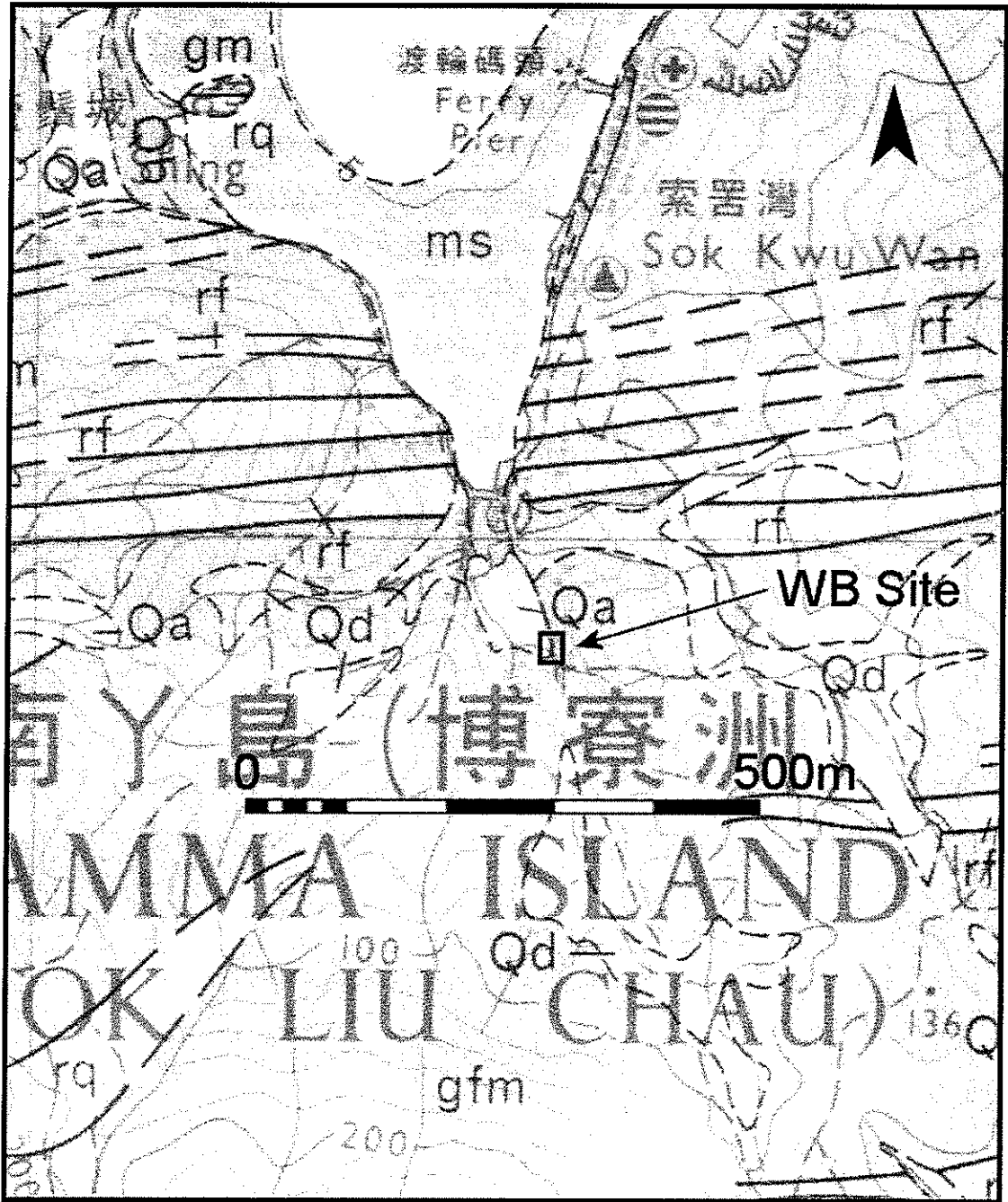


Figure 3: Geology of Study Area – alignment followed western edge of granite bedrock

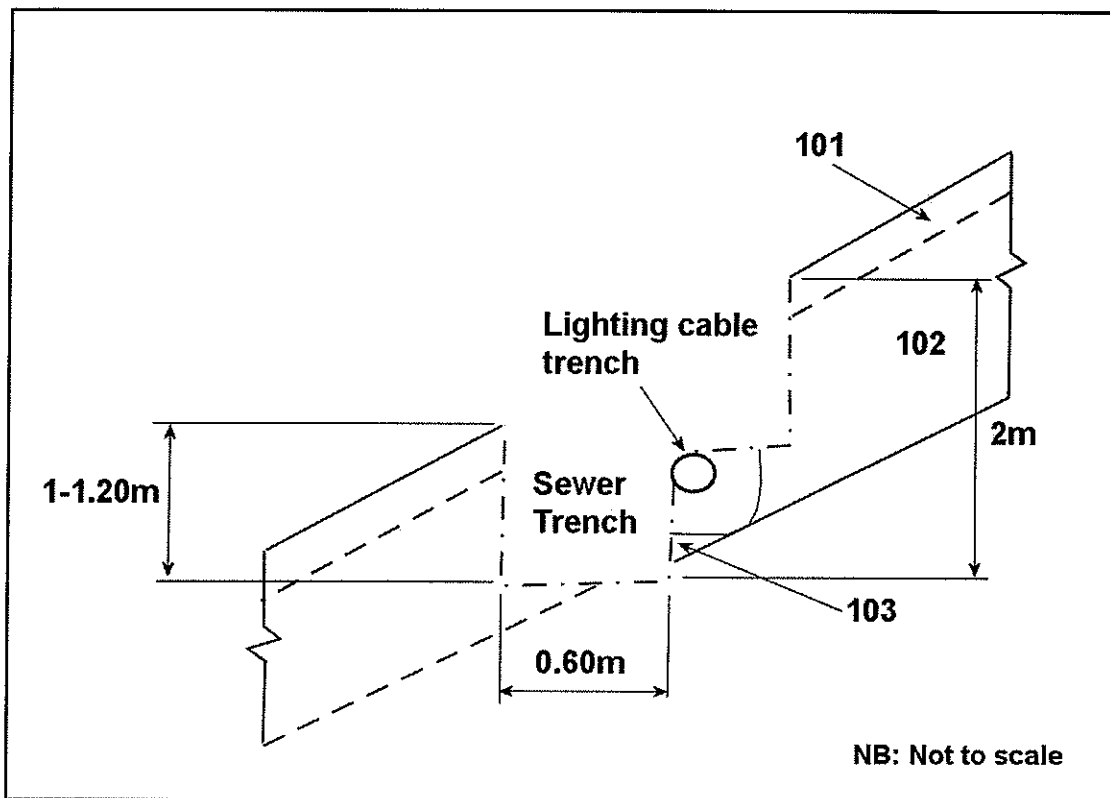


Figure 4: Transverse sketch section of sewer trench in environs of MH S53 – looking north



