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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.3**

(AUGUST 2008)

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Scott Wilson CDM Joint Venture

Chief Engineer/Harbour Area Treatment Scheme
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Your reference:

Our reference: 05117/6/10/317552

Date: 22 September 2008

Attention: Mr. C K Au

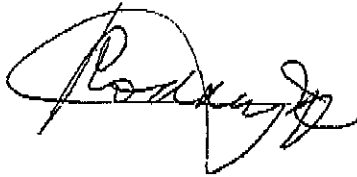
BY FAX ONLY

Dear Sir

Agreement No. CE20/2005 (DS)
Outlying Islands Sewerage Stage 1 Phase 1 Part 2 and Phase 2
Yung Shue Wan and Sok Kwu Wan Sewerage, Sewage Treatment and Disposal – Design and Construction
Monthly Impact Monitoring Report No. 3

I refer to the Environmental Permit (EP-281/2007) and the email from the environmental team, ETS-Testconsult Limited with the revised report, dated 20 September 2008. I do not have further comment and have verified the captioned report.

Yours faithfully
SCOTT WILSON CDM JOINT VENTURE



Rodney Ip

ANCP/ancp

cc	Kaden Construction Ltd	(Attn: Mr Stephen Leung)
	ETS-Testconsult	(Attn: Ms Linda Law)
	ER/LAMMA	(Attn: Mr Alfred Cheung)
	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.3 has been prepared by the ET of ETS-Testconsult Limited to document the impact monitoring works conducted for the Project in August 2008.

Construction Progress

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

- Site clearance
- Excavation works for laying of sewerage pipe and trenchless
- Pipe laying works

Environmental Monitoring Progress

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

- Noise Monitoring (Day-time): 4 Occasions at 4 designated locations;
- 24-hour TSP Monitoring: 5 Occasions at 4 designated locations;
- 1-hour TSP Monitoring: 15 Occasions at 4 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 for noise monitoring were recorded in the reporting period.

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, 228.61 tonnes Public Fill (e.g. mix soil and rock) and 1.34 tonnes rubbish were generated and disposed to Sok Kwu Wan Re-fill Transfer Station (SKWRTS) properly. Besides, approximate 10 tonnes C&D materials were in stockpile for reused in the Contract and 181 tonnes were reused in other project in this reporting month.

Site Inspection

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

<u>Concerned Parties</u>	<u>Dates of Audit / Inspection</u>
ET	07, 12, 18 and 28 August 2008
RE / IEC / Kaden / ET	28 August 2008

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 were found covered improperly at S160, Area 2B and S51 during the weekly site inspection on 28/08/08.	The Contractor was reminded to cover all stockpiles by using tarpaulin sheets.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.
2	Water	Stagnant water was observed accumulated at S56 near Chung Mei Village during the weekly site inspection on 28/08/08.	The Contractor was reminded to divert the stagnant water to desilting facilities before discharged or apply pesticides to avoid mosquito breeding.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.
3	Site Practice	Timber and water pipes at Area 2B and S161 were noted stored improperly during the weekly site inspection on 28/08/08.	The Contractor was reminded to store all construction material properly and keep the site area tidy.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.

Environmental Complaints, Notifications of Summons and Successful Prosecutions

No environmental 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:

- Trench excavation work; and
- Sewer pipe-laying works.

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 2008. 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 be undertaken in this Project. These will comprise laying approximately 1.4km of sewerage pipes from 220mm to 350mm diameter in Sok Kwu Wan Village. These works will be carried out under a conventional Design, Bid, Build (DBB) contract, entirely separate from the single Design, Build and Operate (DBO) contract for Sewage Treatment Works (STW) construction.

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:

- Site clearance
- Excavation works for laying of sewerage pipe and trenchless
- Pipe laying works

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 0.6m³/min and 1.7m³/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 recoded.
- 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 m^3/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 5 occasions of 24-hr TSP monitoring and 15 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.

24-hr and 1-hr TSP monitoring on 06/08/08 were cancelled due to bad weather (Typhoon Signal No.8) and rescheduled on 07/08/08. Besides, dust monitoring on 22/08/08 was also cancelled due to bad weather (Typhoon Signal No.9) and rescheduled on 25/08/08.

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*
07/08/08	09:15	153	X	13:00	162	X	09:30	139	X
07/08/08	10:15	147	X	14:00	152	X	10:30	150	X
07/08/08	11:15	136	X	15:00	156	X	11:30	147	X
12/08/08	13:00	97	X	09:20	110	X	09:10	115	X
12/08/08	14:00	113	X	10:20	98	X	10:10	128	X
12/08/08	15:00	109	X	11:20	94	X	11:10	110	X
18/08/08	08:50	85	X	09:00	95	X	13:10	142	X
18/08/08	09:50	93	X	10:00	103	X	14:10	151	X
18/08/08	10:50	104	X	11:00	110	X	15:10	149	X
25/08/08	08:50	104	X	09:00	111	X	13:10	165	X
25/08/08	09:50	117	X	10:00	132	X	14:10	171	X
25/08/08	10:50	128	X	11:00	137	X	15:10	168	X
28/08/08	10:40	174	X	13:00	194	X	09:10	220	X
28/08/08	13:00	198	X	14:10	216	X	10:10	189	X
28/08/08	14:00	181	X	15:10	189	X	11:10	162	X

Parameter	24-hr TSP Monitoring					
	Station	AM1		AM2		AM3
Date	Result	Exceed*	Result	Exceed*	Result	Exceed*
07/08/08	78	X	69	X	26	X
12/08/08	25	X	21	X	31	X
18/08/08	23	X	25	X	58	X
22/08/08	24	X	26	X	59	X
28/08/08	17	X	20	X	15	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

<i>Time Period</i>	<i>Action</i>	<i>Limit</i>
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 4 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.

Noise monitoring on 06/08/08 were cancelled due to bad weather (Typhoon Signal No.8) and rescheduled on 07/08/08.

No Day-time noise monitoring results at all monitoring stations exceeded the Action Level since no documented complaints on noise issue were received in this reporting month. 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

<i>Monitoring Parameter</i>	<i>Date</i>	<i>NM1</i>		<i>NM2</i>		<i>RNM3[#]</i>		<i>NM4</i>	
		<i>Result</i>	<i>Exceedance*</i>	<i>Result</i>	<i>Exceedance*</i>	<i>Result</i>	<i>Exceedance*</i>	<i>Result</i>	<i>Exceedance*</i>
Noise Daytime Monitoring	07/08/08	58.9	X	63.5	X	60.9	X	58.5	X
	12/08/08	58.2	X	64.7	X	62.7	X	58.0	X
	18/08/08	51.8	X	67.7	X	65.8	X	67.0	X
	28/08/08	57.5	X	67.5	X	62.4	X	54.8	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 07, 12, 18 and 28 August 2008 by ET. Monthly joint site inspections at 28 August 2008 were 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 were found covered improperly at S160. Area 2B and S51 during the weekly site inspection on 28/08/08.	The Contractor was reminded to cover all stockpiles by using tarpaulin sheets.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.
2	Water	Stagnant water was observed accumulated at S56 near Chung Mei Village during the weekly site inspection on 28/08/08.	The Contractor was reminded to divert the stagnant water to desilting facilities before discharged or apply pesticides to avoid mosquito breeding.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.
3	Site Practice	Timber and water pipes at Area 2B and S161 were noted stored improperly during the weekly site inspection on 28/08/08.	The Contractor was reminded to store all construction material properly and keep the site area tidy.	Since the finding was noted during the last weekly site inspection, it will be verified in the coming month.

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 Discharge of Industrial Trade Effluent arising from Construction Site to communal storm water drain
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 (tonne)	228.61		323.03
	Broken Concrete (tonne)	0	N/A	0
	Reused in the Contract (tonne)	10	For Stockpile / Reuse	50
	Reused in other Projects (tonne)	181.6	N/A	181.6
	Disposal as Public Fill (tonne)	37.01	SKWRTS	91.43
C&D Waste	Metals (1000kg)	0	N/A	0
	Paper/Cardboard Packaging (1000kg)	0	N/A	0
	Plastics (1000kg)	0	N/A	0
	Chemical Waste (1000kg)	0	N/A	0
	Other, e.g. General Refuse (tonne)	1.34	SKWRTS	1.34

8.0 ENVIRONMENTAL NON-CONFORMANCE

8.1 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 day-time noise level measured at all monitoring stations exceeded the Action and Limit Level in the reporting month. No evening-time, night-time and holiday noise monitoring were required since no construction works were processed during these periods.

8.2 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 8.1.

Table 8.1 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



9.0 IMPLEMENTATION STATUS

9.1 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.

9.2 Implementation Status of Event and Action Plan

There were no exceedances of Action and Limit level recorded in this reporting month and hence no further actions were required to be taken.

9.3 Implementation Status of Environmental Complaint Handling

No complaints were received in this reporting month. Details of the environmental complaint-log are presented in Table 8.1.

9.4 Implementation Status of Notification of Summons and Prosecution

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

10.0 CONCLUSION AND DISCUSSION

According to the summary of air quality monitoring results, no exceedances of Action and Limit Level of 24-hour and 1-hour TSP monitoring results were recorded during the reporting period.

Besides, no Day-time noise level measured at all monitoring stations exceeded the Action and Limit Level in the reporting period. No Evening-time, Night-time and Holiday noise monitoring were required since no construction works were processed during these periods.

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.

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

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.

11.0 FUTURE KEY ISSUES

11.1 Upcoming Environmental Monitoring Schedule in coming monitoring month

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



Table 11.1 Proposed Environmental Monitoring Schedule in coming month

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1/9	2	3 1-hr TSP x 3 24-hr TSP NM Weekly SI	4	5	6
7	8	9 1-hr TSP x 3 24-hr TSP NM Weekly SI	10	11	12	13
14	15 Holiday	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 1-hr TSP x 3 24-hr TSP	27
28	29	30				

11.2 Upcoming Construction Works Schedule in coming month

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

- Trench excavation work; and
- Sewer pipe-laying works.

