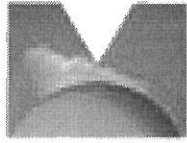


Maeda Corporation



MAEDA

Expansion of Shek Wu Hui Sewage Treatment Works

Monthly EM&A Report
(December 2005)

January 2006

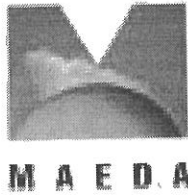
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Maeda Corporation



Expansion of Shek Wu Hui Sewage Treatment Works

Monthly EM&A Report (December 2005)

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Report no: EA01284R0032

Date: January 2006

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Certified by Environmental Team Leader
Sharifah Or

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1 Executive Summary

The expansion of Shek Wu Hui Sewage Treatment Works (SWHSTW) aims to increase the treatment capacity of the existing SWHSTW to cope with the increasing wastewater flows and loads as a result of the population growth in the catchment area of Fanling/Sheung Shui and the committed extension of sewerage system to unsewered areas. It is considered as a project constituting a material change to an exempted designated project under Schedule 2 of EIAO. Thus, the procedures under the EIAO have been followed and an Environmental Monitoring and Audit (EM&A) Programme has to be carried out. The present report documents the outcomes of the EM&A Works undertaken during December 2005.

Breaches of Action and Limit Levels

No non-compliance of action/limit level was recorded at all monitoring stations for both noise and air quality during the reporting month.

Complaints Log

During this reporting month, no environmental complaint was received.

Notifications of Any Summons and Successful Prosecutions

During the site preparation stage, EPD issued a yellow ticket to the Contractor due to the construction dust impact on 2 November 2005. Low humidity is considered as the main reason for the construction dust impact. Mitigation measures such as increasing the frequency of water spraying and provision of fencing along the site boundary were implemented on 3 November 2005. EPD inspected the site on 4 November 2005 and found the condition acceptable.

During the reporting month, no notification of summons or successful prosecution was recorded.

Reporting Changes

There was no reporting change during December 2005.

Future Key Issues

The construction activities for the coming three months will include the construction of H-piles, excavation, the construction of temporary support and backfilling, utilities diversion, pipe laying and the relocation of FeCl₃ tank and the construction of new FeCl₃ tank.

2 Introduction

2.1 Basic Information

Shek Wu Hui Sewage Treatment Works (SWHSTW) provides treatment to the wastewater generated from Fanling/Sheung Shui areas before discharge it into Mai Po Inner Deep Bay Ramsar Site through River Indus and Shenzhen River, thus helps protecting the water quality of River Indus, Shenzhen River and Mai Po Inner Deep Bay Ramsar Site. The expansion of SWHSTW aims to expand the treatment capacity of the existing SWHSTW to cope with the increasing wastewater flows and loads as a result of the population growth in the catchment area of Fanling/Sheung Shui and the committed extension of sewerage system to unsewered areas.

In accordance with Section 9(2)(g) of the Environmental Impact Assessment Ordinance (EIAO), the SWHSTW is an exempted designated project as the existing SWHSTW has been in operation before the EIAO came into effect on 1 April 1998. However, since the proposed works involve physical expansion and alternation to the existing SWHSTW (hereafter called “the Project”) and may cause adverse environmental impacts if mitigation measures are not in place, it shall be considered as a project constituting a material change to an exempted designated project under Schedule 2 of EIAO. Hence the procedures under the EIAO have been followed. A Project Profile (PP) for direct application of the EP (Application No.DIR-121/2005) was approved by Environmental Protection Department (EPD) in May 2005 and an environmental permit (EP-218/2005) was obtained prior to the commencement of the expansion works.

Drainage Services Department (DSD) awarded the civil contract of the expansion of SWHSTW to Maeda Corporation (Maeda) in September 2005. Maeda appointed Hyder Consulting Limited (HCL) as the Contractor’s Environmental Team (ET) during the construction period. CH2M-IDC Hong Kong Limited is the independent environmental checker (IEC). The construction contract commenced in September 2005 and the total construction period is approximately 36 months. The notified commencement date of work to the Director of EPD is 14 December 2005.

2.2 Management Structure and Project Organisation

The Engineer (DSD) is responsible for overseeing the construction works and ensuring that they are undertaken by the Contractor (Maeda) in accordance with the specification and contractual requirements. The Contractor shall report to the Engineer. The ET is employed by the Contractor and is responsible for conducting the EM&A programme. The IEC shall advise the Engineer on the environmental issues related to the Project.

The key personnel contact names and telephone number are summarised in Table 2-1. The project organisation is shown in Appendix 1.

Party	Position	Name	Telephone number
Project Proponent - DSD	Project Manager	Raymond Lee	2594 7457
	Engineer's Representative	Tim Tsoi	2594 7460
Contractor - Maeda	Site Agent	George Cheung	9268 1918
ET - Hyder	ET Leader	Sharifah Or	2911 2730
IEC – CH2M-IDC	IEC	David Yeung	2872 2934

Table 2-1 Key Personnel Contact Names and Telephone Number for the Project

2.3 Construction Programme

Construction programme of the Project is attached in Appendix 2.

2.4 Works Undertaken during the Reporting Month

Works undertaken during the reporting month included:

- construction of preliminary H-pile;
- fencing erection;
- ground investigation work; and
- setting up of engineer's site office.

2.5 Status of Environmental Permit/ Licence

The status of the Environmental Permit/Licence for the Project is shown below.

Permit/Licence	Application Date	Date of issue	Ref. No.	Valid Until
Environmental Permit	21 May 2005	16 June 2005	EP-218/2005	N/A
Notification under APCO	22 Sep 2005	-	-	-
Registration as a chemical waste producer	26 Sep 2005	4 Nov 2005	WPN: 5213-624-M2446-06	-
Effluent Discharge Licence	11 Nov 2005	20 Dec 2005	Licence No.: W5/11287/1	19 Dec 2010
CNP (For 2 Generators operating between 0700 and 2300 on General Holiday and between 1900 and 2300 on Any Day not being a General Holiday at Site Office)	25 Nov 2005	12 Dec 2005	GW-RN0597-05	12 Jun 2006
Application for Exemption Account for Disposal of construction Waste	12 Dec 2005	Under review by EPD	Application No.: RN/00134	N/A

Table 2-2 Status of Permit/Licence for the Project

3 Environmental Status

3.1 Works Undertaken during the Month with Illustrations

The site has been subdivided into different Works Areas/Portions as illustrated in Appendix 3. The construction of preliminary H-pile, ground investigation works and fencing erection were carried out in Portions 2 and 3. Setting-up of Engineer's Site Office was undertaken in Works Areas A, B and C.

3.2 Project Area, Environmental Sensitive Receivers and Monitoring Locations

The site is located at the existing Shek Wu Hui Sewage Treatment Plant, next to Chuk Wan Street. Project area, environmental sensitive receivers and monitoring locations are shown in Appendix 4.

4 Brief Summary of EM&A Requirements

4.1 Monitoring Parameters

4.1.1 Air Quality

During the construction phase impact monitoring, 1-hour and 24-hour Total Suspended Particulates (TSP) levels are measured at the selected air monitoring locations in accordance with the EM&A Manual. These two parameters are measured to indicate the impacts of construction dust on air quality.

4.1.2 Noise

The construction noise level is measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}) for 30 minutes. $L_{eq(30\text{ min})}$ is used as the monitoring parameter for the period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq(15\text{ min})}$ is employed for comparison with the Noise Control Ordinance (NCO) criteria.

Other noise parameters such as L_{10} and L_{90} are also obtained for reference.

4.2 Action and Limit Levels

4.2.1 Air Quality

The baseline monitoring results documented in the Baseline Monitoring Report for the Project (our report ref.: EA01284R0012) form the basis for derivation of the Action and Limit Levels for air quality impact monitoring. Table 4-3 shows the derived Action and Limit Levels for the Project. If the air quality criteria are exceeded due to the Project, the Event/Action Plan summarised in Table 4-5 should be triggered immediately.

Monitoring Station ID	1-hour TSP Level in ($\mu\text{g}/\text{m}^3$)		24-hour TSP Level in ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
CAM1a	342.7	500	203.3	260
CAM2a	340.2		201.6	

Table 4-3 Action and Limit Levels for Air Quality

4.2.2 Noise

The Action and Limit Levels for construction noise are defined in Table 4-4. If valid non-compliance of the criteria occurs, actions in accordance with the Event/Action Plan in Table 4-6 should be implemented. If construction works are undertaken during the restricted hours, a construction noise permit under NCO shall be obtained by the Contractor.

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

Table 4-4 Action and Limit Levels for Noise

4.3 Event and Action Plans

The Event and Action Plans for air quality and noise monitoring are shown in Tables 4-5 and 4-6, respectively.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
Exceedance for one sample	<ul style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC and ER; Repeat measurement to confirm finding. 	<ul style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method. 	<ul style="list-style-type: none"> Notify Contractor. 	<ul style="list-style-type: none"> Rectify any unacceptable practice; Amend working methods if appropriate.
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> Identify source, investigate the cause of exceedance and propose remedial measures ; Inform IEC and ER; Advise ER on the effectiveness of the proposed remedial measures; Repeat measurements to confirm findings; Increase monitoring frequency to daily; Discuss with IEC and Contractor on remedial actions required; If exceedance continues, arrange meeting with IEC and ER; If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; 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. 	<ul style="list-style-type: none"> Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	<ul style="list-style-type: none"> Submit proposals for remedial to ER within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
LIMIT LEVEL				
Exceedance for one sample	<ul style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC, ER, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring 	<ul style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise ER on the effectiveness of the proposed remedial measures; 	<ul style="list-style-type: none"> Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	<ul style="list-style-type: none"> frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Supervise implementation of remedial measures. 		
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> Notify IEC, ER, Contractor and EPD; Identify source, investigate the cause of exceedance and propose remedial measures; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly; Supervise the implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of exceedance in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly 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. 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by ER until the exceedance is abated.

Table 4-5 Event/ Action Plan for Air Quality Monitoring

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

Table 4-6 Event/ Action Plan for Noise Monitoring

4.4 Environmental Mitigation Measures and Requirements

The recommended measures for mitigating air quality, water quality, noise, waste and all other possible environmental impacts due to the construction works have been stated clearly in the EM&A Manual. The details of the measures implemented by the Contractor are shown in Appendix 5.