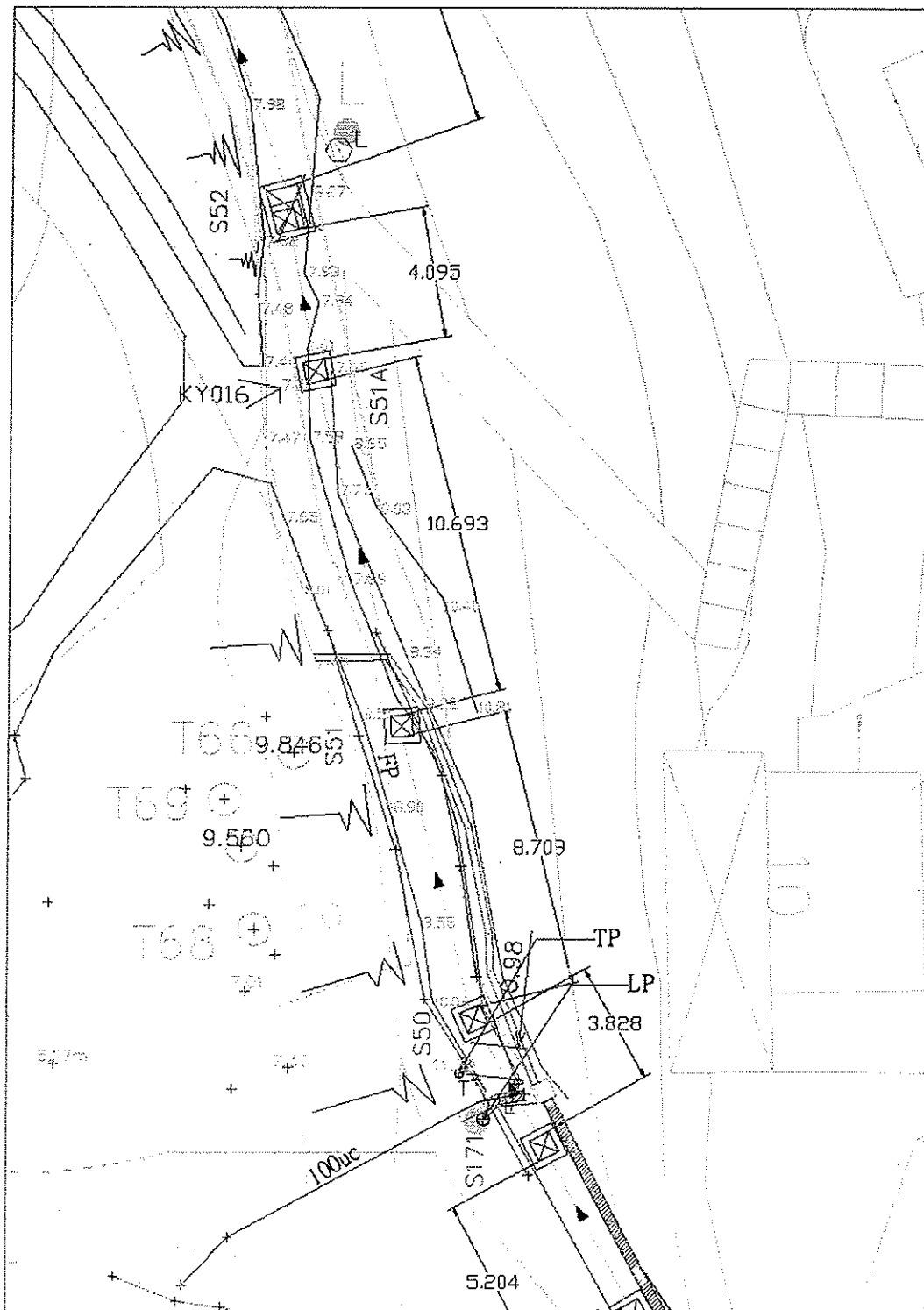


Figure 5: Surveyors' plan of the MH S50 to S52 alignment (kindly supplied by Kaden Engineering Ltd)