11.3 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

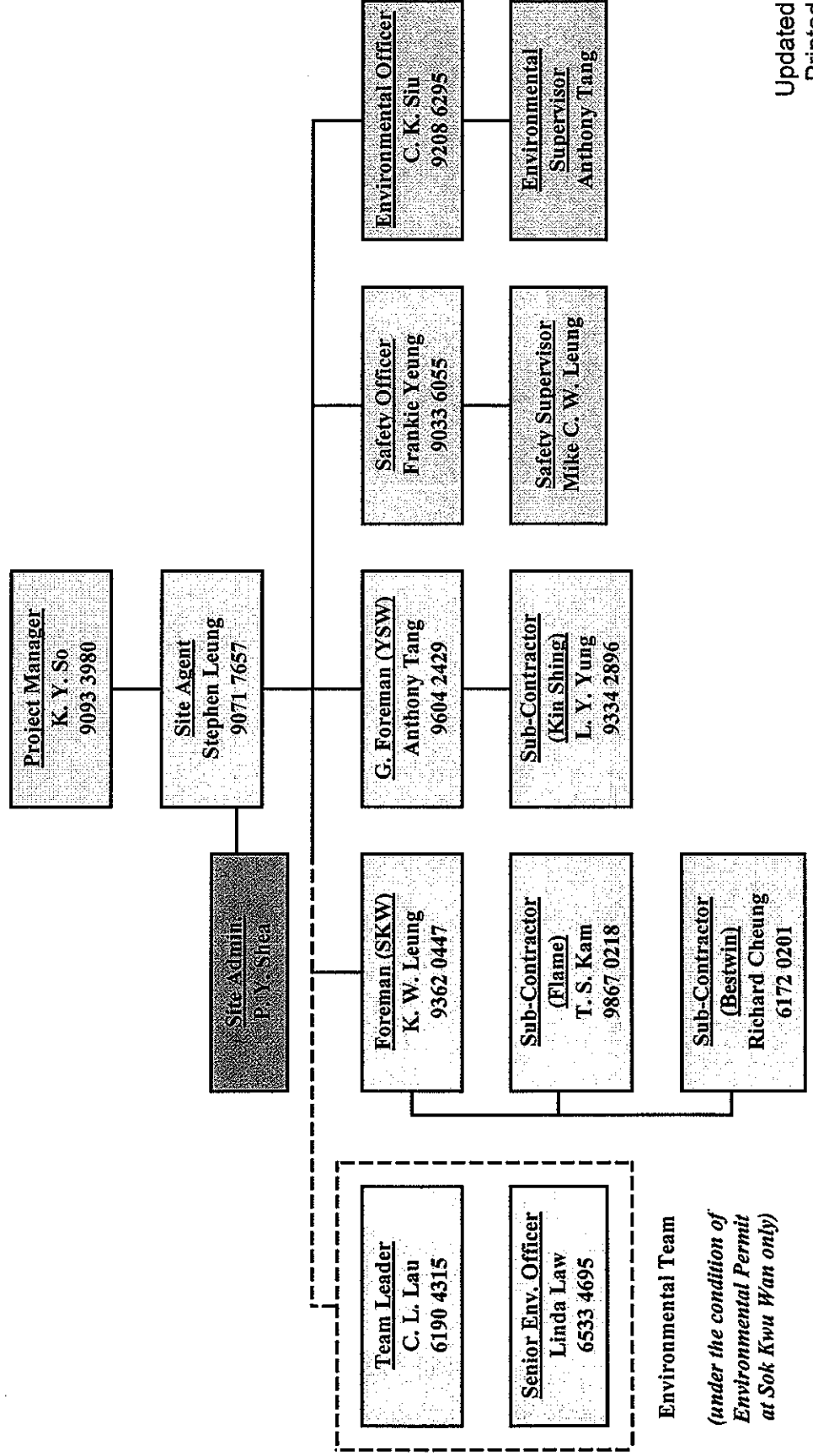
Organization Chart and Lines of Communication

Kaden Construction Limited

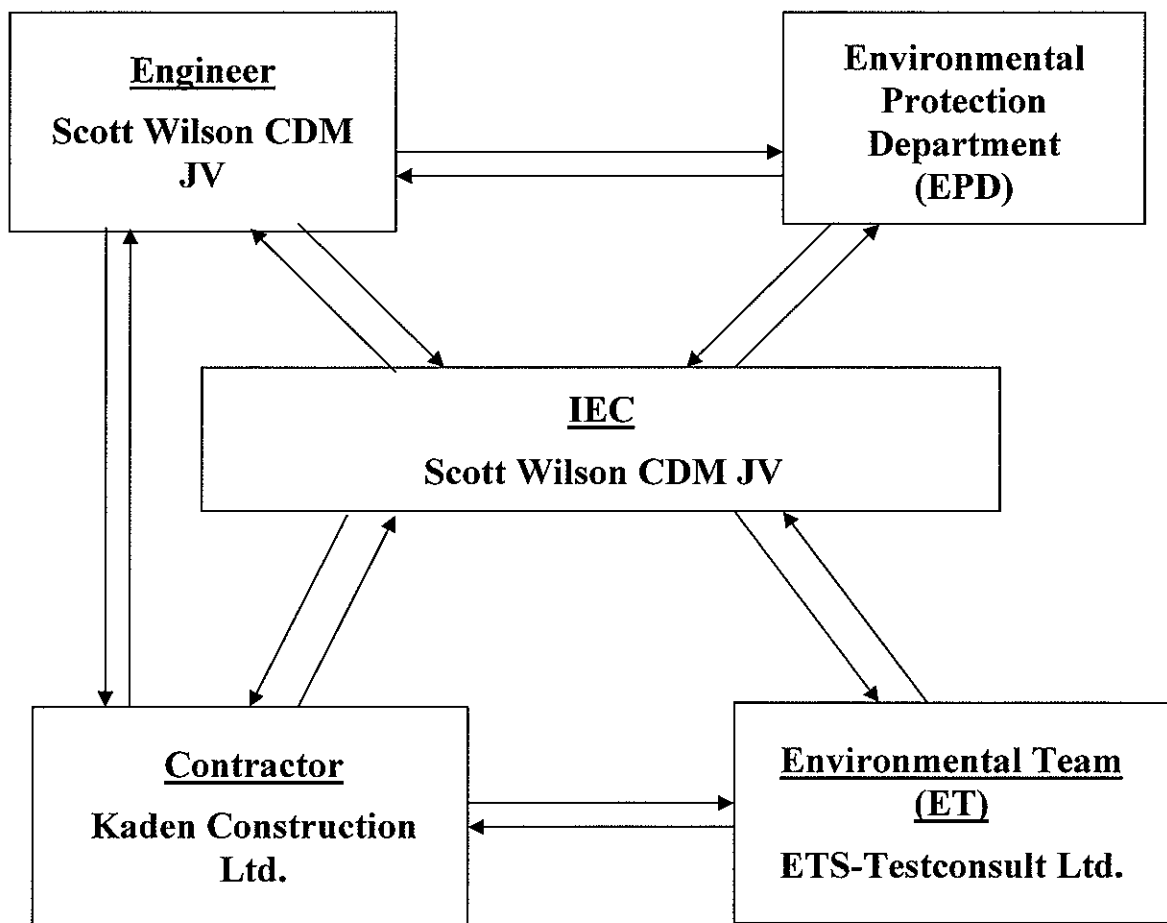
DSD Contract No. DC/2007/18

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

Organization Structure for Environmental Management



Lines of Communication





Appendix B1

Calibration Certificates for Impact Air Quality Monitoring Equipments



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TEST REPORT

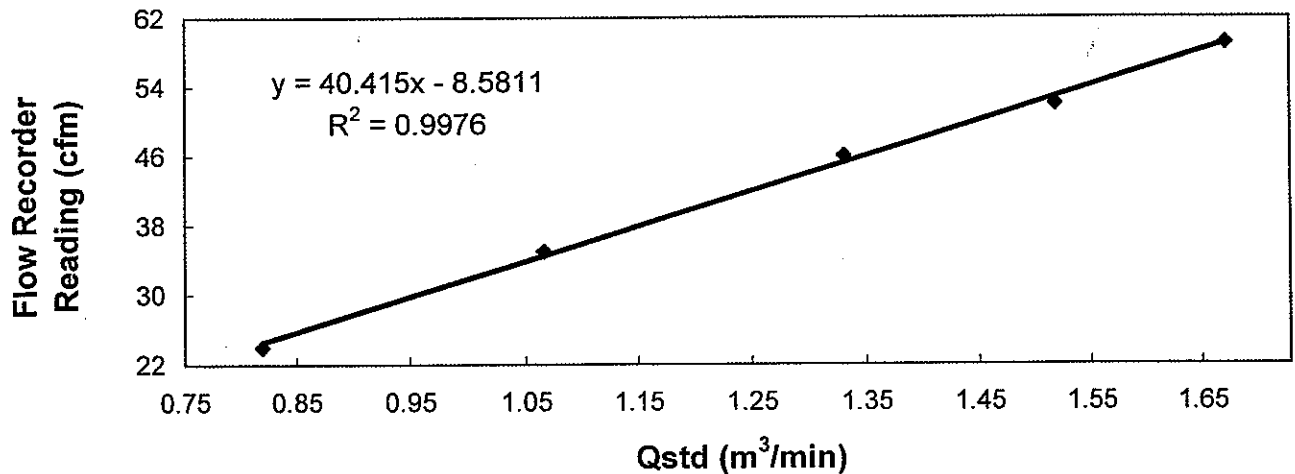
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW **Date of Calibration** : 11 June 2008
Serial No. : 1173 (ET/EA/003/17) **Calibration Due Date** : 10 August 2008
Method : Based on Operation Manual to perform 5-point calibration by using calibration kit
Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	59	52	49	35	24
Qstd (Actual flow rate, m ³ /min)	1.67	1.52	1.33	1.07	0.82
Pressure : 751.6 mm Hg	Temp. : 302 K				

Sampler 1173 Calibration Curve
Site: Sok Kwu Wan (AM-1)
Date of Calibration: 11 June 2008



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 :
LAW, Sau Yee
(Senior Environmental Officer)



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TEST REPORT

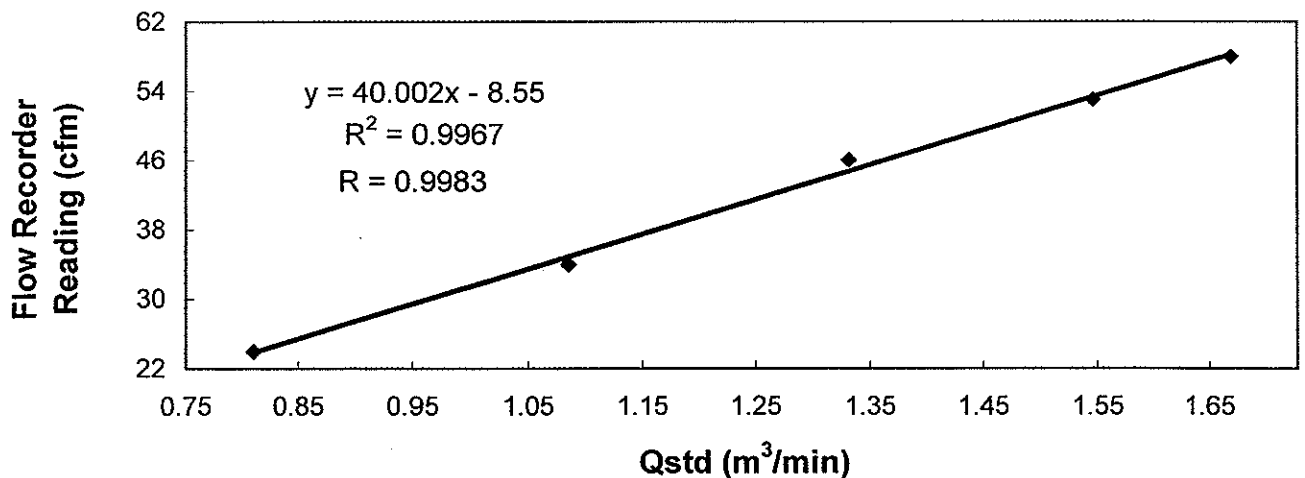
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW **Date of Calibration** : 12 August 2008
Serial No. : 1173 (ET/EA/003/17) **Calibration Due Date** : 11 October 2008
Method : Based on Operation Manual to perform 5-point calibration by using calibration kit
Tisch TE-5025 A