5 Implementation Status of Environmental Protection and Pollution Control/ Mitigation Measures

The status of the mitigation measures implemented by the Contractor is listed in Appendix 5.

6 Monitoring Results

6.1 Monitoring Methodology

6.1.1 Air Quality

1-hr and 24-hr TSP monitoring works were undertaken by the ET using high volume samplers (HVS). The sampling procedures follow the standard sampling method as set out in High Volume Method for Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA.

During the sampling, dust laden air is drawn through a HVS fitted with a conditioned, pre-weighted filter paper, at a controlled rate. After sampling for 1 hour and 24 hours, the filter paper with retained particles is collected and returned to the laboratory for drying in a desiccator followed by accurate weighing. Respective 1-hour and 24-hour TSP levels are calculated from the ratio of the mass of particulates retained on the filter paper to the total volume of air sampled.

The HVSs were equipped with an electronic mass flow controller and calibrated against a traceable standard at regular intervals. All equipment, calibration kit and filter papers were clearly labelled.

The sampling procedures and specifications are the same for 1-hour and 24-hour baseline air quality monitoring except the sampling duration. The specifications are as follows:

- 0.6-1.7 m³/min (20-60SCFM);
- Equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- Installed with elapsed time meter with +/- 2 minutes accuracy for 24 hours operation;
- Capable of providing a minimum exposed area of 406 cm² (63in²);
- Flow control accuracy: +/- 2.5% deviation over 24-hr sampling period;

- Equipped with a shelter to protect the filter and sampler;
- Incorporated with an electronic mass flow rate controller or other equivalent devices;
- Equipped with a flow recorder for continuous monitoring;
- Provided with a peaked roof inlet;
- Incorporated with a manometer;
- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- Easy to change the filter; and
- Capable of operating continuously for a 24-hour period.

Relevant environmental data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and other special phenomena observed and work progress of the concerned site were also recorded.

Filter papers of size 8"x10" were labelled before sampling. They were inspected clean with no pin holes and conditioned in a humidity-controlled chamber for over 24-hr and be pre-weighed before use for the sampling.

After sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag, and then returned for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg. All the collected samples would be kept in a good condition for 6 months before disposal.

The weight of filter paper was measured by a HOKLAS accredited laboratory.

6.1.2 Noise

Weatherproof logging sound level meters which comply with the International Electrotechnical Commission Publication 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications were used to measure the construction noise at the designated monitoring locations. Noise parameters of the A-weighted levels L_{eq} , L_{10} and L_{90} were measured with a sampling period of 5 minutes throughout the monitoring. The average of six consecutive 5-minute readings was used to provide $L_{eq(30\text{ minutes})}$ for non-restricted hours. A facade correction of 3dB(A) would be applied to all free field measurements.

During the impact monitoring, information such as date, weather condition, equipment used, measurement results and major noise sources were recorded on the field data record sheet. Noise measurements would not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed would be checked with a portable wind speed meter capable of measuring wind speed in m/s. All measurements were recorded to the nearest 0.1dB(A).

6.2 Name of Laboratory, Types of Equipment Used and Calibration Details

6.2.1 Name of Laboratory

Filter papers used for air quality monitoring were sent to ALS Environmental, a HOKLAS accredited laboratory, for weighing. Other sampling and analytical works were conducted by Hyder Consulting Limited, the ET.

6.2.2 Types of Equipment Used and Calibration Details

HVS - Model GBM2000H1, manufactured by Anderson Instruments Inc., is used for TSP monitoring. It complies with the USEPA specifications in Appendix B Part 50 - Reference Method for the Determination of Suspended Particulate matter in the Atmosphere (High-Volume Method) of the Code of Federal Regulation dated July 1, 1991. Initial calibration of dust monitoring equipment was conducted upon installation and prior to commissioning. One point flow rate calibration will be carried out every two months. Five-point calibration will be carried out every six months. All the calibration data would be converted into standard temperature and pressure condition.

Orific HVS calibration Kit model G2523 is used for the calibration of HVSs. Calibration of calibration kit will be carried out annually. Appendix 6 presents the monitoring equipment calibration record.

For noise monitoring, Bruel & Kjaer (B&K) Precision Integrating Sound Level Meters of Type 2238 in compliance with the International Electrotechnical Commission Publication 651: 1979 (Type 1) and 804: 1985 (Type 1) Specifications were used.

Prior to and following each noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator (B&K Type 4230) generating a known sound pressure level at a known frequency. Measurements are considered as valid only if the calibration level from before and after the noise measurement agree to within 1dB. All sound level meters and calibrators will be calibrated annually. Appendix 6 presents the monitoring equipment calibration records.

Table 6-7 summarises the types of monitoring and calibration equipment.

Equipment Type	Manufacturer	Model	Serial Number/I.D.
Sound Level Meter	B&K	Type 2238	2448529
Sound Level Meter	B&K	Type 2238	2285726
Sound Level Calibrator	B&K	Type 4231	1770806
Sound Level Calibrator	Rion	NC-73	10786708
High Volume Sampler ⁽¹⁾	Anderson	GBM 2000 H1	0133
High Volume Sampler	Anderson	GBM 2000 H1	0134
High Volume Sampler ⁽²⁾	Anderson	GBM 2000 H1	1191
Orific HVS Calibration Kit	Tisch Environmental	G2523	517N

Note: (1) The HVS was used on 14 December 2005

(2) The HVS is used after 20 December 2005

Table 6-7 Monitoring Equipment

6.3 Parameters Monitored

Parameters monitored are described in Sections 4.1.1 and 4.1.2.

6.4 Monitoring Locations

There are two designated air quality monitoring locations identified in the EM&A Manual. Due to the access constraint, alternative monitoring locations were selected and approved by ER and IEC prior the commencement of monitoring. These alternative locations for air quality monitoring are summarised in Table 6-8 and shown in Appendix 4.

Monitoring Station ID	Name of Premises	Monitoring Location
CAM1a	San Po Street Pumping Station	Ground floor level
CAM2a	Sheung Shui Heung Floodwater Pumping Station	Ground floor level

Table 6-8 Air Quality Monitoring Locations

There are two designated noise monitoring locations identified in the EM&A Manual and their locations are described below and shown in Appendix 4.

Monitoring Station ID	Name of Premises	Monitoring Location
NM1	Wai Loi Tsuen	1.2m above ground
NM2	Temporary Domestic Structure	1.2m above ground

Table 6-9 Noise Monitoring Locations

6.5 Monitoring Date, Time, Frequency and Duration, Weather Condition and Other Factors

Monitoring frequency for 1-hr TSP and 24-hr TSP is 3 times every 6 days and once every 6 days, respectively. One set of noise measurements will be conducted between 0700 and 1900 on normal weekdays at each monitoring station on a weekly basis, when noise-generating activities are underway. Monitoring date, time and duration for noise and air quality monitoring and all other factors related to the monitoring result, such as weather condition, are listed in the following tables.

Station	Date	Time	Duration	Weather Condition
1-hr TSP				
CAM1a	14 Dec 2005	0945 – 1315	3 X 1 hour	Cloudy
	22 Dec 2005	0946 – 1251	3 X 1 hour	Cloudy
	28 Dec 2005	0923 – 1224	3 X 1 hour	Cloudy
CAM2a	14 Dec 2005	0933 – 1305	3 X 1 hour	Cloudy
	20 Dec 2005	1000 – 1209	3 X 1 hour	Fine
	28 Dec 2005	0935 – 1234	3 X 1 hour	Cloudy
24-hr TSP				
CAM1a	14 Dec 2005	1320 – 1320	24 hours	Cloudy
	22 Dec 2005	1256 – 1256	24 hours	Cloudy
	28 Dec 2005	1227 – 1227	24 hours	Rainy and Cloudy
CAM2a	14 Dec 2005	1315 – 1315	24 hours	Cloudy
	20 Dec 2005	1310 – 1310	24 hours	Fine
	28 Dec 2005	1236 – 1236	24 hours	Rainy and Cloudy

Table 6-10 Sampling Schedule of Air Quality Monitoring

Station	Date	Time	Duration	Weather Condition
NM1	14 Dec 2005	1000 – 1030	30 mins	Cloudy
	20 Dec 2005	1010 – 1040	30 mins	Sunny
	28 Dec 2005	0945 – 1015	30 mins	Cloudy
NM2	14 Dec 2005	1120 – 1150	30 mins	Cloudy
	20 Dec 2005	1120 – 1150	30 mins	Sunny
	28 Dec 2005	1045 – 1115	30 mins	Cloudy

Table 6-11 Sampling Schedule of Noise Monitoring

6.6 Results and Graphical Plots of Monitoring Parameters

Air quality monitoring results of 1-hour and 24-hour TSP are summarised in Table 6-12 and detailed in Appendix 7. Graphical plots of the monitoring results are also provided in Appendix 7.

Station	Date	Measured Level ($\mu\text{g}/\text{m}^3$)		Action/Limit Level ($\mu\text{g}/\text{m}^3$)	
		1-hr TSP	24-hr TSP	1-hr TSP	24-hr TSP
CAM1a	14 Dec 2005	256.7	32.6	342.7/500	203.3/260
		250.8			
		248.9			
	22 Dec 2005	242.5	96.9		
		231.1			
		194.5			
	28 Dec 2005	291.7	49.4		
		289.4			
		260.5			
CAM2a	14 Dec 2005	203.6	189.8	340.2/500	201.6/260
		200.3			
		182.1			
	20 Dec 2005	179.8	115.1		
		158.0			
		150.3			
	28 Dec 2005	229.9	83.3		
		210.4			
		217.1			

* Shaded area indicates an exceedance of Action/Limit Level.

Table 6-12 Air Quality Monitoring Results

Noise monitoring results are summarised in Table 6-13 and detailed in Appendix 7. Graphical plots of the monitoring results are also provided in Appendix 7. As all monitoring was conducted at free field condition, a facade correction of 3dB(A) was applied to each of noise measurements.