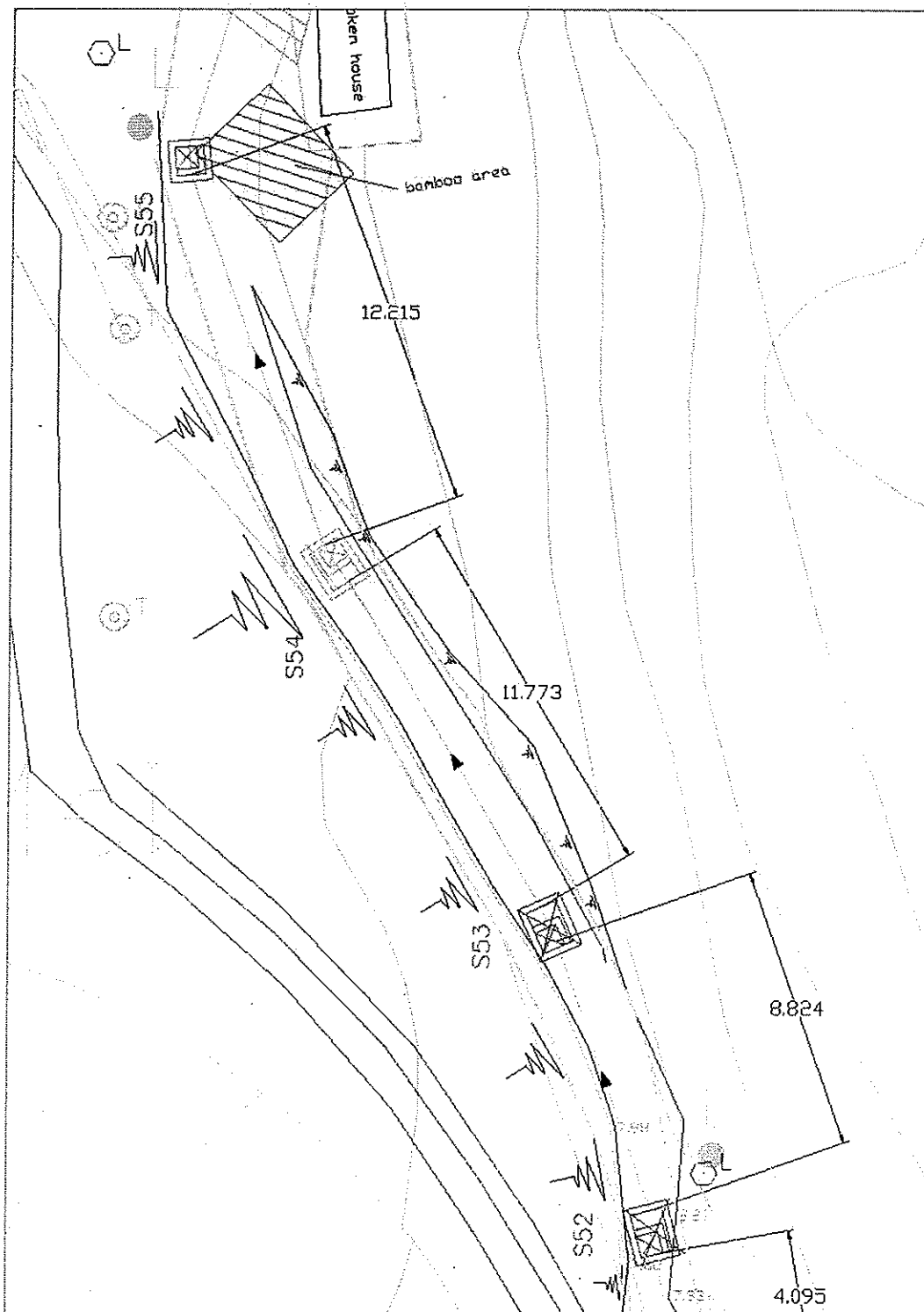


Figure 6: Surveyors' plan of the MH S52 to S54 alignment (kindly supplied by Kaden Engineering Ltd)

9.2 Plates



Plate 1: Pre-excavation view of the alignment between MHs S52 and S54 – looking north



Plate 2: Pre-excavation view of alignment between MHs S51A and S50 – looking south



Plate 3: Post-excitation view of the alignment between MHs S54 and S52 – looking south