Results :


Flow recorder reading (cfm)	58	53	46	34	24
Qstd (Actual flow rate, m ³ /min)	1.67	1.55	1.33	1.09	0.81
Pressure :	753 mm Hg		Temp. :	298 K	

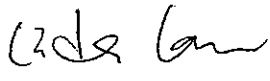
Sampler 1173 Calibration Curve
Site: Sok Kwu Wan (AM-1)
Date of Calibration: 12 August 2008

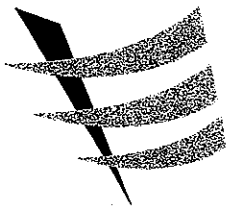


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after 5-point calibration

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 : 
LAW, Sau Yee
(Senior Environmental Officer)



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TEST REPORT

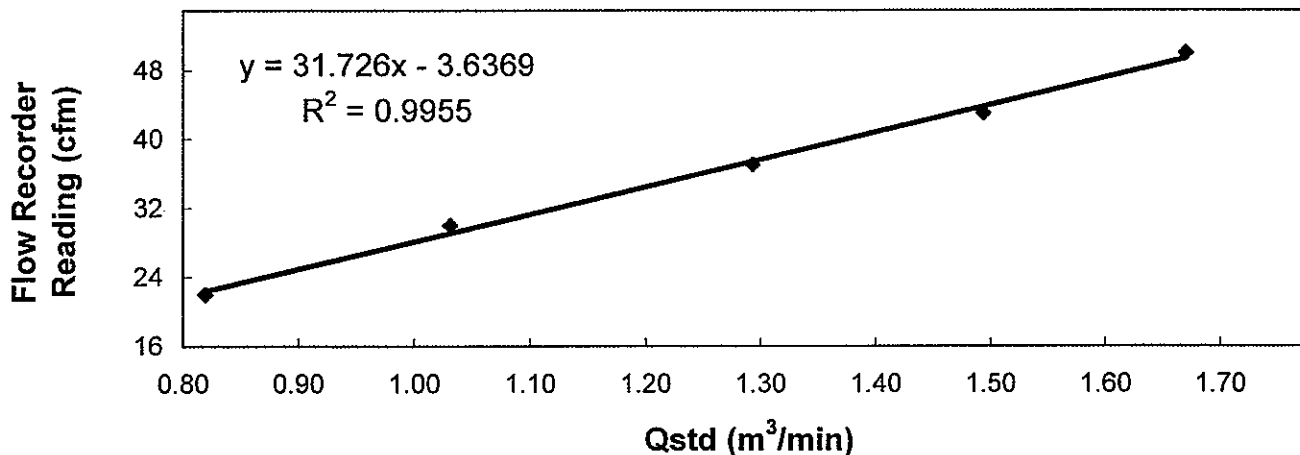
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 11 June 2008
Serial No. : 9865 (ET / EA / 003 / 14) Calibration Due Date : 10 August 2008
Method : Based on Operations Manual for in series calibration method by TISCH
ENVIROMENTAL Model Te-5025A calibration kit

Results :


Flow recorder reading (cfm)	50	43	37	30	22
Qstd (Actual flow rate, m ³ /min)	1.67	1.49	1.29	1.03	0.82
Pressure :	751.56 mm Hg			Temp. :	302 K

Sampler 9865 Calibration Curve
Site: Sok Kwu Wan (AM-2)
Date of Calibration: 11 June 2008



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 : 
LAW, Sau Yee
(Senior Environmental Officer)



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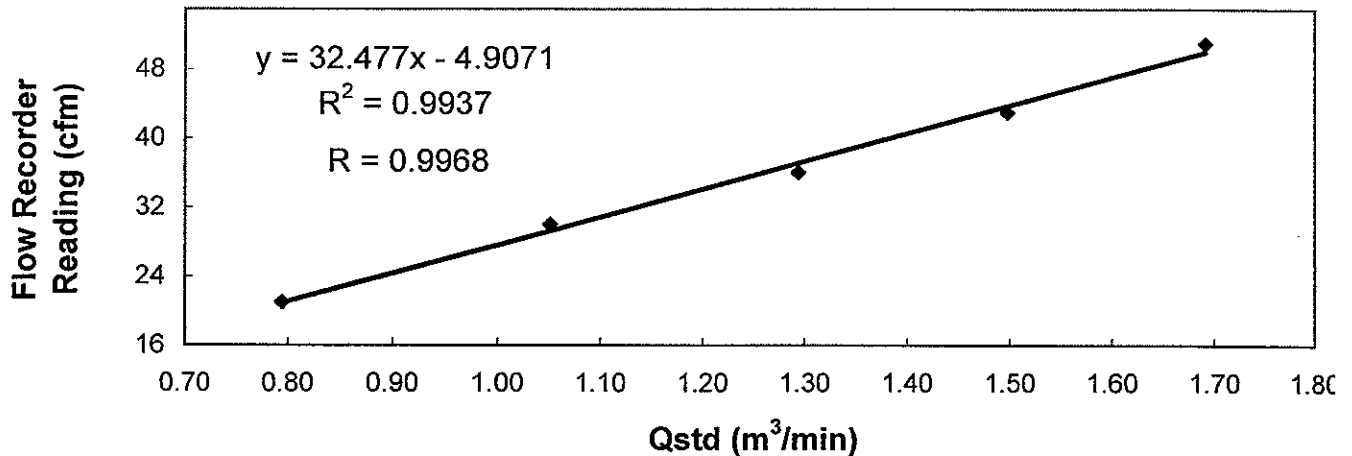
TEST REPORT

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 12 August 2008
Serial No. : 9865 (ET / EA / 003 / 14) Calibration Due Date : 11 October 2008
Method : Based on Operations Manual for in series calibration method by TISCH
ENVIROMENTAL Model Te-5025A calibration kit


Results	Flow recorder reading (cfm)	51	43	36	30	21
	Qstd (Actual flow rate, m ³ /min)	1.69	1.50	1.29	1.05	0.79
	Pressure : 753 mm Hg	Temp. : 298 K				


Sampler 9865 Calibration Curve
Site: Sok Kwu Wan (AM-2)
Date of Calibration: 12 August 2008

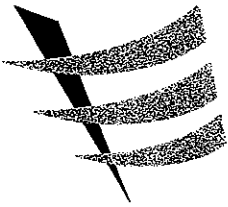


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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 : 
LAW, Sau Yee
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TEST REPORT

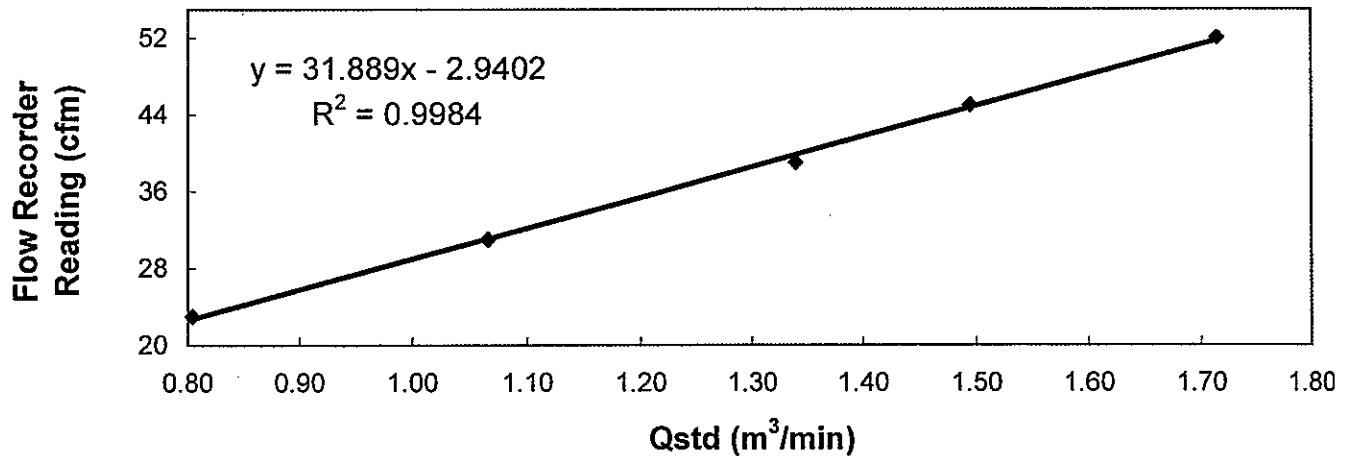
**Calibration Report
of
High Volume Air Sampler**

Manufacturer : Graseby GMW Date of Calibration : 11 June 2008
Serial No. : 9912 (ET / EA / 003 / 15) Calibration Due Date : 10 August 2008
Method : Based on Operations Manual for in series calibration method by TISCH
ENVIROMENTAL Model Te-5025A calibration kit

Results :

Flow recorder reading (cfm)	52	45	39	31	23
Qstd (Actual flow rate, m ³ /min)	1.71	1.49	1.34	1.07	0.80
Pressure :	751.56 mm Hg		Temp. :	302 K	

**Sampler 9912 Calibration Curve
Site: Sok Kwu Wan (AM-3)
Date of Calibration: 11 June 2008**

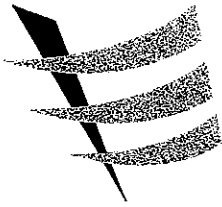


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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 :
LAW, Sau Yee
(Senior Environmental Officer)



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TEST REPORT

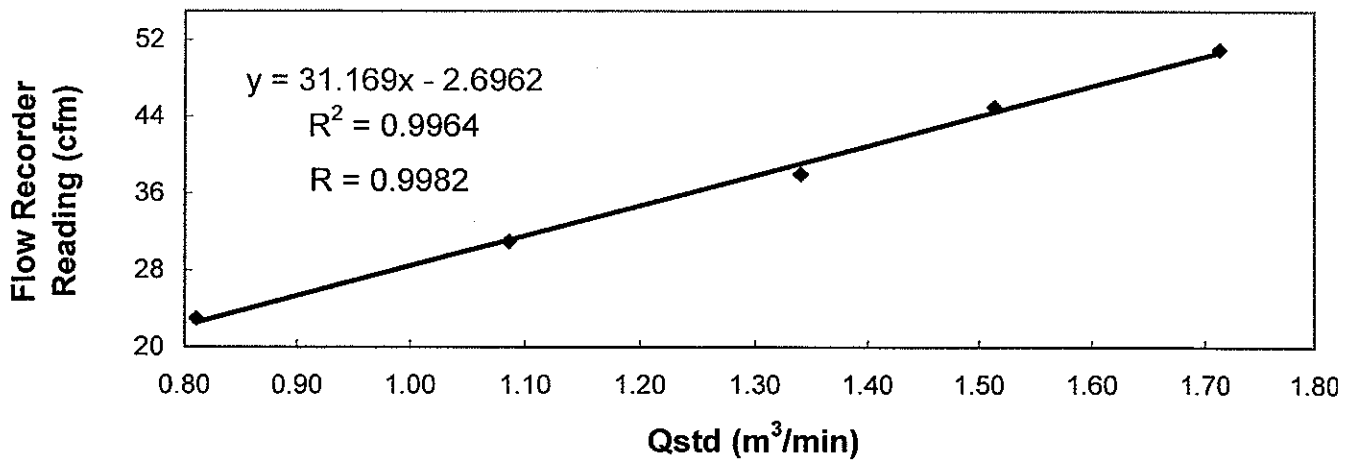
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 12 August 2008
Serial No. : 9912 (ET / EA / 003 / 15) Calibration Due Date : 11 October 2008
Method : Based on Operations Manual for in series calibration method by TISCH
ENVIROMENTAL Model Te-5025A calibration kit