Station	Date	Measured Noise Level, dB(A)			Limit Level, dB(A)
		L ₉₀ (30min)	L ₁₀ (30min)	L _{eq} (30min)	
NM1	14 Dec 2005	58.5	67.5	65.8	75
	20 Dec 2005	56.5	63.0	60.6	
	28 Dec 2005	56.0	63.0	61.1	
NM2	14 Dec 2005	50.8	56.2	54.4	75
	20 Dec 2005	47.3	54.0	52.1	
	28 Dec 2005	47.3	54.0	52.9	

Note: (1) Shaded area indicates an exceedance of Limit Level.

(2) A facade correction of 3dB(A) was applied to each of noise measurements.

Table 6-13 Noise Monitoring Results

6.7 Factors Which Might Affect the Monitoring Results

During the monitoring practices, the weather was dry in general and dust would be easily generated. Thus, dust from other sources, such as roads with the movement of heavy vehicles surrounding the monitoring stations, would affect the air quality monitoring result.

6.8 QA/QC Results and Detection Limit

The quality assurance (QA) / quality control (QC) results and detection limit are shown in Appendix 8.

7 Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions

7.1 Non-compliance of Action and Limit Levels

No non-compliance of Action or Limit Level was recorded for air quality and noise monitoring.

7.2 Complaints Received

In case of an environmental complaint received, all related parties should follow the complaints response procedures specified in the EM&A Manual.

During this reporting month, no environmental complaint was received. Cumulative number of environmental complaint is shown in Table 7-14.

Reporting Month	Number of Environmental Complaint Received	Cumulative Number of Environmental Complaint Since the Commencement of the Project
December 2005	0	0

Table 7-14 Cumulative Number of Environmental Complaint

7.3 Notifications of Summons and Successful Prosecutions

On 2 November 2005, EPD issued a yellow ticket to the Contractor due to the construction dust impact. The situation was rectified on 3 November 2005. EPD undertook a site inspection on 4 November 2005 and found the condition acceptable.

No notification of summons or successful prosecution was recorded.

7.4 Review of the Reasons and Implications of Non-compliance, Complaints, Summons and Prosecutions

7.4.1 Non-compliance of Acton/Limit Level

No non-compliance was recorded in the reporting period.

7.4.2 Complaints, Summons and Prosecutions

Low humidity is considered as the main reason for the construction dust impact identified on 2 November 2005. Mitigation measures as suggested by the EPD such as increasing the intensity of watering were implemented and the condition was rectified on 3 November 2005.

7.5 Site Inspection

Weekly site inspections were carried out on 14, 21 and 28 December 2005. The findings of the site inspections and appropriate mitigation measures were recorded in the site inspection checklists.

The observations raised during the site inspections, corresponding recommendations and rectification status are summarised in Table 7-15.

Inspection date	Deficiencies	Recommendation	Status
14 Dec 2005	<ol style="list-style-type: none"> 1. Cement works to seal the bottom of hoarding was being undertaken during the site inspection. Some cement was deposited on public area. 2. Bare ground was dry. 3. Concrete waste was found near the trees. 4. Muddy trails on DSD access road were identified. 	<ol style="list-style-type: none"> 1. It is reminded that any cement deposited on public area outside the hoarding should be avoided and cleaned up as necessary. 2. Frequent water spraying is needed. 3. The trees retained on site should be properly maintained and no construction material or waste should be placed under the trees. 4. Wheel washing should be performed within the site to avoid bringing any dirt or mud outside the site. 	<ol style="list-style-type: none"> 1. The condition was rectified on 21 Dec 2005. 2. The condition was rectified on 21 Dec 2005. 3. The condition was rectified on 21 Dec 2005. 4. The condition was rectified on 21 Dec 2005.
21 Dec 2005	No observation was raised.	N.A.	N.A.
28 Dec 2005	General refuse was accumulated in the surface channel at the site office area.	Prompt cleaning-up is needed.	The Contractor reported that the condition was rectified on 29 Dec 2005. The condition would be checked again in the next site inspection.

Table 7-15 Summaries of Site Inspections and Recommendations

The site audit conducted by IEC was carried out on 14 December 2005. The Contract has undertaken appropriate actions in responses to the IEC's findings.

8 Waste Management Status

According to the information provided by the Contractor, the following waste materials were generated during the reporting month:

- Inert C&D materials - 299 m³; and
- General Refuse - 78 m³.

C&D materials were disposed of at Tuen Mun Area 38 public fill. General refuse was collected and disposed of at NENT Landfill properly. No chemical waste was produced in the reporting month. Trip ticket system was implemented and disposal records were in order on site. The Waste Management Plan was followed.

9 Future Key Issues

The construction activity for the coming three months is summarized below:

- construction of H-piles
- excavation, construction of temporary support and backfilling
- utilities Diversion
- pipe laying
- relocation of FeCl₃ tank and construction of new FeCl₃ tank

The upcoming EM&A schedule for the future three months is shown in Appendix 9.

10 Comments, Recommendations and Conclusions

EM&A works have been undertaken in December 2005 for the Project based on the requirements set in the EM&A Manual.

All monitoring equipments have been calibrated and all monitoring protocols have been carried out properly according to the EM&A Manual.

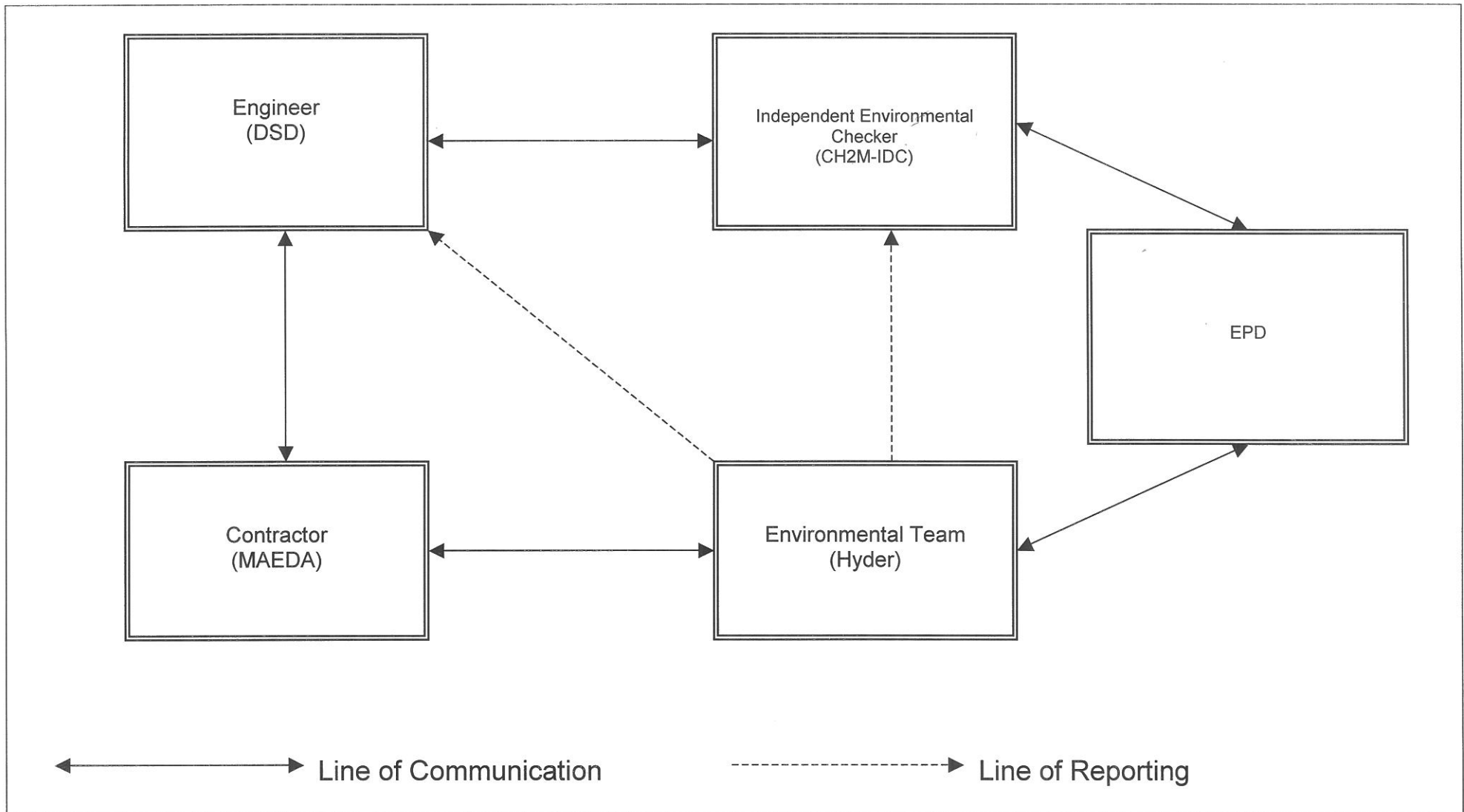
No valid exceedance of Action/Limit Level was recorded during the reporting month.

No compliant, notification of summons and prosecution were recorded during the reporting month. A yellow ticket was issued by EPD to the Contractor due to fugitive dust emission on 2 November 2005 and mitigation measures such as increasing the intensity of watering were implemented. The condition was rectified.

Three weekly site inspections were carried out during the reporting month. In response to the observations raised by ET, the Contractor has undertaken follow-up actions to rectify the condition.

Appendix 1

Project Organization



Title

Expansion of Shek Wu Hui Sewage Treatment Works – Project Organization

Date

Dec 2005

Figure

N.A.