Plate 4: Deeper sondage excavated at MH S52 – looking south



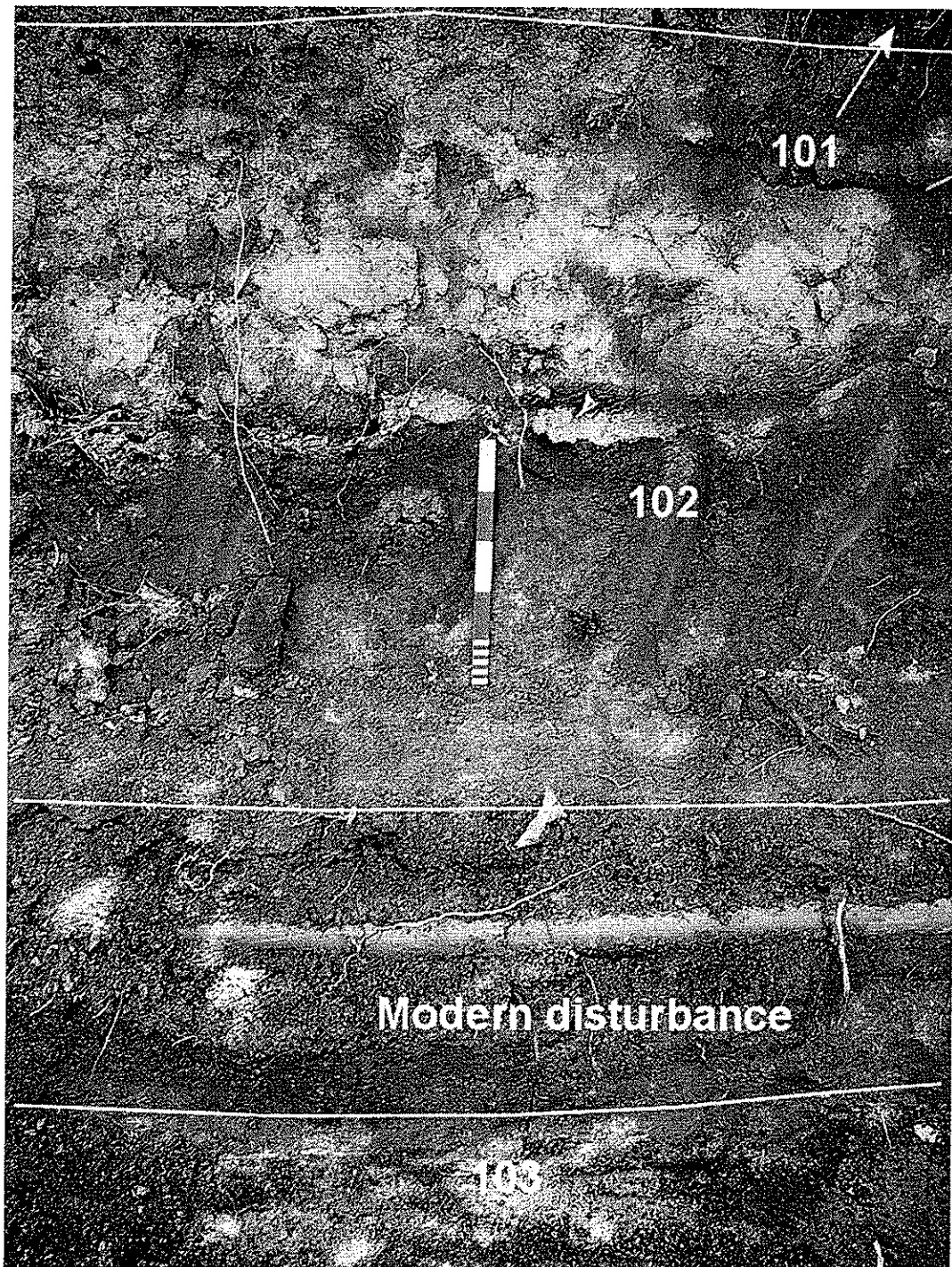


Plate 5: West facing section at MH S53 – trench stepped at base of 0.5m scale

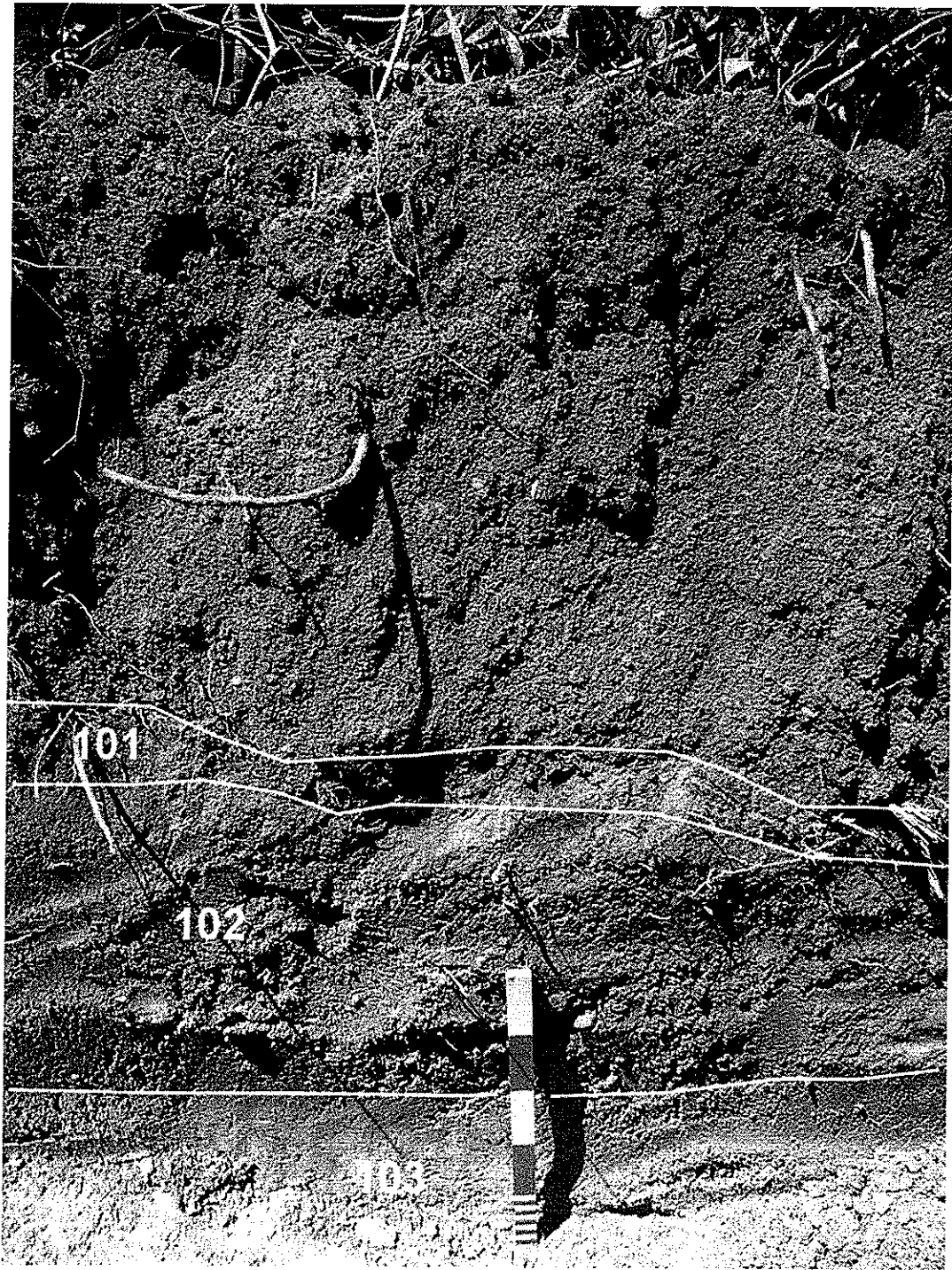


Plate 6: East facing section at MH S54



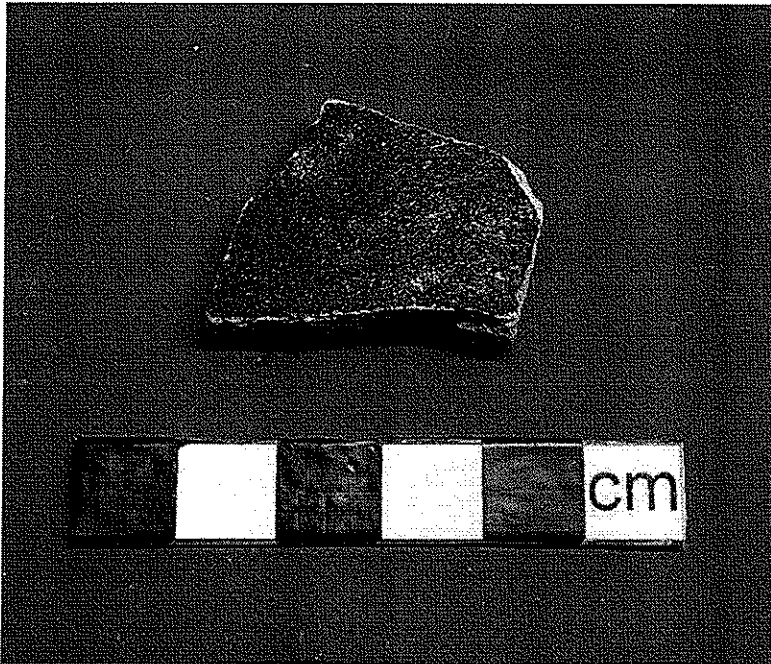


Plate 7: Undiagnostic village ware sherd found on surface of topsoil 101

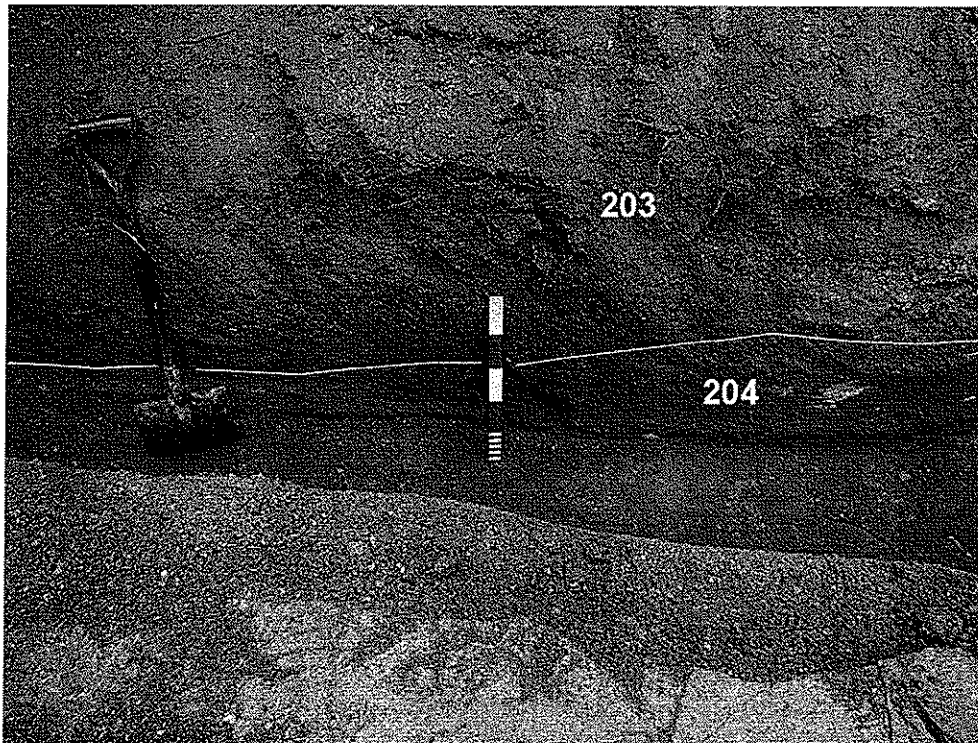


Plate 8: West facing section in environs of MH S50



Plate 9: Post-excavation view in environs of MH S50 – looking north

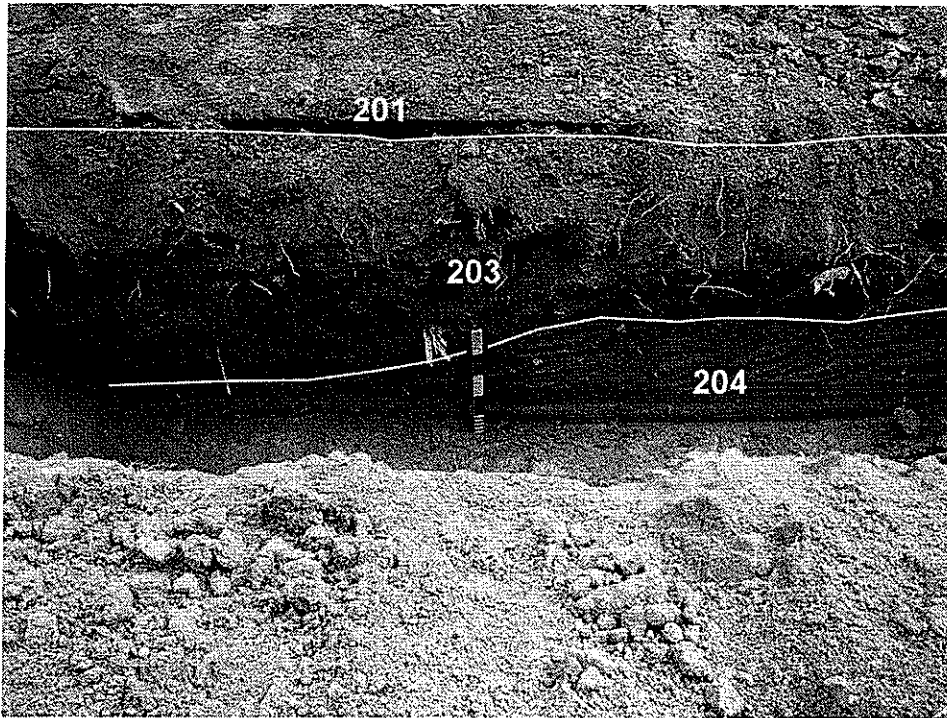


Plate 10: East facing section in environs of MH S51

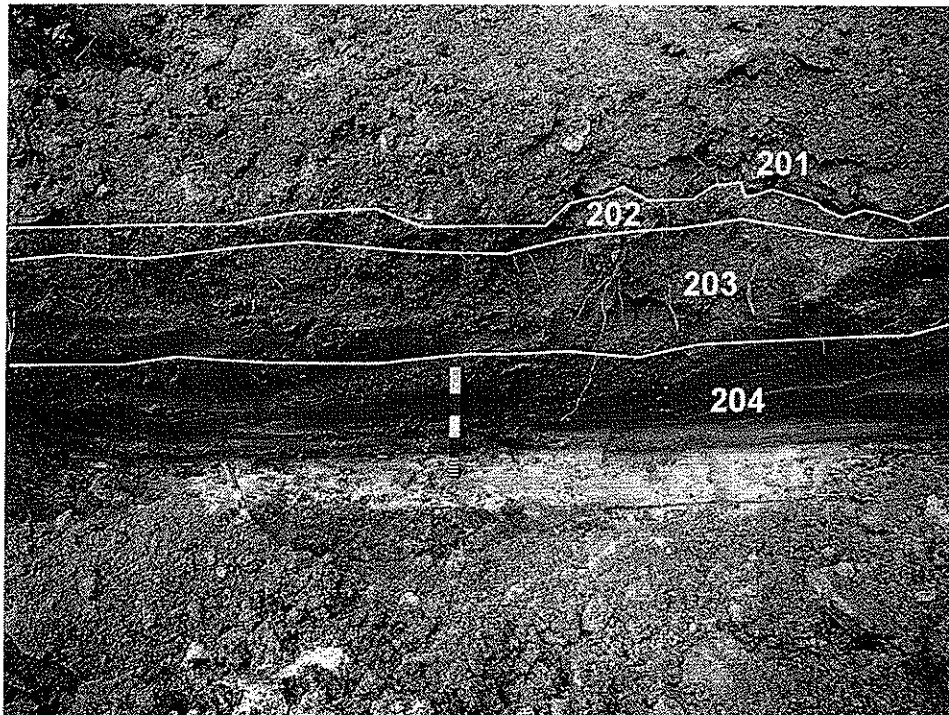


Plate 11: East facing section in environs of MH S51A



Plate 12: Post-excavation view in environs of MH S51A – looking south

## 10. Supporting Data

### 10.1 MHs S52 to S54: Tabulated stratigraphic, contextual and finds summary

Context	Description	Finds & Dating	Thickness
101	Topsoil: Greyish brown (10YR 5/2) slightly sandy, clayey SILT	1 sherd of undiagnostic VW: date unknown	0.10m max.
102	Slope Deposits: Strong brown (7.5YR 5/6) gravelly CLAY	None: date unknown	0.70-0.80m
103	CDG: Reddish Yellow (7.5YR 6/8) clayey GRAVEL	None: date unknown	1.5m at l.o.e

### 10.2 MHs S50 to S51A: Tabulated stratigraphic, contextual and finds summary

Context	Description	Finds & Dating	Thickness
201	Footpath Surfacing: Grey concrete	None: modern	0.03-0.05m
202	Topsoil: Greyish brown (10YR 5/2) slightly sandy, clayey SILT	None: date unknown	0.10 max
203	Slope Deposits: Reddish yellow (7.5YR 6/8) very gravelly CLAY	None: date unknown	0.50m max.
204	Slope deposits: Strong brown (7.5YR 5/6) slightly gravelly CLAY	None: date unknown	0.60m at l.o.e.