Results :

Flow recorder reading (cfm)	51	45	38	31	23
Qstd (Actual flow rate, m ³ /min)	1.71	1.51	1.34	1.09	0.81
Pressure :	753 mm Hg		Temp. :	298 K	

Sampler 9912 Calibration Curve
Site: Sok Kwu Wan (AM-3)
Date of Calibration: 12 August 2008



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 :
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(Assistant Environmental Officer)

Approved by :
LAW, Sau Yee
(Senior Environmental Officer)



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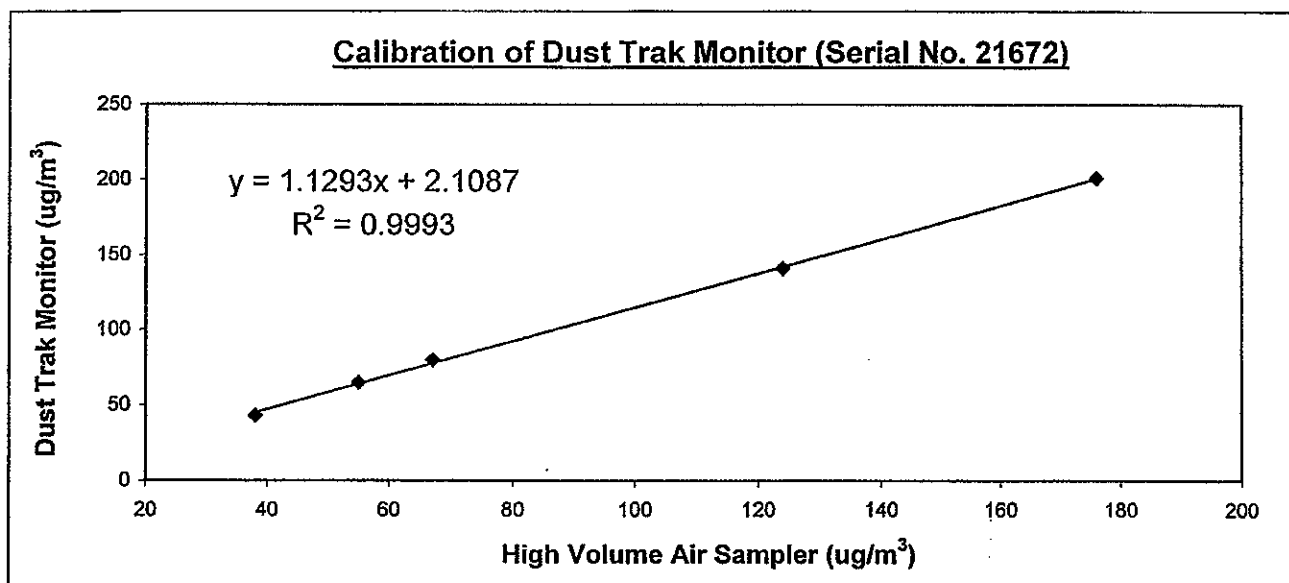
TEST REPORT

Internal Calibration Report
of
Dust Trak Monitor

Manufacturer : TSI - 8520 Dust Trak Date of Calibration : 14 March 2008
Serial No. : 21672 (ET / EA / 001 / 01) Calibration Due Date : 13 September 2008
Method : The Dust Trak Monitor and High Volume Air Sampler were placed together to perform five-point calibration under the same environmental condition.


Results :

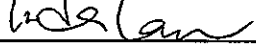
Dust Trak Monitor (ug/m ³)	43	65	80	141	201
High Volume Air Sampler (ug/m ³)	38	55	67	124	176
High Volume Air Sampler Serial No.: 1178			Calibration Date: 21 / 03 / 2008		



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 : 
LEUNG, Ka Chun
(Assistant Environmental Officer)

Approved by : 
LAW, Sau Yee
(Senior Environmental Officer)



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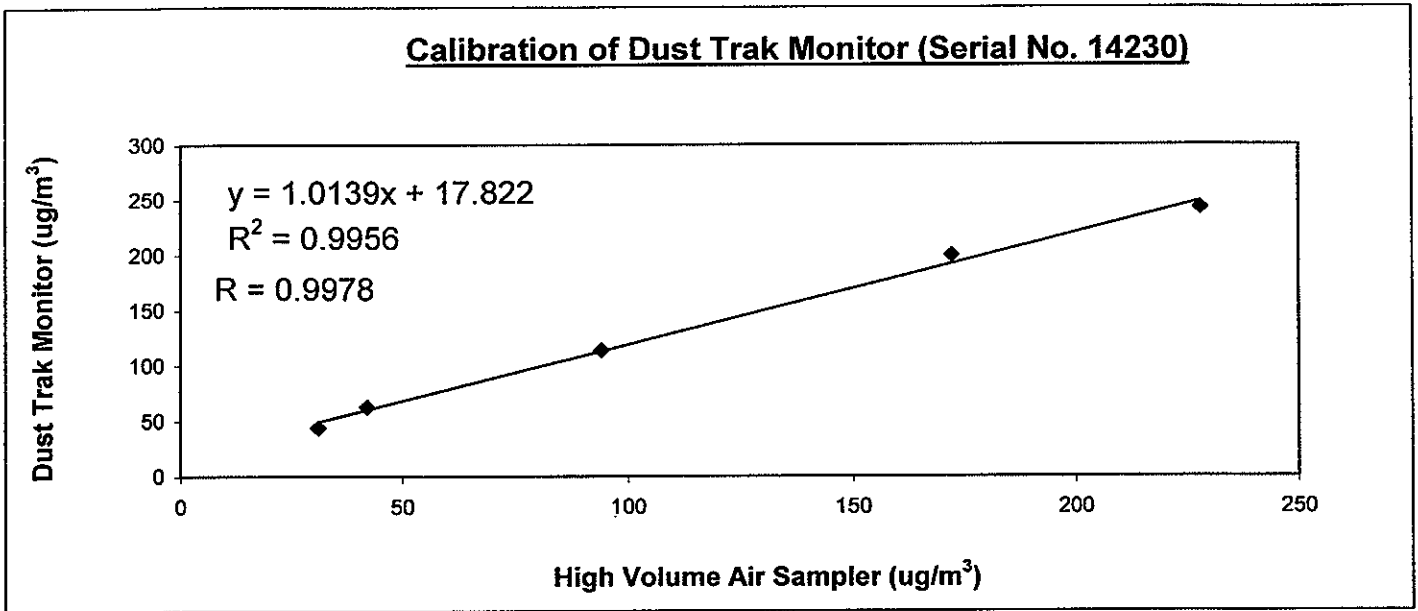
TEST REPORT

Internal Calibration Report
of
Dust Trak Monitor

Manufacturer : TSI - 8520 Dust Trak **Date of Calibration** : 12 July 2008
Serial No. : 14230 (ET/EA/001/04) **Due Date** : 11 January 2009
Method : Parallel measurement (five-point calibration) by placing the Dust Trak Monitor and High Volume Air Sampler together under the same environmental condition


Results :

Dust Trak Monitor (ug/m ³)	44	63	114	200	243
High Volume Air Sampler (ug/m ³)	31	42	94	172	228
High Volume Air Sampler Serial No.: 1178			Calibration Due Date: 01 September 2008		



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 : 
LEUNG, Ka Chun
(Assistant Environmental Officer)

Approved by : 
LAW, Sau Yee
(Senior Environmental Officer)



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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 14, 2008 Rootmeter S/N 9833620 Ta (K) - 295
 Operator Tisch Orifice I.D. - 1172 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3800	3.1	2.00
2	NA	NA	1.00	0.9650	6.3	4.00
3	NA	NA	1.00	0.8630	7.9	5.00
4	NA	NA	1.00	0.8230	8.6	5.50
5	NA	NA	1.00	0.6770	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9935	0.7199	1.4125	0.9958	0.7216	0.8866
0.9893	1.0252	1.9976	0.9916	1.0276	1.2538
0.9870	1.1437	2.2334	0.9894	1.1464	1.4018
0.9862	1.1983	2.3424	0.9885	1.2011	1.4703
0.9807	1.4486	2.8251	0.9830	1.4521	1.7732

Qstd slope (m) = 1.94106
 intercept (b) = 0.01311
 coefficient (r) = 0.99996

Qa slope (m) = 1.21546
 intercept (b) = 0.00823
 coefficient (r) = 0.99996

y axis = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$

y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$

CALCULATIONS

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

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

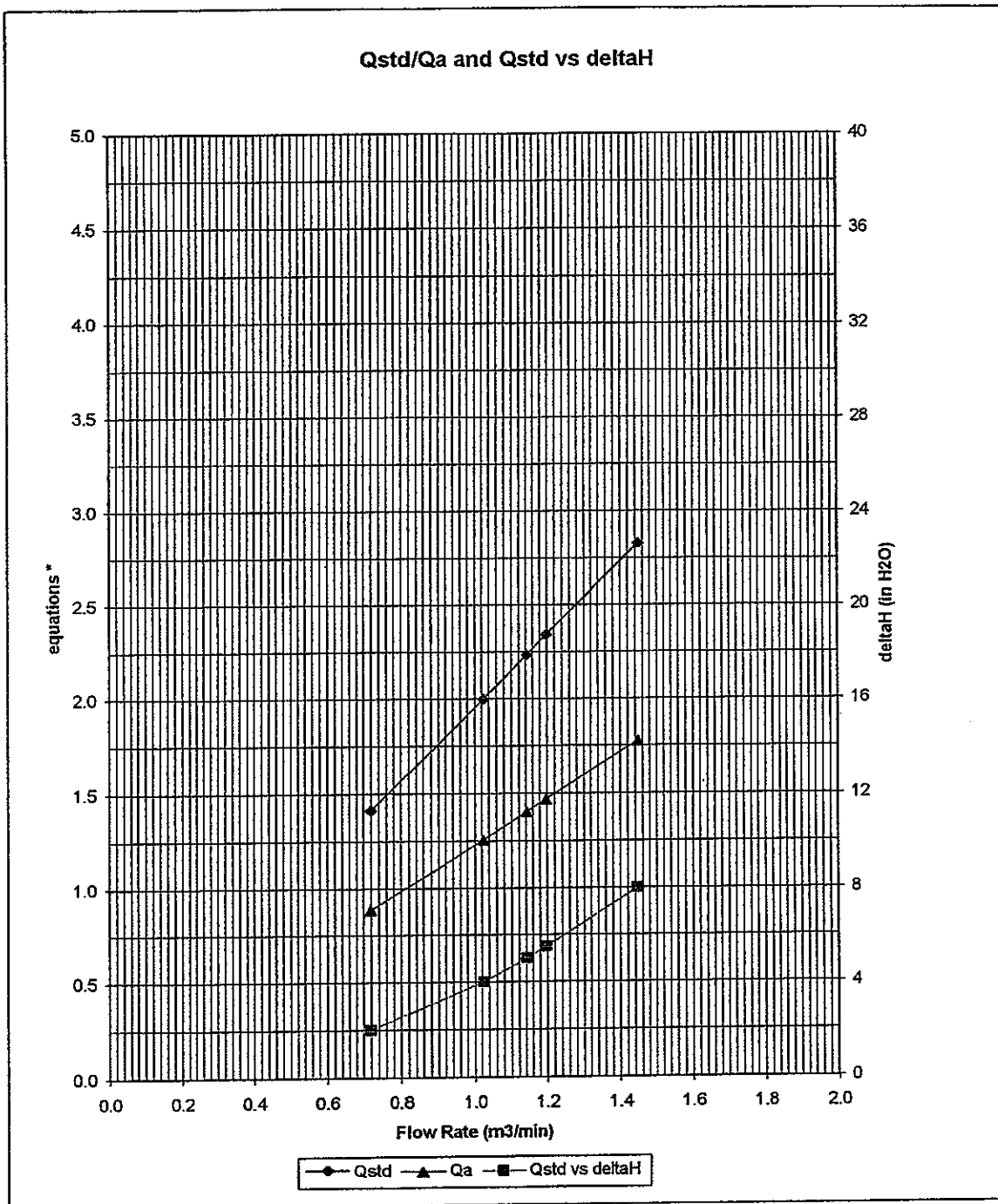
For subsequent flow rate calculations:

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



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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:

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

1172



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 ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
07/08/08	17:30	08/08/08	17:30	12959.25	19283.25	24.00	0.9546	0.9546	0.9546	2.8603	2.9673	78	Cloudy
12/08/08	16:01	13/08/08	16:00	12983.25	13007.24	23.99	1.0637	1.0637	1.0637	2.8110	2.8493	25	Fine
18/08/08	11:06	19/08/08	11:06	13007.24	13031.24	24.00	1.0887	1.0887	1.0887	2.8457	2.8824	23	Sunny
22/08/08	15:58	23/08/08	15:58	13031.24	13055.24	24.00	1.0887	1.0887	1.0887	2.8002	2.8380	24	Sunny
28/08/08	13:00	29/08/08	13:01	13055.24	13079.25	24.01	1.1137	1.1137	1.1137	2.8190	2.8470	17	Sunny

Monitoring Station : AM2

Start Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
07/08/08	17:30	08/08/08	17:30	16991.81	17015.81	24.00	1.1233	1.1233	1.1233	2.7954	2.9064	69	Cloudy
12/08/08	12:20	13/08/08	12:19	17015.81	17039.80	23.99	1.1980	1.1980	1.1980	2.7797	2.8159	21	Fine
18/08/08	11:11	19/08/08	11:11	17039.80	17063.80	24.00	1.0132	1.0132	1.0132	2.8042	2.8402	25	Sunny
22/08/08	16:14	23/08/08	16:15	17063.80	17087.82	24.02	1.0132	1.0132	1.0132	2.7764	2.8148	26	Sunny
28/08/08	16:12	29/08/08	16:12	17087.82	17111.82	24.00	1.0918	1.0918	1.0918	2.8250	2.8564	20	Sunny

Monitoring Station : AM3

Start Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)	Weather Condition
		Date	Time	Initial	Final		Initial	Final		Initial	Final		
07/08/08	16:00	08/08/08	16:00	1055.49	1079.49	24.00	1.0957	1.0957	1.0957	2.7935	2.8342	26	Cloudy
12/08/08	12:30	13/08/08	12:30	1079.49	1103.49	24.00	1.0169	1.0169	1.0169	2.8269	2.8723	31	Fine
18/08/08	10:37	19/08/08	10:37	1103.49	1127.49	24.00	1.1132	1.1132	1.1132	2.8155	2.9091	58	Sunny
22/08/08	16:30	23/08/08	16:30	1127.49	1151.49	24.00	1.1132	1.1132	1.1132	2.7957	2.8899	59	Sunny
28/08/08	13:00	29/08/08	13:00	1151.49	1175.49	24.00	1.2415	1.2415	1.2415	2.8191	2.8468	15	Sunny

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	
07/08/08	09:15	10:15	47	417	153	Cloudy
07/08/08	10:15	11:15	50	402	147	Cloudy
07/08/08	11:15	12:15	62	365	136	Cloudy
12/08/08	13:00	14:00	42	391	97	Fine
12/08/08	14:00	15:00	50	411	113	Fine
12/08/08	15:00	16:00	42	356	109	Fine
18/08/08	08:50	09:50	36	388	85	Sunny
18/08/08	09:50	10:50	40	396	93	Sunny
18/08/08	10:50	11:50	55	445	104	Sunny
25/08/08	08:50	09:50	40	394	104	Fine
25/08/08	09:50	10:50	47	426	117	Fine
25/08/08	10:50	11:50	55	447	128	Fine
28/08/08	10:40	11:40	62	500	174	Sunny
28/08/08	13:00	14:00	59	435	198	Sunny
28/08/08	14:00	15:00	64	465	181	Sunny

Monitoring Station : AM2

Date	Monitoring Period		1-hr TSP ($\mu\text{g}/\text{m}^3$)			Weather
	Start	Finish	Minimum	Maximum	Average	
07/08/08	13:00	14:00	46	399	162	Cloudy
07/08/08	14:00	15:00	50	405	152	Cloudy
07/08/08	15:00	16:00	49	347	156	Cloudy
12/08/08	09:20	10:20	37	380	110	Fine
12/08/08	10:20	11:20	42	354	98	Fine
12/08/08	11:20	12:20	35	371	94	Fine
18/08/08	09:00	10:00	44	410	95	Sunny
18/08/08	10:00	11:00	53	436	103	Sunny
18/08/08	11:00	12:00	58	473	110	Sunny
25/08/08	09:00	10:00	48	431	111	Fine
25/08/08	10:00	11:00	57	456	132	Fine
25/08/08	11:00	12:00	58	462	137	Fine
28/08/08	13:00	14:00	70	463	194	Sunny
28/08/08	14:10	15:10	68	526	216	Sunny
28/08/08	15:10	16:10	56	562	189	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	
07/08/08	09:30	10:30	51	506	139	Cloudy
07/08/08	10:30	11:30	50	472	150	Cloudy
07/08/08	11:30	12:30	48	430	147	Cloudy
12/08/08	09:10	10:10	36	402	115	Fine
12/08/08	10:10	11:10	42	385	128	Fine
12/08/08	11:10	12:10	35	396	110	Fine
18/08/08	13:10	14:10	64	589	142	Sunny
18/08/08	14:10	15:10	71	635	151	Sunny
18/08/08	15:10	16:10	70	614	149	Sunny
25/08/08	13:10	14:10	68	568	165	Fine
25/08/08	14:10	15:10	70	611	171	Fine
25/08/08	15:10	16:10	67	600	168	Fine
28/08/08	09:10	10:10	72	572	220	Sunny
28/08/08	10:10	11:10	75	492	189	Sunny
28/08/08	11:10	12:10	68	427	162	Sunny

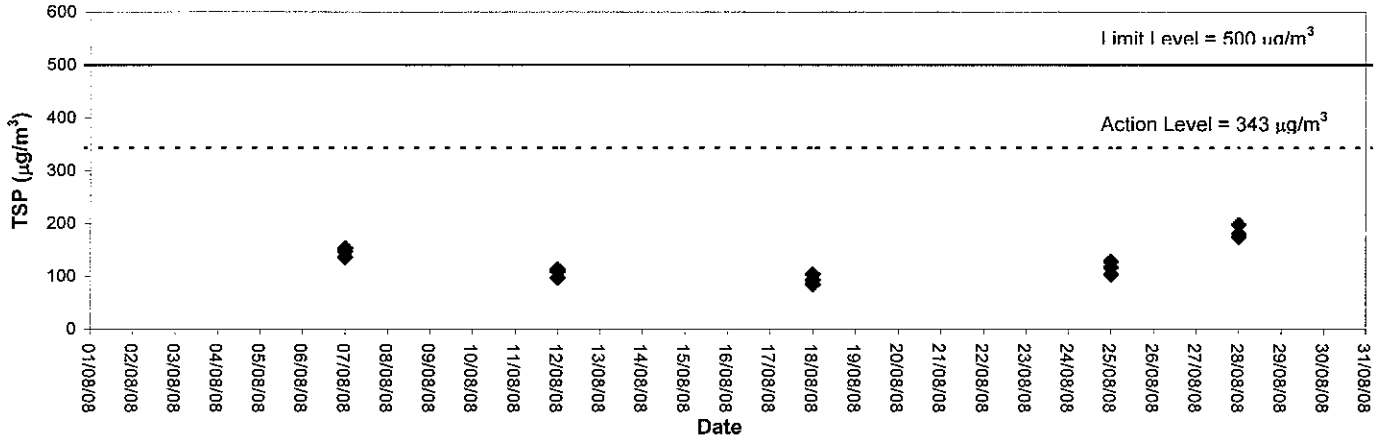


Appendix C3

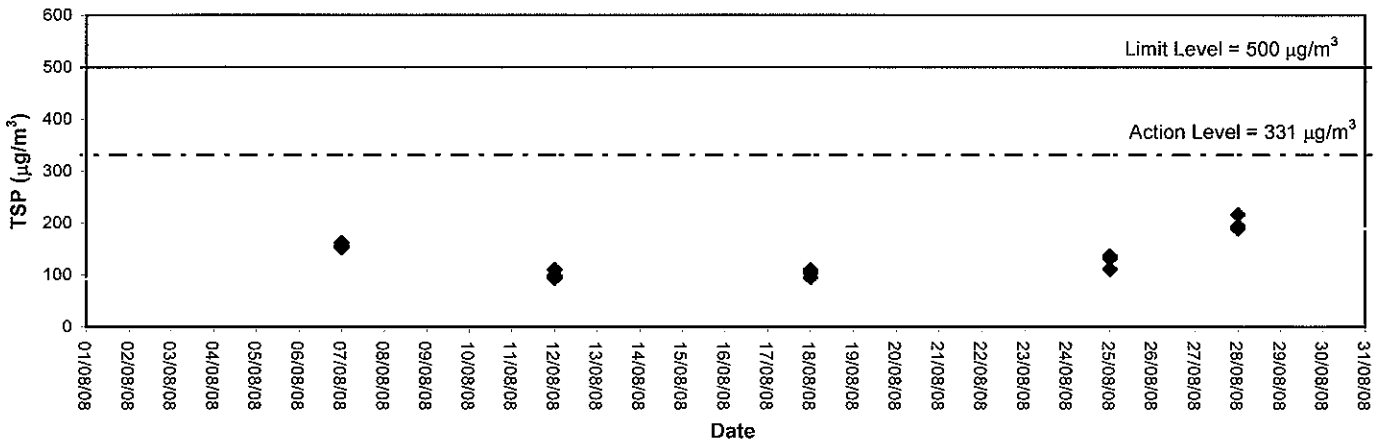
Graphical Plots of Impact Air Quality Monitoring Data