Scale

NTS

Appendix 2

Construction Programme

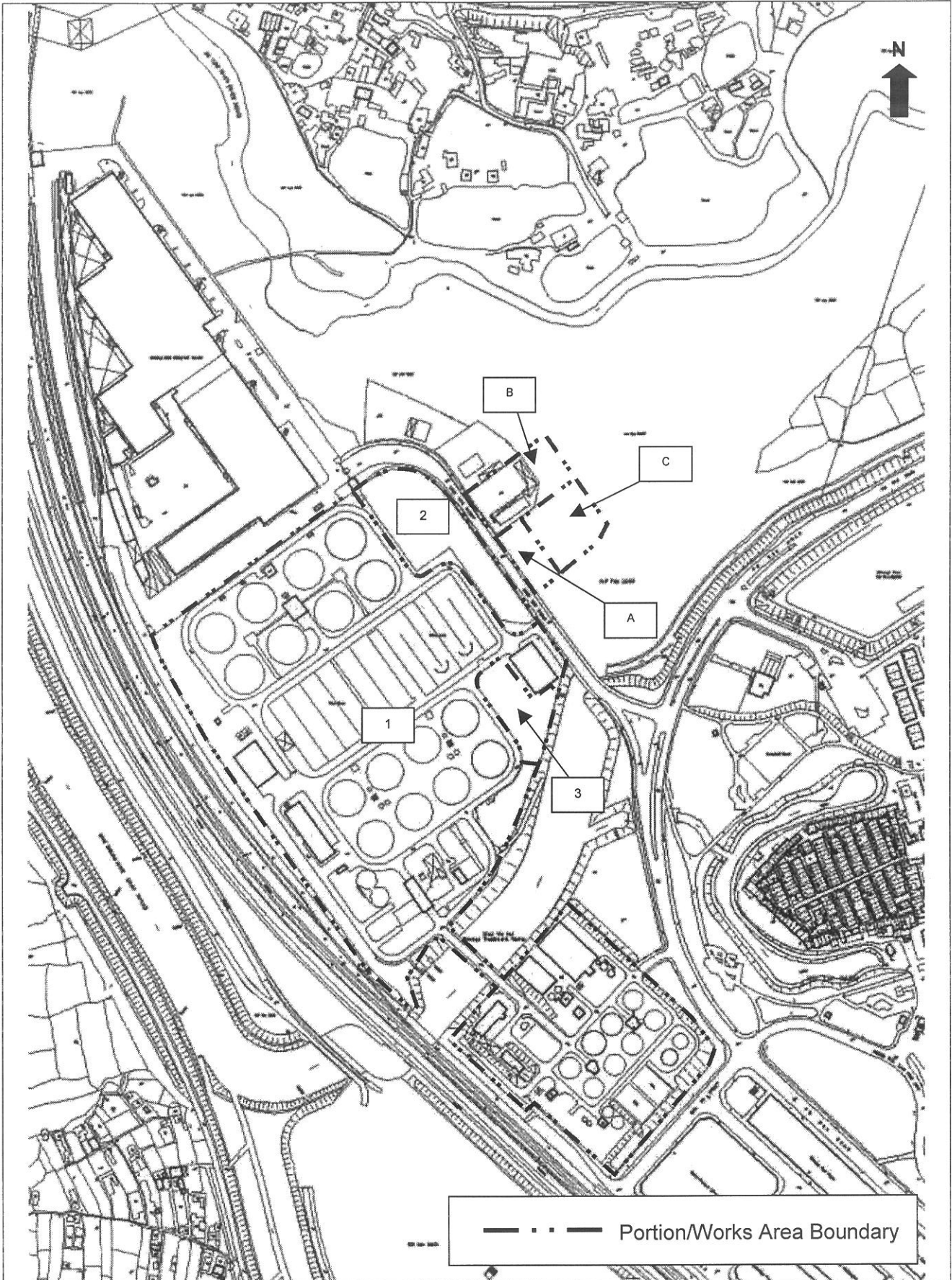
Start Date	26/09/05	Early Bar	D5DA	Sheet 1 of 5	Date	Revision	Checked	Approved
Finish Date	24/09/08	Progress Bar	Contract No. DC/2005/01 EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS AND UPGRADING OF TING KOK ROAD PUMPING STN NO.5					
Data Date	26/09/05	Critical Activity						
Run Date	31/10/05 12:36							



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Predecessors	2005												2006												2007												2008																																																													
						E				O				N				D				J				F				M				A				M				J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S	
Shek Wu Hui																																																																																																							
Contract No. DC/2005/01																																																																																																							
Contract Dates																																																																																																							
D004	Commencement of the Works	0	26/09/05																																																																																																				
Air Blower House No.2																																																																																																							
D014	Completion of Section 1 of the Works	670	26/09/05	27/07/07																																																																																																			
BN01: Preliminaries																																																																																																							
Area A																																																																																																							
DC0104	The Engineer's Site Accommodation	40	17/10/05	01/12/05	DC0132*																																																																																																		
Area B																																																																																																							
DC0112	Contractor's office erection	11	18/10/05	29/10/05	D004*																																																																																																		
Area A, B & C																																																																																																							
DC0122	Hoarding erection	12	24/10/05	05/11/05	D004*																																																																																																		
Portion 2																																																																																																							
DC0132	Site clearance	8	07/10/05	15/10/05	D004*																																																																																																		
DC0134	Fencing erection	12	24/10/05	05/11/05	DC0132*																																																																																																		
BN02: Section 1 of Works																																																																																																							
Air Blower House No.2																																																																																																							
Foundation																																																																																																							
DC0202	GI works (Predrilling & reporting)	40	25/10/05*	09/12/05	DC0132																																																																																																		
DC0204	Preliminary H-piles (1nos.)	40	10/12/05	26/01/06	DC0202*																																																																																																		
DC0206	Permanent H-piles (21nos.)	90	13/12/05	28/03/06	DC0204*																																																																																																		
DC0208	Proof Load Test (1nos.)	30	29/03/06	03/05/06	DC0206*																																																																																																		
DC0210	Utility Detecton and Diversion	100	27/09/05	24/01/06																																																																																																			
Earthworks																																																																																																							
DC0216	Excavation, Grid 1 - 6/K-L (5.3mPD)	6	04/05/06	10/05/06	DC0208*, DC0210																																																																																																		
DC0218	Excavation Grid A-K (5.3mPD)	10	12/05/06	23/05/06	DC0212*, DC0216*																																																																																																		
Substructure																																																																																																							
DC0222	Pilecaps, 6nos. Grid 1-3/K-L + Ground Beams	6	12/05/06	18/05/06	DC0216*																																																																																																		
DC0224	Pilecaps, 6nos. Grid 4-6/K-L + Ground Beams	6	19/05/06	25/05/06	DC0222*																																																																																																		
DC0226	Pilecaps, 6nos. Grid 4-6/F-J + Ground Beams	6	28/05/06	01/06/06	DC0224*																																																																																																		
DC0228	Pilecaps, 6nos. Grid 4-6/A-F + Ground Beams	9	02/06/06	13/06/06	DC0226*																																																																																																		
DC0232	Base slabs, Grid K-L	21	26/05/06	20/06/06	DC0224*																																																																																																		
DC0234	Base slabs, Grid 4-6/A-K	15	21/06/06	08/07/06	DC0232*																																																																																																		
DC0236	Structural works up to ground level	30	21/06/06	26/07/06	DC0232*																																																																																																		
DC0238	Ground floor slab	20	28/07/06	19/08/06	DC0220*, DC0236*																																																																																																		
Superstructure																																																																																																							
DC0242	Structural framing & slab at lev 11.80mPD	35	21/08/06	30/09/06	DC0238*																																																																																																		
DC0244	Concrete structure up to roof	24	02/10/06	30/10/06	DC0242*																																																																																																		
Internal Finishes																																																																																																							
DC0246	Internal Finishes	60	31/10/06	10/01/07	DC0244*																																																																																																		
E&M Installation																																																																																																							
DC0248	Pipework & drainage/ducts in structures	92	27/07/06	13/11/06	DC0236*																																																																																																		
External Finishes																																																																																																							
DC0252	External finishes	60	31/10/06	10/01/07	DC0244*																																																																																																		
External Works																																																																																																							
DC0260	External Works	52	12/01/07	13/03/07	DC0240*, DC0252*																																																																																																		
DC0262	Covered Walkway	120	15/02/07	07/07/07	DC0260*																																																																																																		
Key Date																																																																																																							
DC02K1	Completion of the Section 1	0		07/07/07	D004*, DC0262*																																																																																																		
BN03: Section 2 of Works																																																																																																							
Flow Division Pump Pit Nos. 1																																																																																																							
Foundation																																																																																																							
DC0360	Utilities Diversion	91	27/09/05	13/01/06																																																																																																			
DC0364	Permanent Mini-pile (4nos.)	24	01/02/06*	28/02/06																																																																																																			
Earthworks																																																																																																							
DC0368	Install temporary retaining wall (sheetpile)	30	02/03/06	06/04/06	DC0334, DC0360, DC0364*																																																																																																		
DC0370	Demolition of existing pipes No.1, temp closure	1	07/03/06	07/03/06	DC0368*																																																																																																		
DC0372	Excavation & temp. supporting	12	07/04/06	20/04/06	DC0366*, DC0368*																																																																																																		
Structure																																																																																																							
DC0376	Pilecaps	30	21/04/06	26/05/06	DC0372*																																																																																																		
DC0378	Concrete works & pipework	30	27/05/06	03/07/06	DC0376*																																																																																																		
External Works																																																																																																							
DC0382	Backfilling, remove temp. retaining wall	20	04/07/06	26/07/06	DC0378*																																																																																																		
DC0384	Installation, handrail/plate/ladder	23	27/07/06	22/08/06	DC0380*, DC0382*																																																																																																		
Flow Division Pit Nos. 2																																																																																																							
Foundation																																																																																																							
DC0334	Mini-piling, Pit 2, 4 nos.	24	01/02/06*	28/02/06	DC0330*																																																																																																		
Earthworks																																																																																																							
DC0342	Installation of temp. retaining wall	23	27/07/06	22/08/06	DC0382*																																																																																																		
DC0344	Demolition of existing pipes No.2, temp. closure	1	02/08/06	02/08/06	DC0342*, DC0368																																																																																																		
DC0346	Excavation & temp. supporting	30	23/08/06	27/09/06	DC0340*, DC0342*																																																																																																		
Structure																																																																																																							
DC0386	Pilecaps	20	28/09/06	21/10/06	DC0346*																																																																																																		
DC0388	Concrete work & pipework	20	27/09/05	21/10/05	DC0348*																																																																																																		
External Works																																																																																																							
DC0390	Backfill to Pit 2, remove temp. retaining wall	30	22/10/05	25/11/05	DC0388*																																																																																																		
DC0392	Installation, handrail/plate/ladder	30	26/11/05	31/12/05	DC0390*																																																																																																		