## 11. Supporting Documents

### 11.1 Requirements for Archaeological Watching Brief

## 12. Comments and Responses



## **Appendix I**

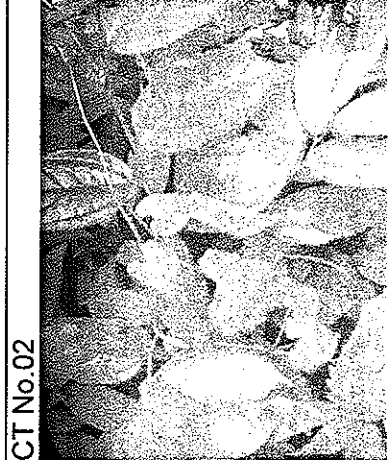
### **Photographic Records of the Uncommon Tree Species**



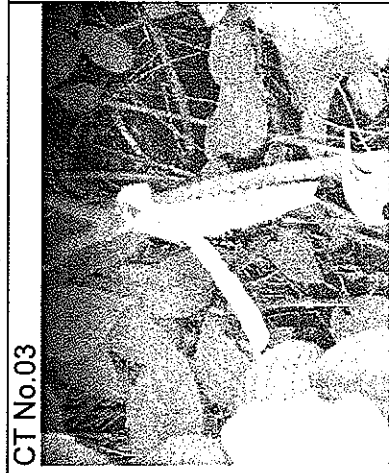
Photos (31 Aug 2009)



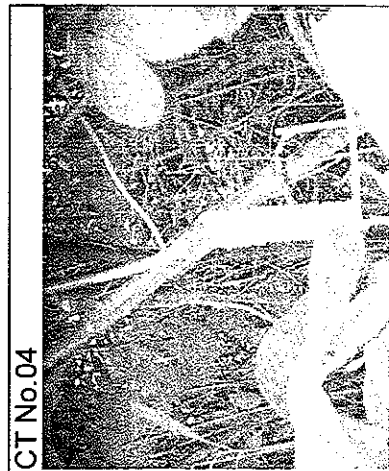
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CT No.02



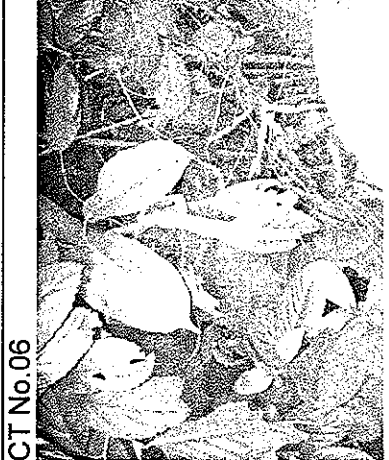
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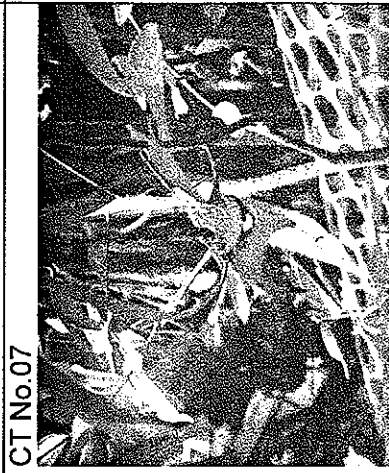
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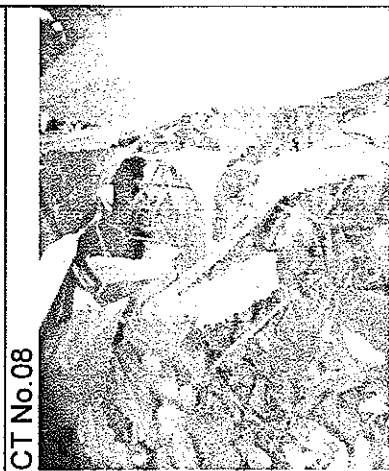
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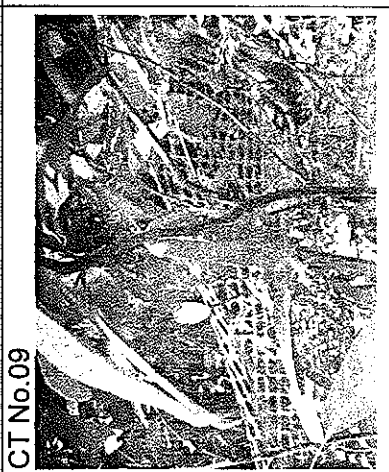
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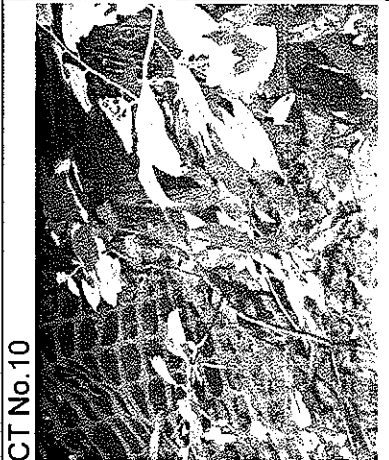
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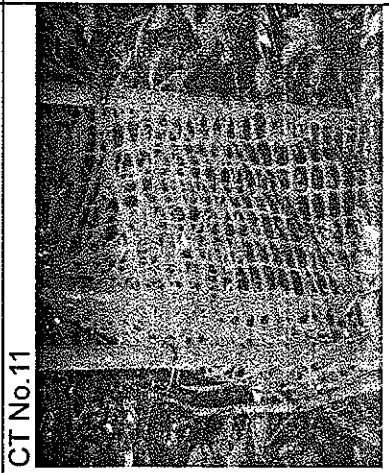
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CT No.10



CT No.11

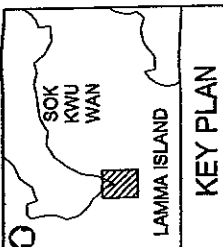


CT No.12



## Figures





**KEY PLAN**

NOTES 1  
 1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 2005/C1/2001.