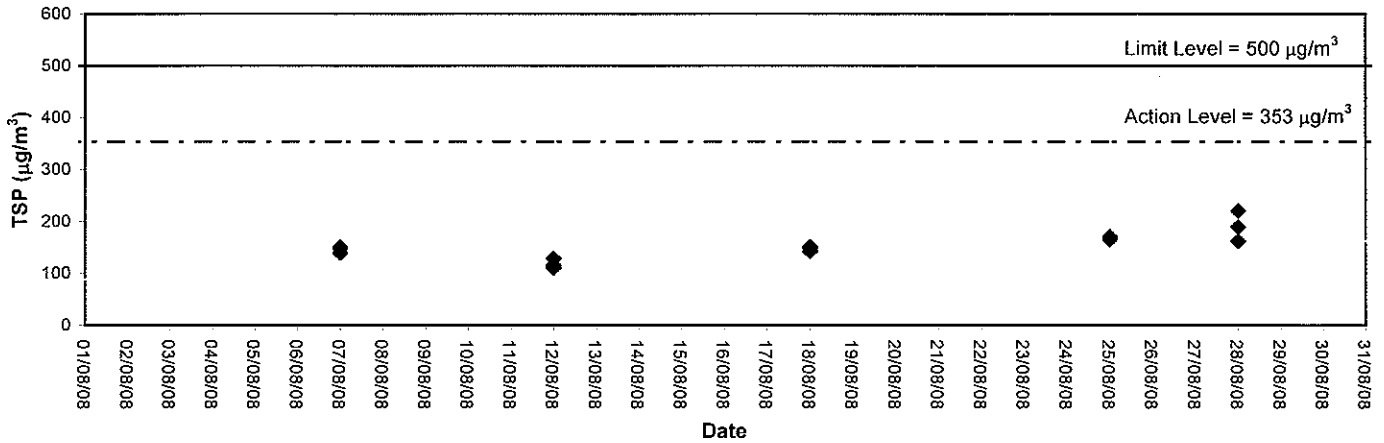
1-hour TSP level at AM1

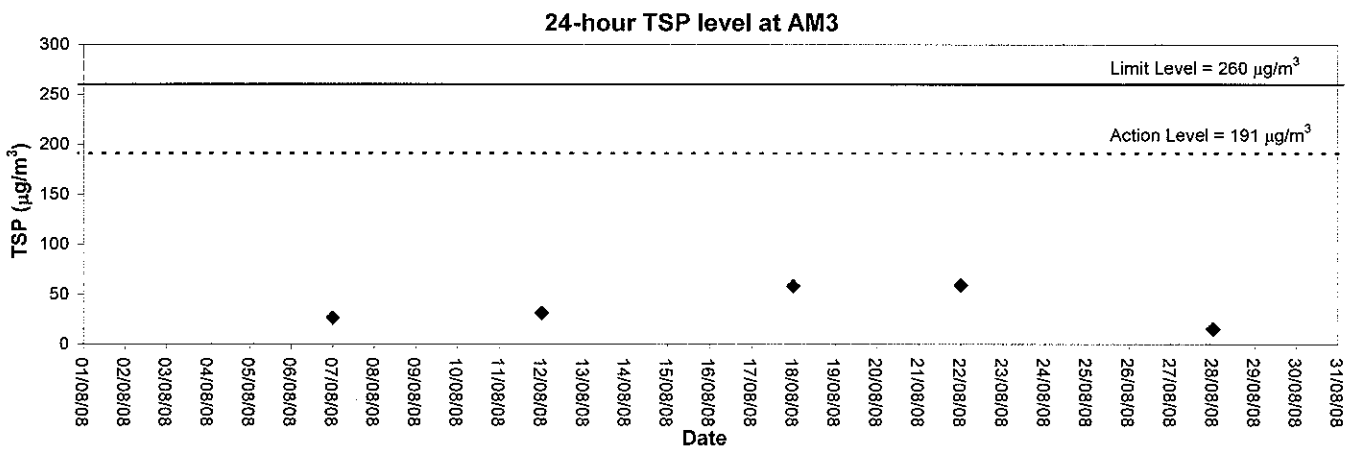
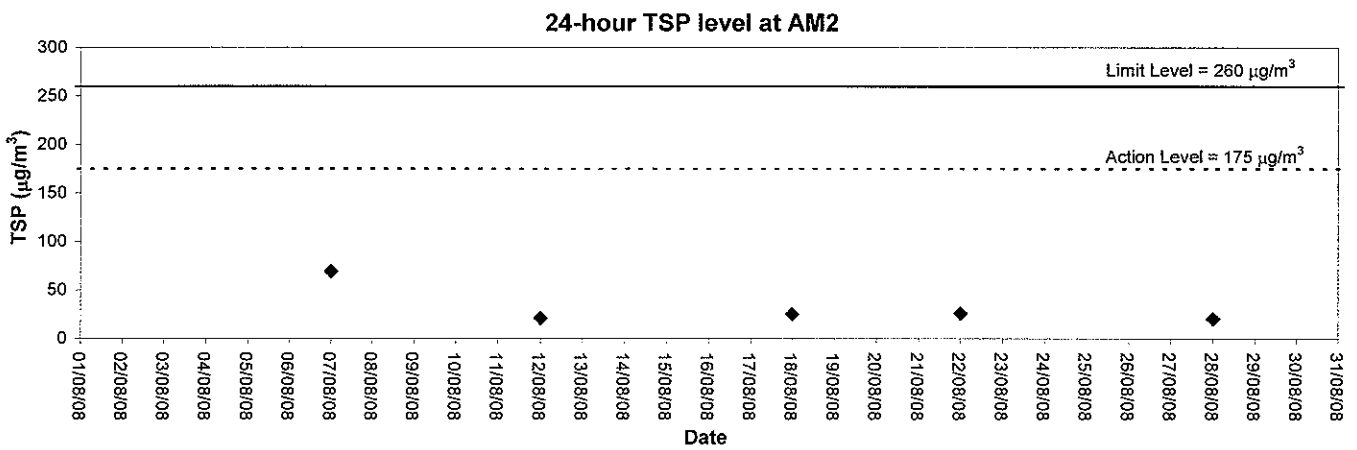
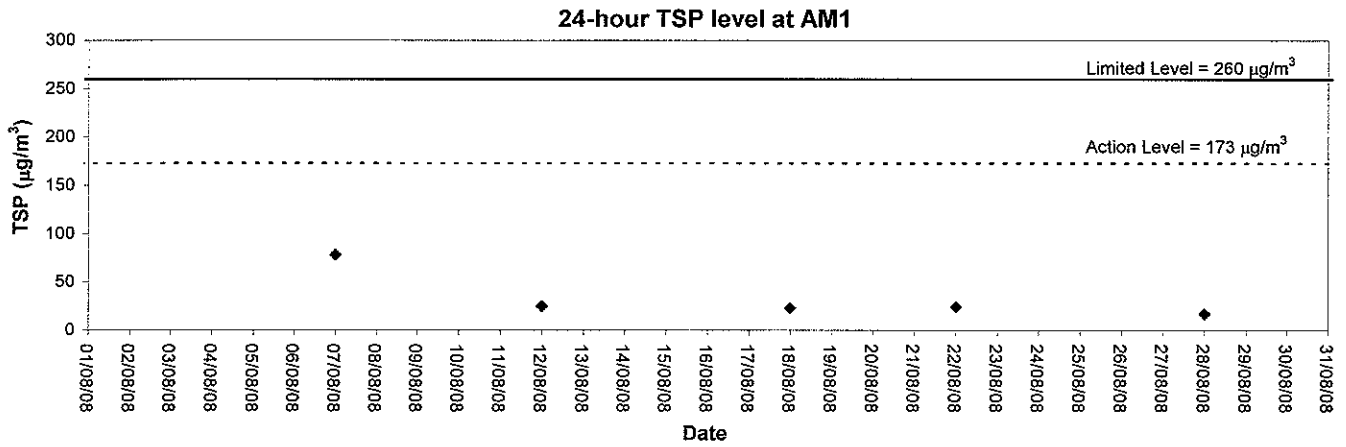


1-hour TSP level at AM2



1-hour TSP level at AM3







Appendix C1

Calibration Certificates for Impact Noise Monitoring Equipments



Calibration Certificate

Certificate No. **81355**

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. : Q80566

Date of receipt : 1-Apr-08

Item Tested

Description : Sound Level Calibrator

Manufacturer : Rion

Model : NC-73

Serial No. : 10196943

Test Conditions

Date of Test : 3-Apr-08

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : F21, Z02.

Test Results

All results were within the manufacturer's 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	73602	7-Jul-08	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	71791	16-Jul-08	NIM-PRC & SCL-HKSAR
S041	Universal Counter	73453	22-Aug-08	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 : 
Dorothy Cheuk

Approved by : 
Steve Kwan

Date: 3-Apr-08

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

The copyright of this certificate is owned by Hong Kong Calibration Ltd.. It may not be reproduced except in full.



Calibration Certificate

Certificate No. 81355

Page 2 of 2 Pages

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	94.0 dB	± 1 dB

Uncertainty : ± 0.1 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.990 8 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.1 %

Mfr's Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

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

3. The above measured values are the mean of 3 measurement.

4. Atmospheric Pressure : 1 005 hPa

----- END -----



RION CO., LTD.

3-20-41 Higashimotomachi Kokubunji Tokyo 185-8533
Phone:042(359)7888, Facsimile:042(359)7442

Certificate of Calibration

Name : Precision sound level meter
Model : NL-31 S/No. : 00773032
Microphone : UC-53A S/No. : 313111
Preamplifier : NH-21 S/No. : 25043

Date of Calibration : November, 27, 2007

We hereby certify that the above product was tested and calibrated according to the prescribed Rion procedures, and that it fulfills specification requirements.

The measuring equipment and reference devices used for testing and calibrating this unit are managed under the Rion traceability system and are traceable according to official Japanese standards and official standards of countries belonging to the International Committee of Weights and Measures.