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Predecessors	2005												2006												2007												2008											
						E			O			N			D			J			F			M			A			M			J			J			A			S			O			N			D		
DC0524	Internal/External finishes	40	14/05/07	29/06/07	DC0437*, DC0522																																																
Switch Room																																																					
DC0532	Permanent Mini-pile (6nos.)	30	14/02/06*	20/03/06	DC0502																																																
DC0534	Excavation, blinding, pilecaps	30	12/10/06	15/11/06	DC0508*, DC0532																																																
DC0536	Structural works	30	16/11/06	20/12/06	DC0534*																																																
DC0538	Internal/External finishing	40	25/06/07	09/08/07	DC0472*, DC0536																																																
External Works																																																					
DC054000	External manholes/pits construction	60	10/08/07	22/10/07	DC0538*																																																
DC054200	Pipelaying, surround & connection	39	22/08/07	09/10/07	DC054000*																																																
DC056200	Backfill & reinstatement	40	10/10/07	24/11/07	DC0476, DC054200*																																																
Key Date																																																					
DC04K3	Completion of the Section 3	0		24/11/07	DC0441, DC056200*																																																
BN06: Section 4 of Works																																																					
Sludge Press House Extension																																																					
Foundation																																																					
DC0610	GI works (pre-drilling & reporting)	40	14/11/05	30/12/05	DC0502*																																																
DC0612	Preliminary mini piling (1nos)	30	31/12/05	03/02/06	DC0610*																																																
DC0614	Permanent Mini-piles (17nos.)	100	03/01/06	29/04/06	DC0612*																																																
DC0616	Proof load test	30	01/05/06	05/06/06	DC0614*																																																
DC0618	Utility Diversion	150	14/11/05	09/05/06	DC0610*																																																
External Works (FeCl3 tank relocation)																																																					
DC0622	Construction new FeCl3 storage tank	20	13/07/06	04/08/06	DC0676*																																																
DC0624	Relocate the FeCl3 storage tank	40	05/08/06	21/09/06	DC0622*																																																
Earthworks																																																					
DC0630	Demolition of existing FeCl Storage tank	30	22/09/06	27/10/06	DC0624*																																																
DC0632	Demolition of existing wall, Sludge Press House	30	28/10/06	01/12/06	DC0630*																																																
DC0634	Excavation & pilecaps, 10 nos.	30	02/12/06	08/01/07	DC0632*																																																
DC0636	Backfill & compaction	30	09/01/07	12/02/07	DC0634*																																																
Superstructure																																																					
DC0638	Structure up to 1st floor	50	13/02/07	12/04/07	DC0636*																																																
DC0640	Structure up to roof	50	13/04/07	12/06/07	DC0638*																																																
Internal Finishes																																																					
DC0644	Internal finishes works & openings	30	13/06/07	17/07/07	DC0640*																																																
DC0646	Fitting out: doors, railings etc.	50	30/07/07	26/09/07	DC0644, DC0648, DC0650*																																																
E&M installation																																																					
DC0648	Pipework & ducting	100	13/02/07	12/06/07	DC0638*																																																
External Finishes																																																					
DC0650	External finishes works	40	13/06/07	28/07/07	DC0640*																																																
Sludge Conditioning Tank No.3																																																					
Foundation																																																					
DC0666	GI works (pre-drilling & reporting)	20	21/11/05	13/12/05	DC0610*																																																
DC0670	Permanent Mini-piles (6nos.)	60	14/12/05	22/02/06	DC0666*																																																
DC0672	Proof load test (1/2Nos.)	30	01/05/06	05/06/06	DC0614*																																																
Earthworks																																																					
DC0676	Install temp. retaining walls (sheetpile)	30	07/06/06	12/07/06	DC0672*																																																
DC0678	Excavation	30	13/06/07	17/07/07	DC0640*, DC0676																																																
DC0680	Backfill & rockfill underneath pit	40	20/12/07	06/02/08	DC0658*																																																
Structure																																																					
DC0682	Concrete works	50	18/07/07	14/09/07	DC0640, DC0678*																																																
DC0684	Installation: handrailing/ladders/mesh etc.	0	15/09/07	14/09/07	DC0682*																																																
External Works																																																					
DC0656	Pipelaying of pipeline No.11 & 12	40	15/09/07	02/11/07	DC0682*																																																
DC0658	Connection to existing systems	40	03/11/07	19/12/07	DC0656*																																																
DC0660	Sump pit construction	44	07/02/08	28/03/08	DC0680*																																																
Sludge Conditioning Tank No.4																																																					
Foundation																																																					
DC0702	GI works (pre-drilling & reporting)	20	21/11/05	13/12/05	DC0666*																																																
DC0704	Permanent Mini-piles (6nos.)	60	14/12/05	22/02/06	DC0702*																																																
DC0706	Proof load test (1/2Nos.)	30	01/05/06	05/06/06	DC0614*																																																
Earthworks																																																					
DC0710	Install temp. retaining walls (sheetpile)	30	07/06/06	12/07/06	DC0706*																																																
DC0712	Excavation	30	13/06/07	17/07/07	DC0640*, DC0710																																																
DC0714	Backfill & rockfill underneath pit	40	20/12/07	06/02/08	DC0658*																																																
Structure																																																					
DC0716	Concrete works	50	18/07/07	14/09/07	DC0712*																																																
DC0718	Installation: handrailing/ladders/mesh etc.	40	15/09/07	02/11/07	DC0716*																																																
External Works																																																					
DC0724	Sump pit construction	44	07/02/08	28/03/08	DC0714*																																																
Dangerous Goods (cat.5) Storeroom																																																					
Earthworks																																																					
DC0732	Excavation, rockfill & blinding	20	09/07/07	31/07/07	DC0262*																																																
Superstructure																																																					
DC0734	Structures	50	01/08/07	28/09/07	DC0732*																																																
Finishing																																																					
DC0736	Internal & external finishing	45	29/09/07	22/11/07	DC0538, DC0734*																																																
Chemical Waste storeroom No.1 & 2																																																					
Earthworks																																																					
DC0742	Excavation, rockfill & blinding	20	09/07/07	31/07/07	DC0732*																																																
Superstructure																																																					
DC0744	Structures	50	01/08/07	28/09/07	DC0742*																																																
Finishing																																																					
DC0746	Internal & external finishing	45	29/09/07	22/11/07	DC0744*																																																
Key Date																																																					
DC06K4	Completion of the Section 4	0		28/03/08	D004*, DC0660*, DC0724*																																																
BN07: Section 5 of Works																																																					
Cover & Shelter to Existing Structure																																																					
DC0752	Shelter for UV channel	41	13/08/07	29/09/07	DC0756*, DC0758*																																																
DC0754	Cover for Inlet Pumping Station	24	13/06/07	10/07/07	DC0640*																																																
DC0756	Cover for Flume channels	28	11/07/07	11/08/07	DC0754*																																																

Appendix 3

Location of Works


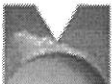


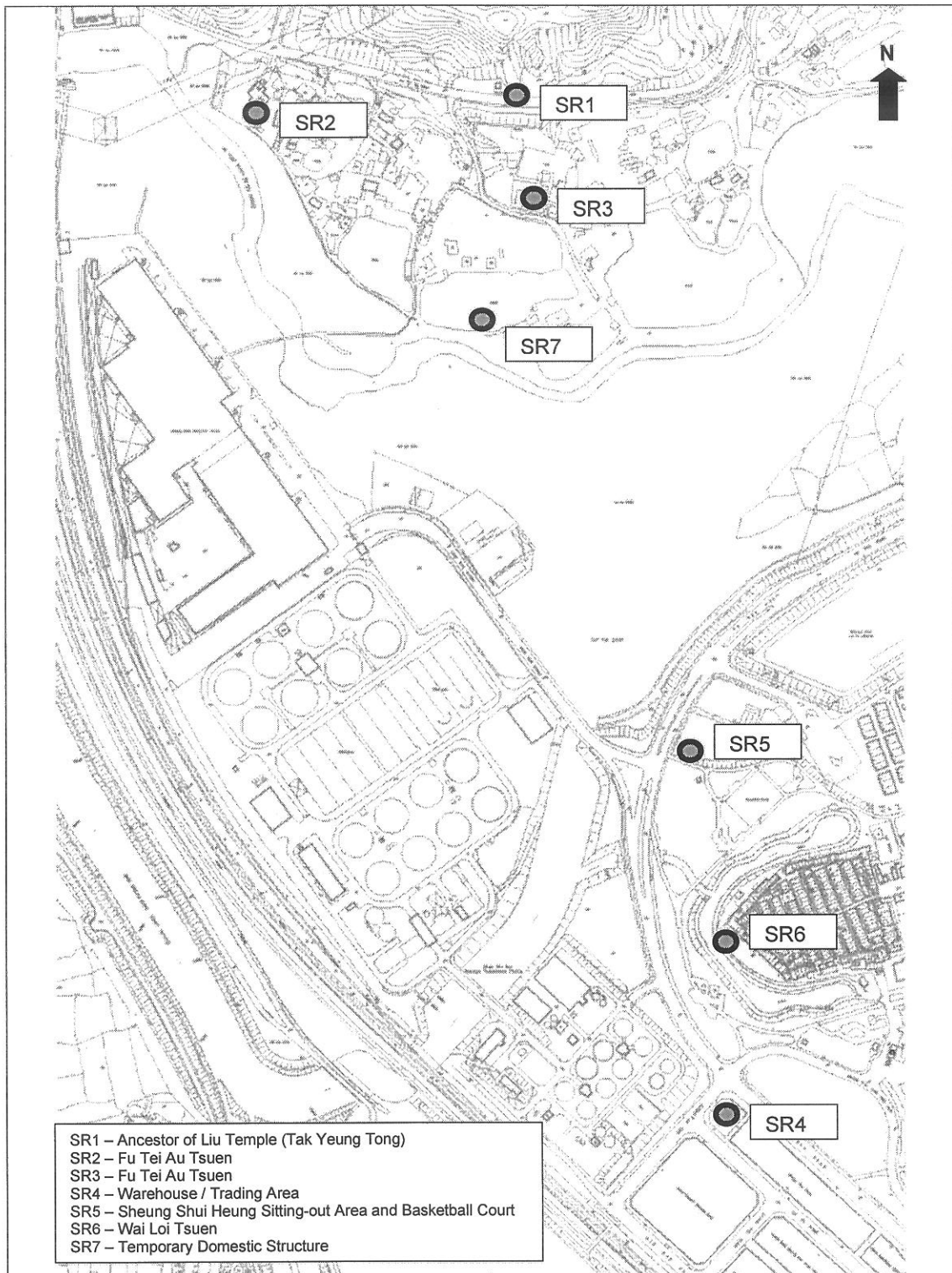
		<p>Title</p> <p>Expansion of Shek Wu Hui Sewage Treatment Works – Location of Portion/Works Area</p>	<p>Date</p> <p>Dec 2005</p>
			<p>Figure</p> <p>N.A.</p>
			<p>Scale</p> <p>NTS</p>