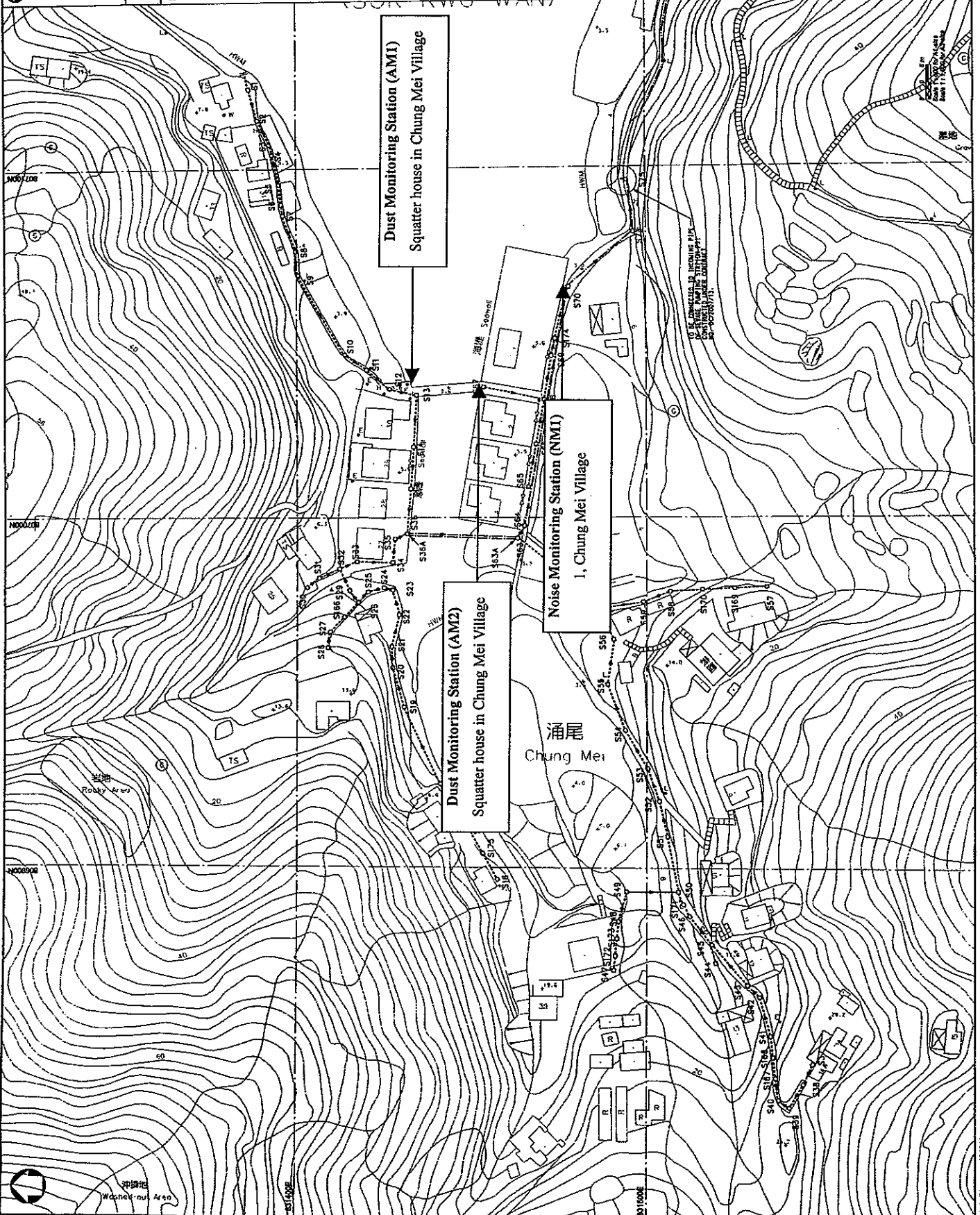
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2	ISSUED FOR CONSTRUCTION	11 JUL 2005	...	...
3	ISSUED FOR CONSTRUCTION	11 JUL 2005	...	...

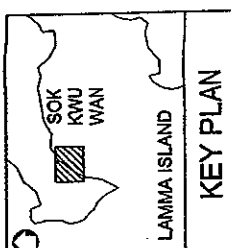
The Government of the Hong Kong Special Administrative Region  
 Drainage Services Department

CONTRACT NO. 06/2007/18  
 YUNG SHUE WAN AND SOK KWU WAN VILLAGE SEWERAGE, STAGE 1 WORKS

VILLAGE SEWERAGE LAYOUT  
 PLANS - SOK KWU WAN  
 (SHEET 1 OF 3)

DATE: 2005/11/2004  
 DRAWN BY: J. L. CHAN  
 CHECKED BY: M. S. CHEN  
 SCALE: 1:500  
 PROJECT NO: 06/2007/18  
 SHEET NO: 1 OF 3





**NOTES**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND LICENSES FROM THE COMPETENT AUTHORITIES UNDER CHINESE LAWS AND REGULATIONS FOR ANY INTERFERING WORKS TO BE PERFORMED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND LICENSES FROM THE COMPETENT AUTHORITIES UNDER CHINESE LAWS AND REGULATIONS FOR ANY INTERFERING WORKS TO BE PERFORMED.

NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR CONSTRUCTION	11/07/06	W. W. CHAN	W. W. CHAN
2	ISSUED FOR CONSTRUCTION	11/07/06	W. W. CHAN	W. W. CHAN

The Government of the Hong Kong Special Administrative Region  
Drainage Services Department

CONTRACT NO. DC2007/18  
YUNG SHUI WAN AND SOK KWU WAN  
VILLAGE SEWERAGE, STAGE 1 WORKS

VILLAGE SEWERAGE LAYOUT  
PLANS - SOK KWU WAN  
(SHEET 3 OF 3)