Manager, Quality Control Department



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	
07/08/08	Cloudy	14:15	14:45	58.9	59.7	56.3	1.5
12/08/08	Fine	13:20	13:50	58.2	59.5	56.1	0.6
18/08/08	Sunny	09:10	09:40	51.8	54.3	47.2	0.9
28/08/08	Sunny	14:10	14:40	57.5	59.4	52.7	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	
07/08/08	Cloudy	11:45	12:15	63.5	65.2	59.1	2.2
12/08/08	Fine	14:15	14:45	64.7	66.0	59.9	0.5
18/08/08	Sunny	09:55	10:25	67.7	70.2	65.8	0.5
28/08/08	Sunny	13:15	13:45	67.5	70.1	60.2	0.5

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	
07/08/08	Cloudy	11:05	11:35	60.9	62.5	59.5	2.5
12/08/08	Fine	10:50	11:20	62.7	63.8	58.0	1.0
18/08/08	Sunny	13:30	14:00	65.8	68.4	62.2	0.8
28/08/08	Sunny	11:45	12:15	62.4	65.3	59.4	0.2

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	
07/08/08	Cloudy	15:10	15:40	58.5	60.5	54.9	1.8
12/08/08	Fine	11:30	12:00	58.0	59.4	53.9	0.7
18/08/08	Sunny	14:15	14:45	67.0	69.2	64.6	1.3
28/08/08	Sunny	11:05	11:35	54.8	59.9	47.7	0.2



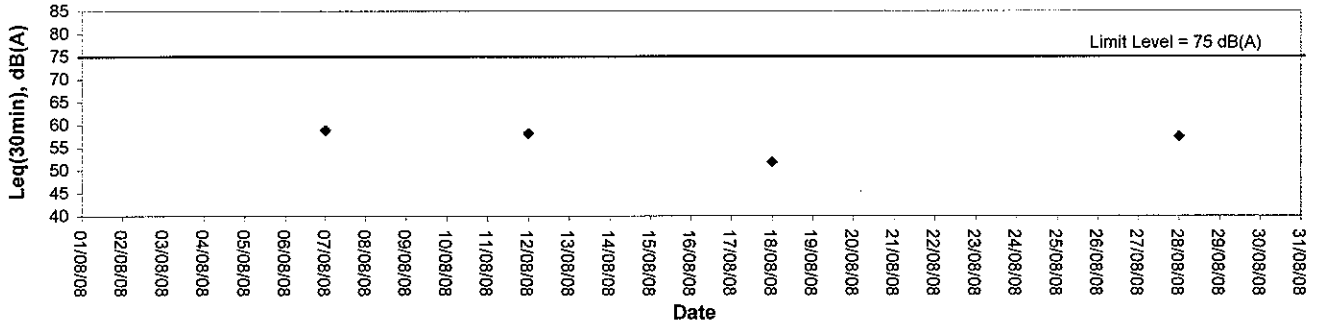
Appendix C3

Graphical Plots of Impact Noise Monitoring Data

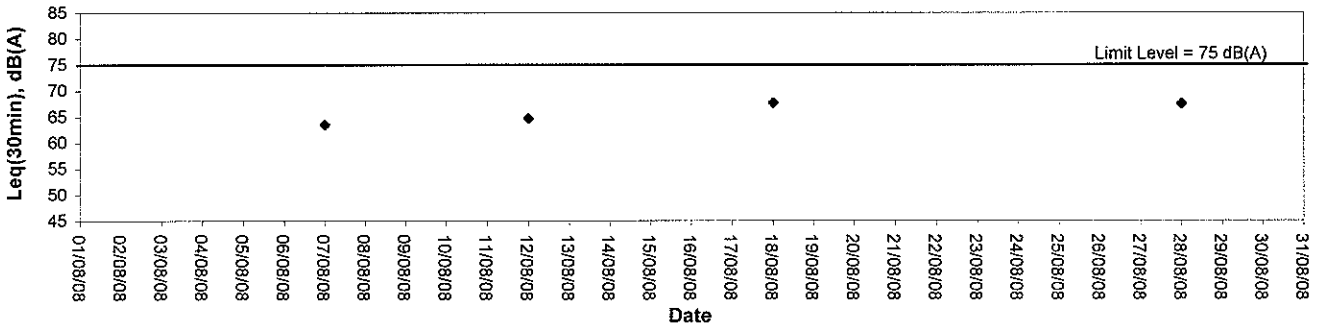


Noise Monitoring (Day-time)

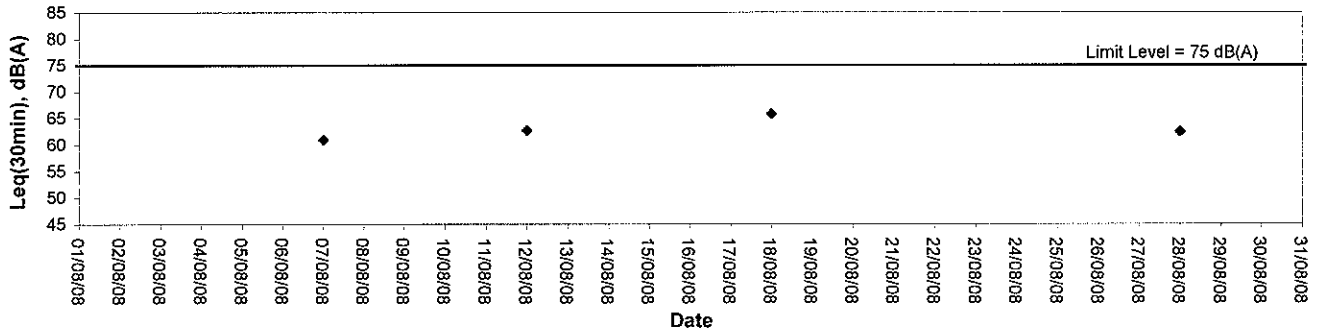
Noise level at NM1



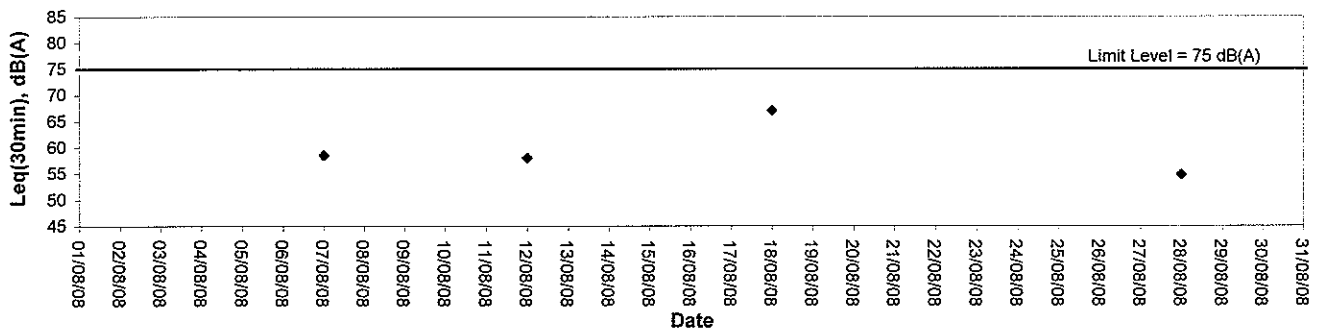
Noise level at NM2



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



Event / Action Plan for Construction Noise

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



Appendix E

Construction Programme



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




Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Waste Management					
<i>General Site Wastes</i>					
• 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	✓			
Chemical Wastes					
• 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 bounded 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				✓
Construction and Demolition (C&D) Wastes					
• 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				✓
Ecological Impact					
• 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
Landscape and Visual Impact					
• Existing trees should be retained.	All areas	√			
• Damage to vegetation should be minimized by close coordination and on site alignment adjusted of rising main and gravity sewer pipelines.	All areas	√			
• Short excavation and immediate backfilling section upon completion of works should be performed to reduce active site area.	All areas	√			
Site Practice					
• 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.	All areas		√		
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All areas		√		
• All generators, fuel and oil storage are within bundle areas.	All areas	√			
• Oil leakage from machinery, vehicle and plant should be prevented.	All areas	√			
• The Environmental Permit should be displaced conspicuously on site.	All areas	√			



Figures



LAMIMA ISLAND

KEY PLAN

NOTES :
 1. FOR DESIGN, WORKING DRAWINGS, WITH 10 SHEETS AND 10000000.

NO.	REVISION	DATE	BY	CHECKED	SCALE
1	ISSUED FOR CONSTRUCTION	11/11/04	W. S. CHAN	J. L. CHAN	1:1000
2	FOR INFORMATION	11/11/04	W. S. CHAN	J. L. CHAN	1:1000
3	FOR INFORMATION	11/11/04	W. S. CHAN	J. L. CHAN	1:1000


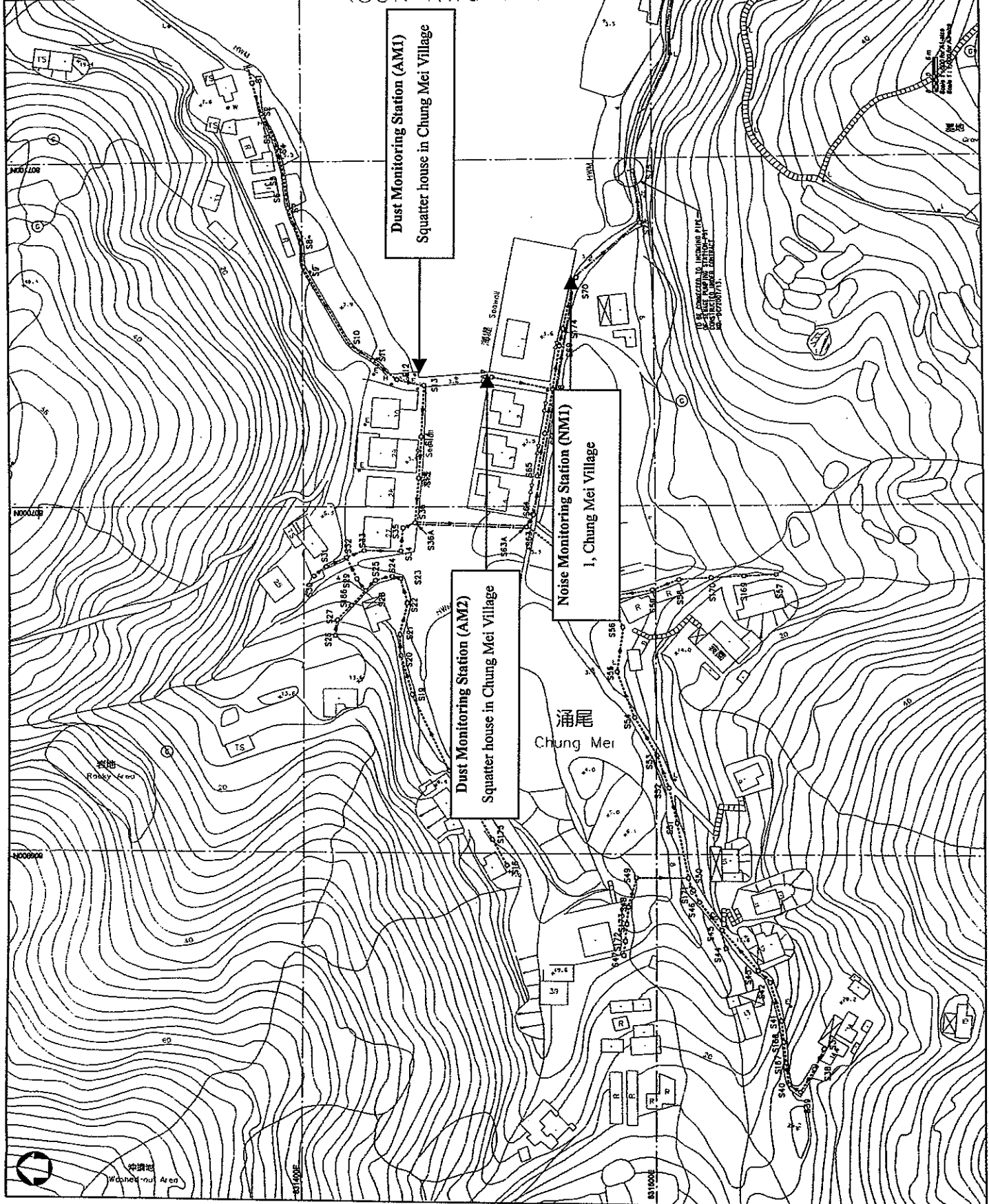
CONTRACT NO. DC/2007/18
 YUNG SHUE WAN AND SOK KWU WAN
 VILLAGE SEWERAGE STAGE 1 WORKS