Appendix 4

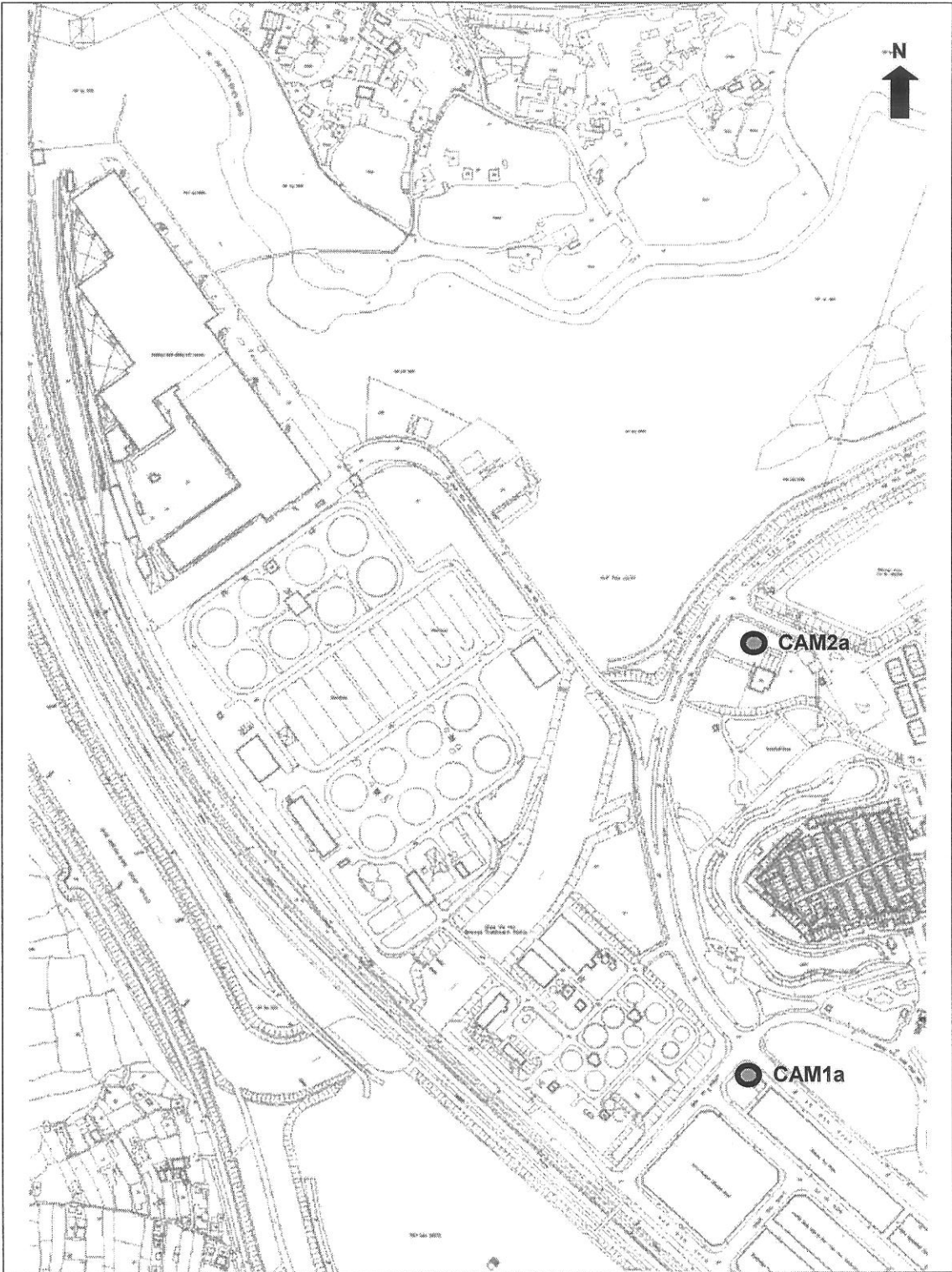
Project Area, Environmental Sensitive Receiver and Monitoring Location





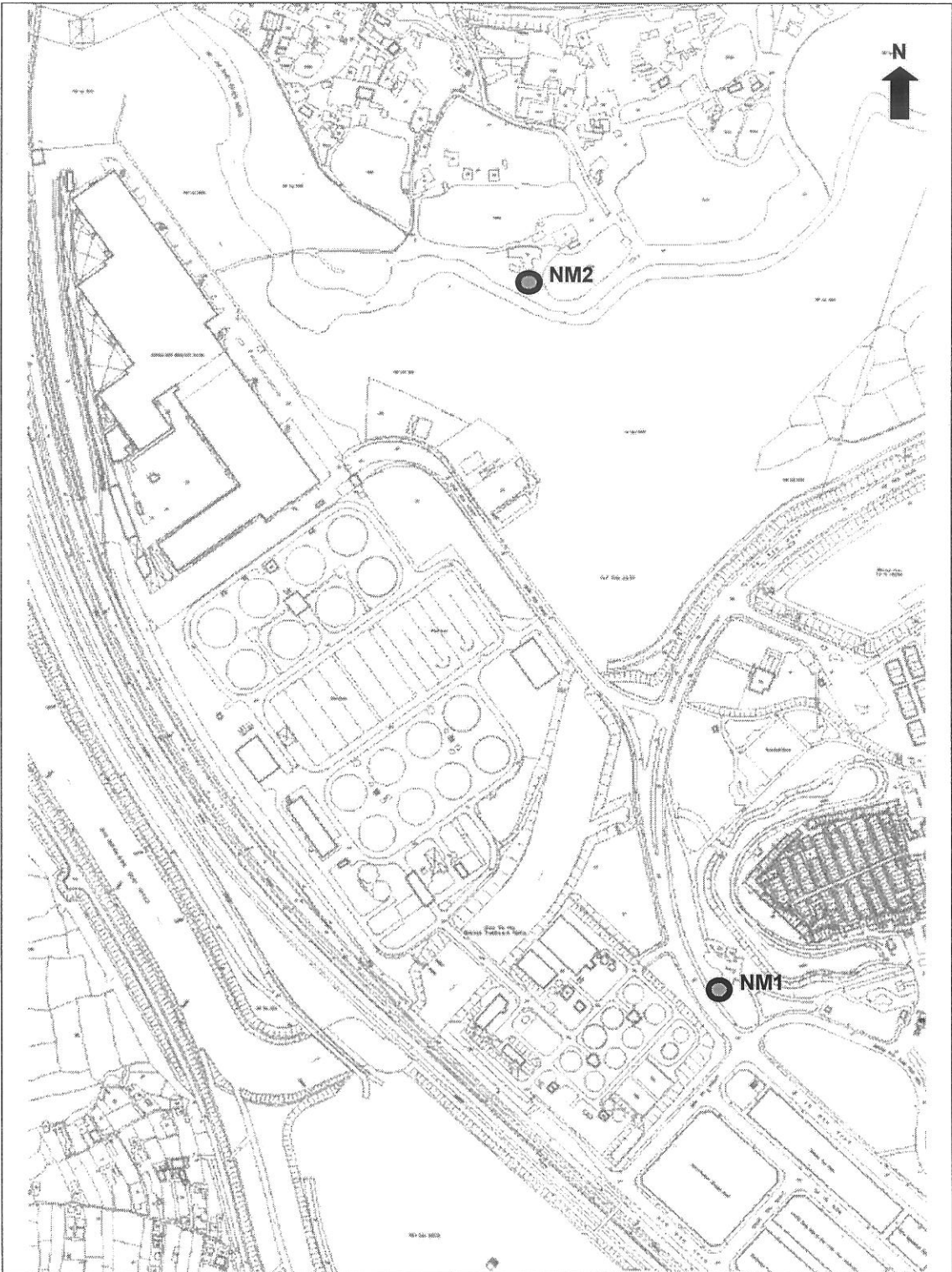
 Hyder Consulting	 MAEDA	Title	
		Expansion of Shek Wu Hui Sewage Treatment Works – Project Area	
		Date	
		Dec 2005	
		Figure	
		N.A.	
		Scale	
		NTS	





		Title Expansion of Shek Wu Hui Sewage Treatment Works – Environmental Sensitive Receiver	Date Dec 2005
			Figure N.A.
			Scale NTS



		Title Expansion of Shek Wu Hui Sewage Treatment Works – Location of Air Quality Monitoring Station	Date Dec 2005
			Figure N.A.
			Scale NTS



		Title Expansion of Shek Wu Hui Sewage Treatment Works – Location of Noise Monitoring Station	Date Dec 2005
			Figure N.A.
			Scale NTS

Appendix 5

Environmental Requirement and Implementation Status

IMPLEMENTATIONS STATUS OF MITIGATION MEASURES

Implementation Status for Air Quality Control

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex I S1.7.1	Dust mitigation measures stipulated in the <i>Air Pollution Control (construction Dust)</i> Regulation shall be incorporated to control dust emission from the Site. Notice shall be given to the authority prior to commencement of works.	Works sites / during construction period	Contractor	Properly Implemented	N/A

The section number in the Project Profile for Expansion of Shek Wu Hui Sewage Treatment works (Application No. DIR-121/2005)

Implementation Status for Water Quality Control

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 2 S2.4.4	The practice outlined in Practice Note for Professional Persons on Construction Site Drainage, Professional Person Environmental Protection Department, 1994 (ProPECC PN 1/94) including the use of sediment traps, wheel washing facilities for vehicles leaving the site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, disposal) procedures should be adopted to minimize the potential water quality impact from construction site runoff and various construction activities.	Works sites / During the construction period	Contractor	Properly Implemented	N/A
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed and internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of $0.1\text{m}^3\text{s}^{-1}$ a sedimentation basin of 30m^3 would be required and for a flow rate of $0.5\text{m}^3\text{s}^{-1}$ the basin would be 150m^3. The detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of construction. Ideally, construction works should be programmed to minimize surface excavation works during the rainy season (April to September). All exposed earth areas should be compacted and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means. 	Works sites / During the construction period	Contractor	Properly Implemented as appropriate	N/A