DATE: 2005/C.1/2006

SCALE: 1:500

PROJECT NO: DC2007/18

DESIGNED BY: W. W. CHAN

CHECKED BY: W. W. CHAN

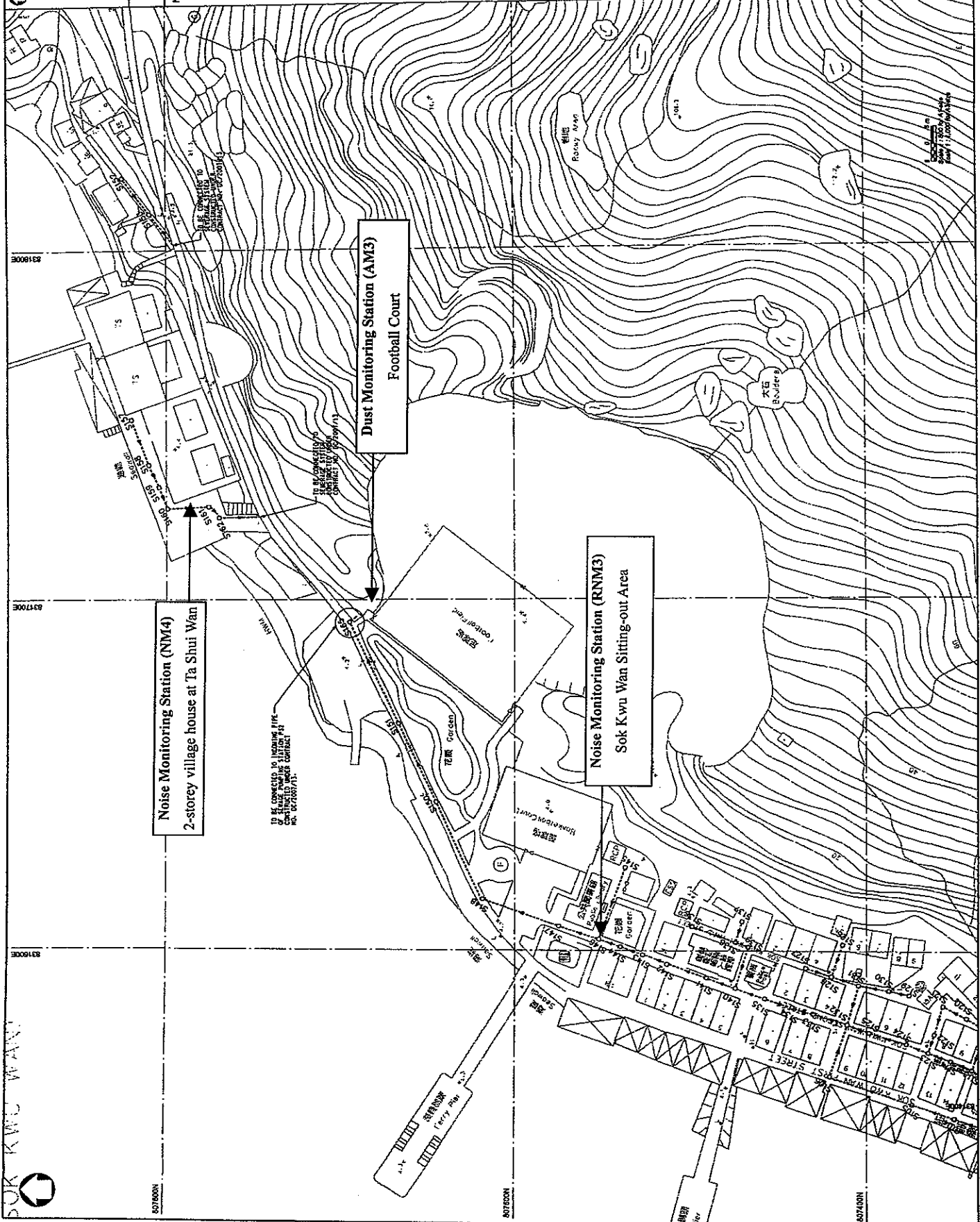
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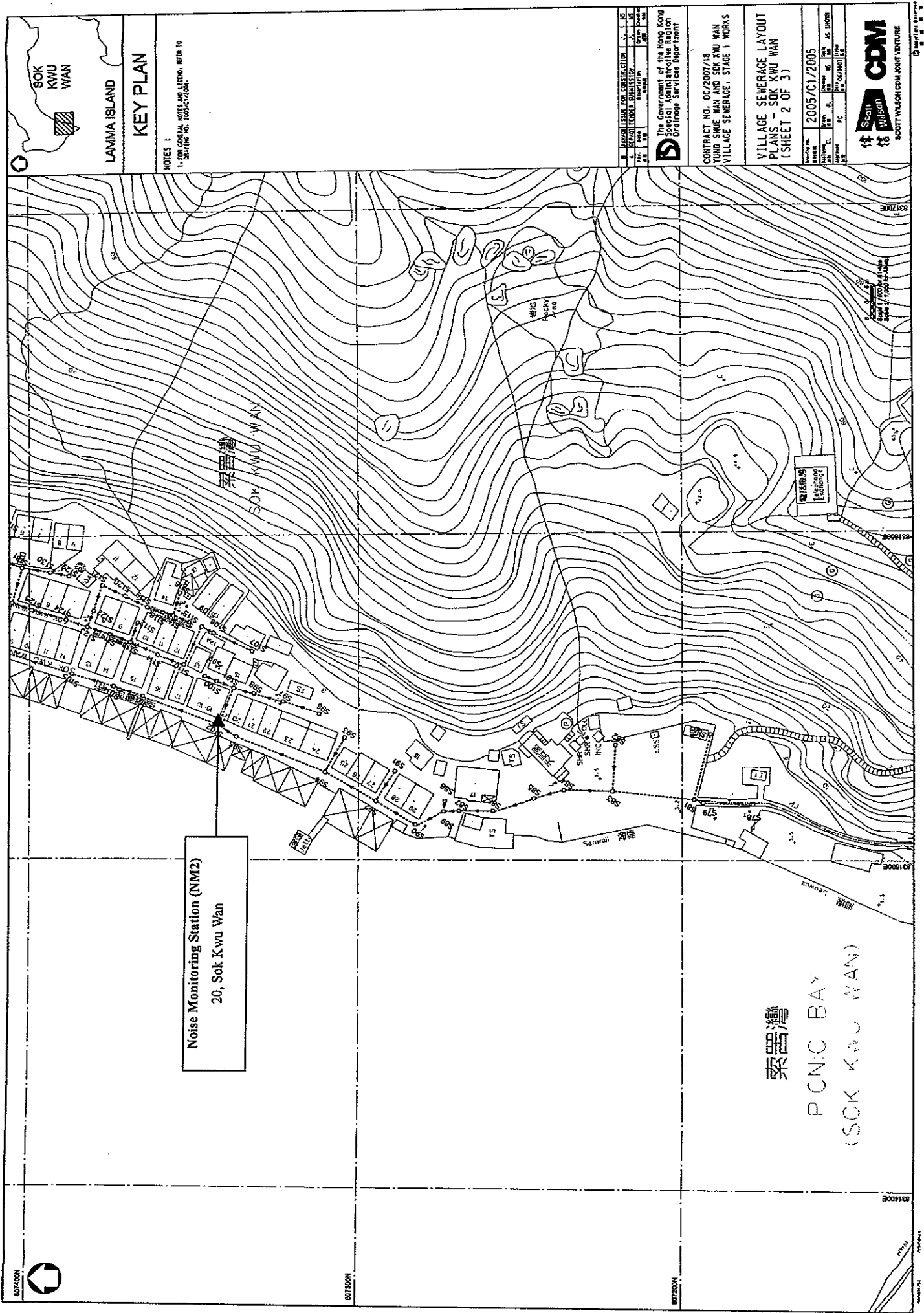


**Noise Monitoring Station (NM4)**  
2-story village house at Ta Shui Wan

**Dust Monitoring Station (AM3)**  
Football Court

**Noise Monitoring Station (RNM3)**  
Sok Kwu Wan Sitting-out Area

NOTES:  
 1. FOR SPECIAL NOTES AND LEGEND, REFER TO  
 DRAWING NO. DS/16/2007/18-01.



索呂灣  
 PCNIC BAY  
 (SOK KWU WAN)

Noise Monitoring Station (NM2)  
 20, Sok Kwu Wan