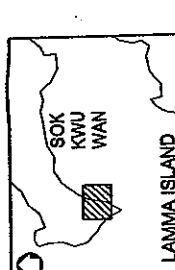
VILLAGE SEWERAGE LAYOUT
 PLANS - SOK KWU WAN
 (SHEET 1 OF 3)

Project No. 2005/CI/2004
 Date 11/11/04
 Scale 1:1000
 Project 18
 Date 11/11/04
 Project 18
 Date 11/11/04

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

SCOTT WILSON CDM JOINT VENTURE



KEY PLAN

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

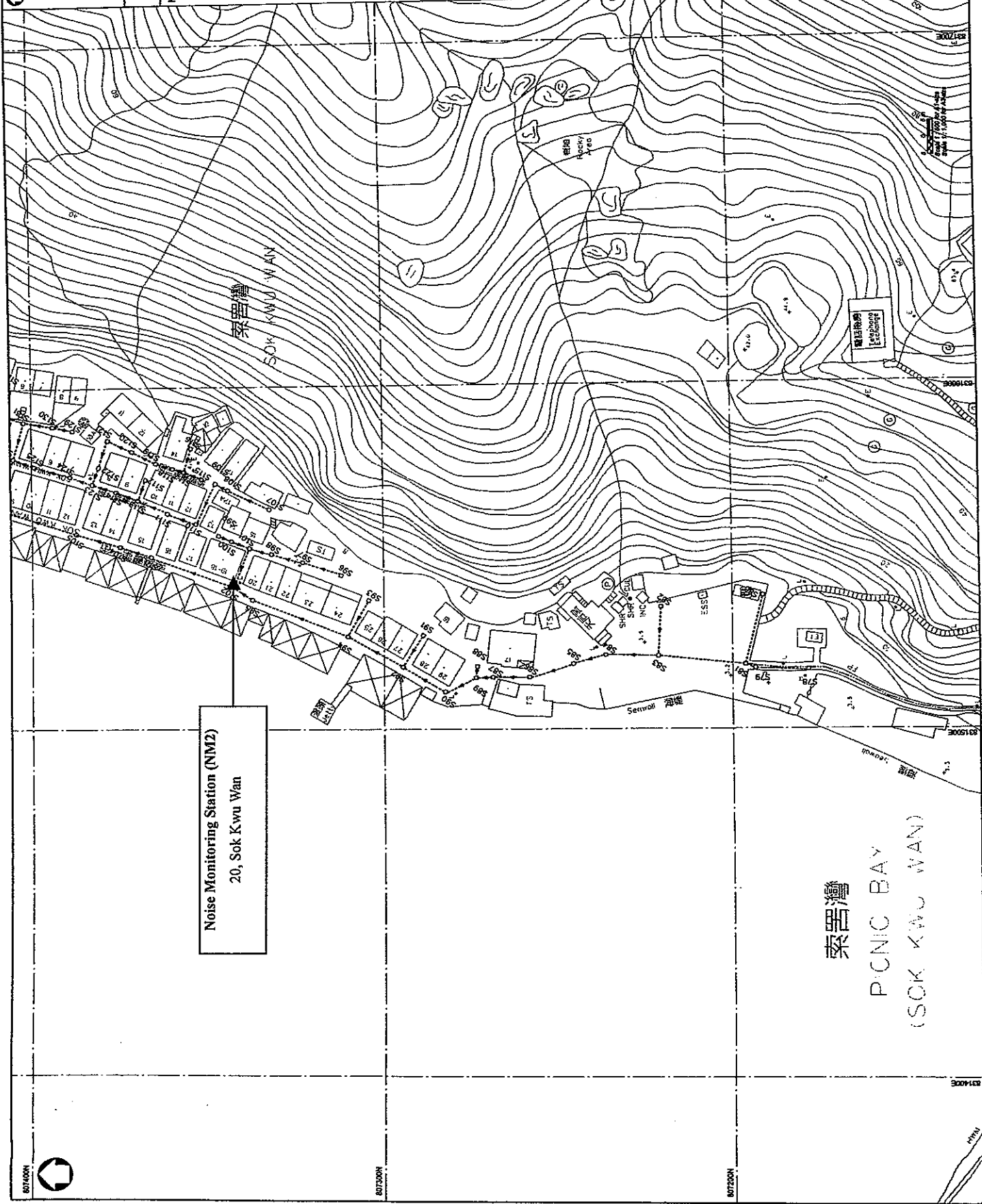
DATE	DESCRIPTION	BY	CHK
15/05/2005	ISSUE FOR CONSTRUCTION	J. S.	J. S.
15/05/2005	REVISED LEGEND SUBMISSION	J. S.	J. S.

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

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

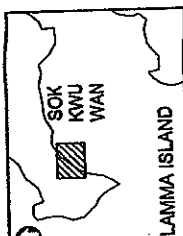
VILLAGE SEWERAGE LAYOUT
 PLANS - SOK KWU WAN
 (SHEET 2 OF 3)

PROJECT NO. 2005/C1/2005
 DRAWING NO. 187-A
 SHEET NO. AS SHOWN
 DATE 15/05/2005
 SCALE 1:1000



Noise Monitoring Station (NM12)
 20, Sok Kwu Wan

索罟灣
 PICNIC BAY
 (SOK KWU WAN)



KEY PLAN

NOTES 1

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. DC/2007/18.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE CONCERNED AGENCIES AND OBTAINING ALL NECESSARY APPROVALS AND PERMITS FOR ANY INTERFERING USE OF THE LAND.

TO BE CONNECTED TO EXISTING 150MM WATER MAIN CONTRACT NO. U22880/13.

TO BE CONNECTED TO EXISTING 150MM WATER MAIN CONTRACT NO. U22880/13.

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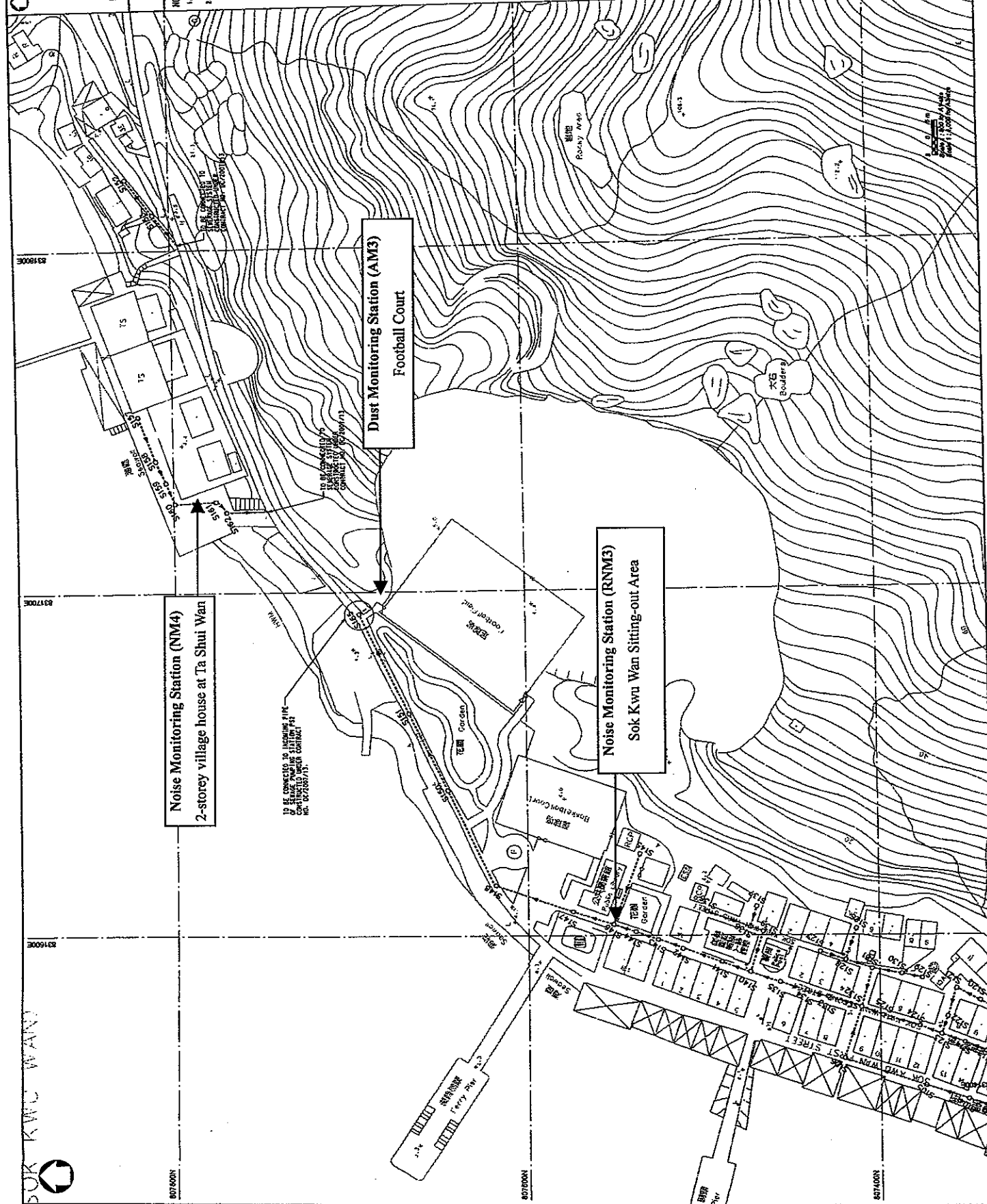
TO BE CONNECTED TO EXISTING 150MM WATER MAIN CONTRACT NO. U22880/13.

TO BE CONNECTED TO EXISTING 150MM WATER MAIN CONTRACT NO. U22880/13.

TO BE CONNECTED TO EXISTING 150MM WATER MAIN CONTRACT NO. U22880/13.

DATE	2005/11/2006
SCALE	AS SHOWN
PROJECT	VILLAGE SEWERAGE LAYOUT PLANS - SOK KWU WAN (SHEET 3 OF 3)
CLIENT	The Government of the Hong Kong Special Administrative Region Drainage Services Department
CONTRACT NO.	DC/2007/18
CONTRACTOR	YUNG SHUE WAN AND SOK KWU WAN VILLAGE SEWERAGE, STAGE 1 WORKS

CDM
SCOTT WILSON CDM JOINT VENTURE



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

Dust Monitoring Station (AM3)
Football Court

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

SOK KWU WAN