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage (Cont'd)</i></p> <ul style="list-style-type: none"> • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all trafficked areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storms events, especially for areas located near steep slopes. 	Works sites / During the construction period	Contractor	Properly implemented as appropriate	N/A

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing bay should be provided at every site exits and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. On-site drainage system should be equipped with oil interceptors to separate oil/fuel from contaminated storm water. 	Works site / During the construction period	Contractor	Properly implemented as appropriate	N/A
Annex 2 S2.4.4	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 100% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. 	Works site / During the construction period	Contractor	Properly Implemented as appropriate	N/A
Annex 2 S2.4.4	<p><i>Sewage from Construction Workforce</i></p> <ul style="list-style-type: none"> Sewage from construction workforce should be handled by portable chemical toilets or sewage holding tanks with the sewage regularly collected by a reputable sewage collector for disposal at, for example, SWHSTW. Sewage from on-site toilets should be diverted to and stored within sewage holding tanks for later disposal. 	Works site / During the construction period	Contractor	Properly implemented	N/A

The section number in the Project Profile for Expansion of Shek Wu Hui Sewage Treatment works (Application No. DIR-121/2005)

Implementation Status for Waste Management

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 3 S3.5.1	<p><i>Waste Reduction Measures of Construction Stage</i></p> <ul style="list-style-type: none"> • Measures recommended in the ETWB TCW No. 15/2003 should be followed to require the contractor to prepare and implement an enhanced Waste Management Plan (WMP) to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • For the demolition works, the contractor shall submit a method statement for the works as part of the WMP. The Contractor shall include in the method statement the sequence of demolition and the work programme to facilitate effective recovery of reusable and/or recyclable portions of the C&D materials at the earliest stage, so as to minimise the need for subsequent sorting. • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. • Separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors. • Any unused chemicals or those with remaining functional capacity shall be recycled. • Maximising the use of reusable steel formwork to reduce the amount of C&D material. • Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill. • Proper storage and site practices to minimise the potential for damage or contamination of construction materials. • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. • Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering. 	Work site / During the construction period	Contractor	Properly implemented as appropriate	N/A

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 3 S3.5.2 – S3.5.5	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> • Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility. • Training of site personnel in proper waste management and chemical waste handling procedures; • Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • A Waste Management Plan should be prepared and should be submitted to the engineer for approval; and • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed. • In order to monitor the disposal of C&D material at landfills and public filling facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. The measures recommended in ETWB TCW No. 31/2004 should be followed. 	Work site / During the construction period	Contractor	Properly Implemented	N/A
Annex 3 S3.5.6	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> • General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material; 	Work site / During the construction period	Contractor	Properly Implemented	N/A

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 3 S3.5.7	<p><i>Construction and Demolition Material</i></p> <ul style="list-style-type: none"> The C&D material generated from the site formation and demolition works should be sorted on-site into inert C&D material (that is, public fill) and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material comprising fill material should be reused on-site as backfilling material as far as practicable. C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill. A suitable area should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. 	Work site / During the construction period	Contractor	Properly Implemented	N/A
Annex 3 S3.5.8	<p><i>Chemical Wastes</i></p> <ul style="list-style-type: none"> When chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed waste collector to transport and dispose of the chemical wastes in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. 	Work site / During the construction period	Contractor	Would be implemented at later stages	N/A

The section number in the Project Profile for Expansion of Shek Wu Hui Sewage Treatment works (Application No. DIR-121/2005)

Implementation Status for Noise Control

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Status	Follow-up Action and Final Outcome
Annex 4 S4.7.1	Use of quiet PME	Work sites / During the construction period	Contractor	Properly Implemented	N/A
Annex 4 S4.7.3	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; • Silencers or mufflers on construction equipment should be utilised, if found necessary, to further reduce noise, and should be properly maintained during the construction phase; • Mobile plant should be sited as far away from NSRs as possible; • Machines and plant (such as trucks) 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 in one direction, should, where possible, be orientated so that the noise is directed away from nearby NSRs; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	Work sites / During the construction period	Contractor	Properly Implemented	N/A

The section number in the Project Profile for Expansion of Shek Wu Hui Sewage Treatment works (Application No. DIR-121/2005)

Appendix 6

Calibration Records

Annex 2 High Volume Air Sampler Calibration Worksheet

Project Title: Expansion of Shek Wu Hui Sewage Treatment Works
Monitoring Location: Sewage Pumping Station at j/o San Po Street and Po Wan Road (CAM1a)
Date: 10-Nov-05
Time: 13:15

Sampler Model:	GBM2000H1
Calibrator Orifice no.:	517N
Slope (m):	2.00063
Intercept (b):	0.007984
Correction coeff. (r)	0.999944
Serial No.:	0133

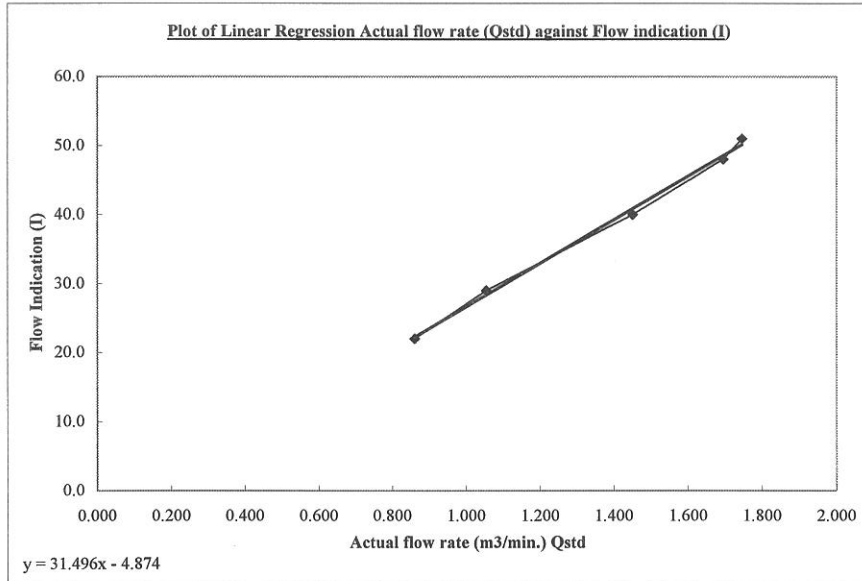
$$Flow(\text{corrected}) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	760.0
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	759.5
Calibration temp. (K) Ta:	298.9

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrected), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.3	3.501	1.746	51.0
2	11.6	3.400	1.695	48.0
3	8.5	2.910	1.451	40.0
4	4.5	2.117	1.054	29.0
5	3.0	1.729	0.860	22.0

Correlation Coefficient : 0.9982



Remark
 Qstd Range 0.6 - 1.7
 IHPa = 0.750062 mmHg

Calibrated by: **Kenneth H.C. Choi** (*[Signature]*) Date: 10/11/05

Checked by: **Adi Lee** (*[Signature]*) Date: 11/11/05

Annex 2 High Volume Air Sampler Calibration Worksheet

Project Title: Expansion of Shek Wu Hui Sewage Treatment Works
Monitoring Location: Flood Balancing Pumping Station at Po Wan Road near Wai Loi Tsuen (CAM2a)
Date: 10-Nov-05
Time: 10:15

Sampler Model:	GBM2000H1
Calibrator Orifice no.:	517N
Slope (m):	2.00063
Intercept (b):	0.007984
Correction coeff. (r)	0.999944
Serial No.:	0134

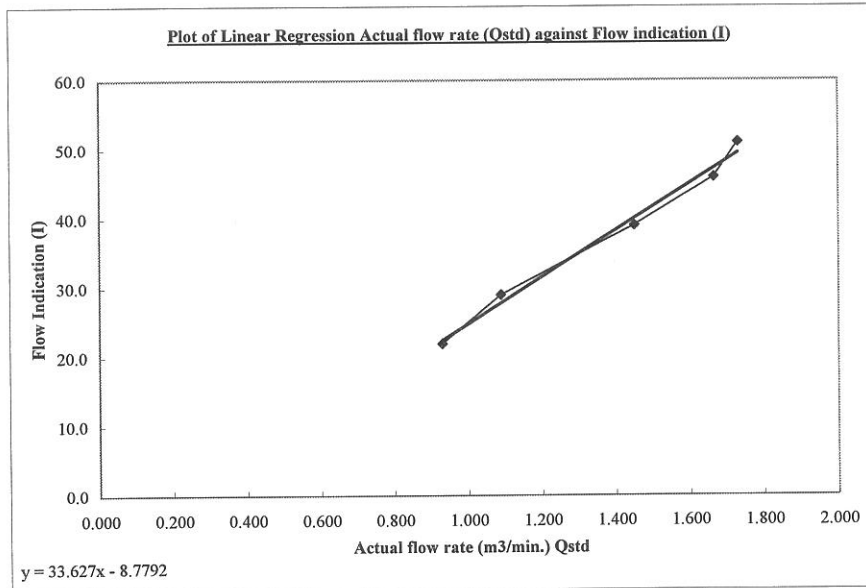
$$\text{Flow (corrected)} = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	760.0
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	759.5
Calibration temp. (K) Ta:	298.9


$$Qstd = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b \right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrected), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.1	3.472	1.732	51.0
2	11.2	3.341	1.666	46.0
3	8.5	2.910	1.451	39.0
4	4.8	2.187	1.089	29.0
5	3.5	1.867	0.929	22.0


Correlation Coefficient : 0.9943



Remark
 Qstd Range 0.6 - 1.7
 1HPa = 0.750062 mmHg

Calibrated by: **Kenneth H.C. Choi**
 ()

Date: 10/11/05

Checked by: **Adi Lee**
 ()

Date: 11/11/05

Annex 2 High Volume Air Sampler Calibration Worksheet

Project Title: Expansion of Shek Wu Hui Sewage Treatment Works
Monitoring Location: Sewage Pumping Station at j/o San Po Street and Po Wan Road (CAM1a)
Date: 22-Dec-05
Time: 9:15

Sampler Model:	GBM2000H1
Calibrator Orifice no.:	517N
Slope (m):	2.00063
Intercept (b):	0.007984
Correction coeff. (r)	0.999944
Serial No.:	1191

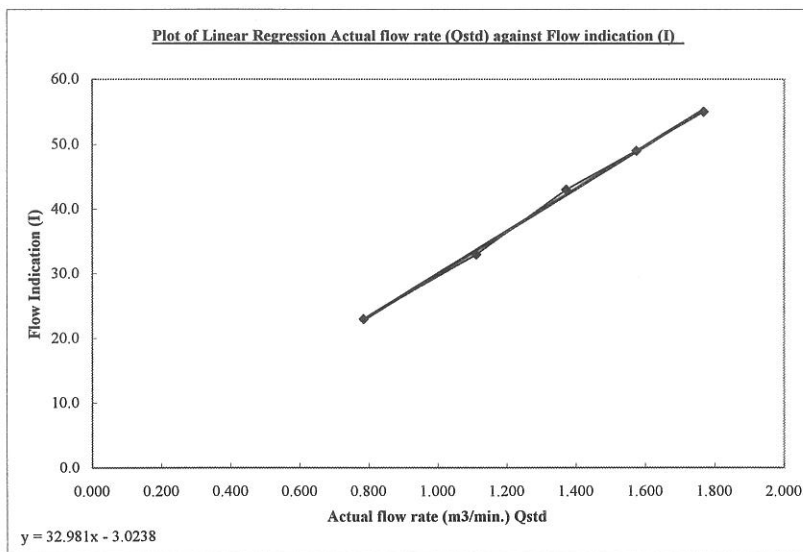
$$Flow\ (corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	760.0
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	759.5
Calibration temp. (K) Ta:	286.6


$$Q_{std} = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b \right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrected), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.1	3.546	1.768	55.0
2	9.6	3.158	1.575	49.0
3	7.3	2.754	1.373	43.0
4	4.8	2.233	1.112	33.0
5	2.4	1.579	0.785	23.0

Correlation Coefficient : 0.9991



Remark
 Qstd Range 0.6 - 1.7
 1HPa = 0.750062 mmHg

Calibrated by: Choi Hung Cho
 ()

Date: 22-Dec-05

Checked by: Adi Lee
 ()

Date: 23/12/05



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 16, 2005 Rootsometer S/N 9833620 Ta (K) - 294
 Operator Tisch Orifice I.D. - 517N Pa (mm) - 753.62

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	1.4090	3.2	2.00
2	NA	NA	1.00	0.9950	6.3	4.00
3	NA	NA	1.00	0.8910	7.8	5.00
4	NA	NA	1.00	0.8490	8.6	5.50
5	NA	NA	1.00	0.7010	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0008	0.7103	1.4178	0.9957	0.7067	0.8833
0.9967	1.0017	2.0051	0.9916	0.9966	1.2492
0.9946	1.1163	2.2418	0.9895	1.1106	1.3966
0.9936	1.1703	2.3512	0.9886	1.1644	1.4648
0.9882	1.4098	2.8356	0.9832	1.4026	1.7666
Qstd slope (m) = 2.02844			Qa slope (m) = 1.27017		
intercept (b) = -0.02391			intercept (b) = -0.01489		
coefficient (r) = 0.99999			coefficient (r) = 0.99999		
y axis = SQRT[H2O(Pa/760)(298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

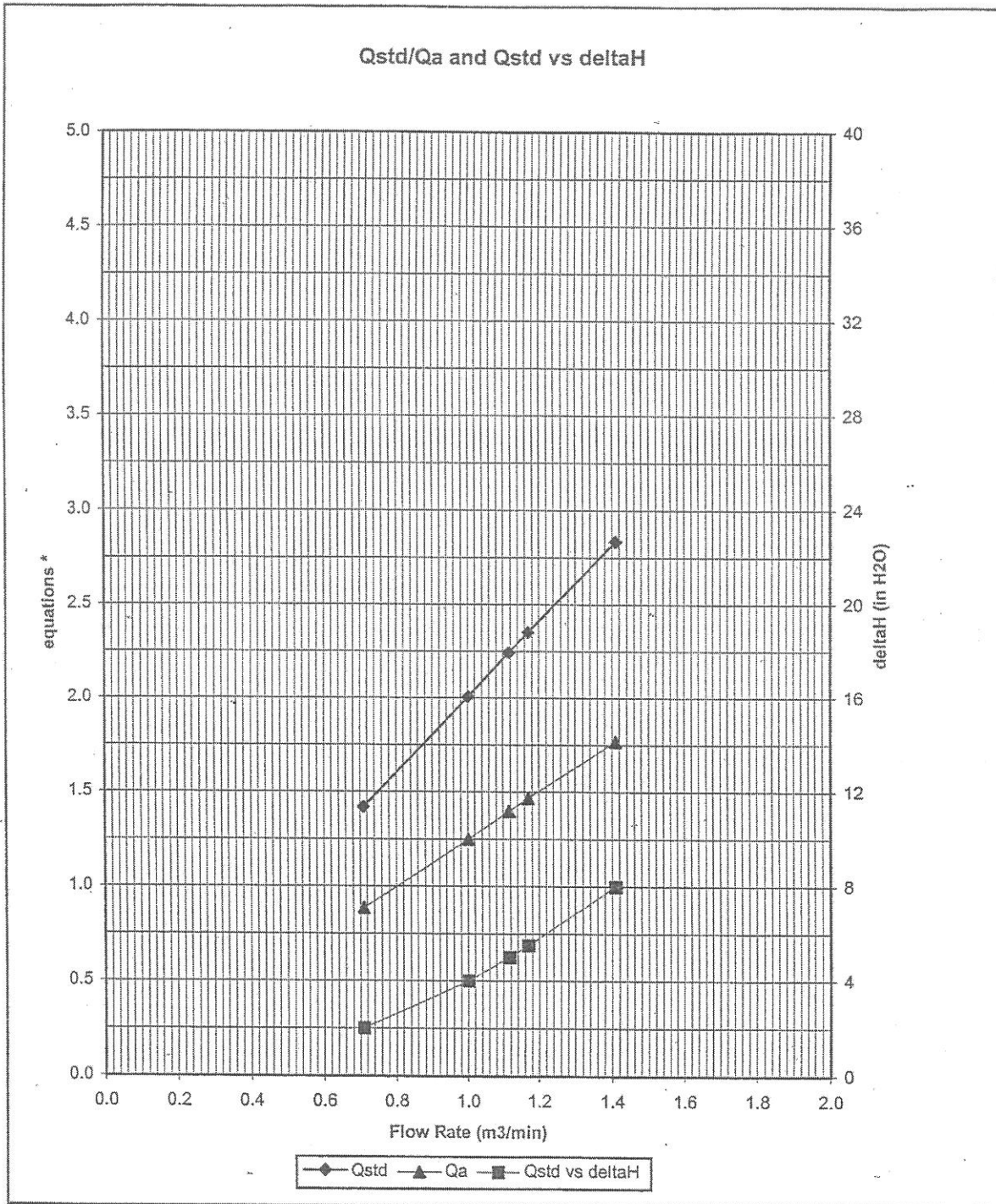
For subsequent flow rate calculations:

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



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

517N



Calibration Certificate

Certificate No. **55747**

Page 1 of 2 Pages

Customer : Hyder Consulting Limited

Address : 47/F., Hopewell Centre, 183 Queen's Road East, Wan Chai, Hong Kong

Order No. : Q52108

Date of receipt : 7-Dec-05

Item Tested

Description : Sound Level Calibrator

Manufacturer : B&K

Model : Type 4231

Serial No. : 1770806

Test Conditions

Date of Test : 15-Dec-05

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check according to customer's requirement.

Calibration procedure : F21, Z02.

Test Results

All results were within the manufacturer's, IEC 942 Class 1 specification.

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

Test equipment used:

<u>Equipment No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S014	53024	7-Jul-06	PRC-NIM
S024	S41431	22-May-06	PRC-NIM
S041	53972	26-Aug-06	HKGSCS

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 : 

Approved by : 
Dorothy Cheuk

Date: 15-Dec-05

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. **55747**

Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.0	± 0.3 dB
114	114.0	

Uncertainty : ± 0.2 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.005 kHz	± 2 %

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.4 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

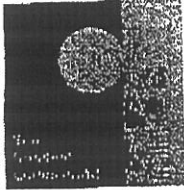
Remark : 1. UUT : Unit-Under-Test

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 : 1 004 hPa.

----- END -----



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C052104

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

has been calibrated for the specific items and ranges.

The results are shown in the Calibration Report No. C052104.

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukulwan Road,
Hong Kong*

Date of Issue : 2 June 2005

*Certified by : 
H C Chan*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



CERTIFICATE OF CALIBRATION

Certificate No. : 2KS051204-1

Page 1 of 2

Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
Type No. :	2238	,	4188
Serial No. :	2285726	,	2462195

Client :

Hyder Consulting Limited
47/F, Hopewell Centre,
183 Queen's Road East,
Wanchai, Hong Kong.

Calibration Conditions :

Air Temperature :	23.0	°C
Air Pressure :	101.1	kPa
Relative Humidity :	61	%

Test Specifications :

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

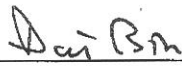
The measurements has been performed with the assistance of :
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain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

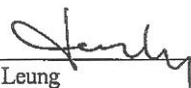
Test Result :

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

Date of Calibration : 08 December, 2005
Calibrated By :

Certificate issued : 09 December, 2005
Approved signatory :


Dai Bin


Jacky Leung

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CERTIFICATE OF CALIBRATION

Certificate No. : 2KS051204-1

Page 2 of 2

Results :

List of performed (sub) test with test status:

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

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

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

Calibration Equipment :

Brüel & Kjør's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999

Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Digital Multi-meter	Datron 1281	27361	05 Oct, 2005	HKSCS (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	11 Jul, 2005	NPL via B&K (UKAS)

Calibrated By : *Ant Bon*
Date : 08 December, 2005

Checked By : *Andy*
Date : 09 December, 2005

CERTIFICATE OF CALIBRATION

Certificate No. : 2KS050510-1

Page 1 of 2

Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
Type No. :	2238	,	4188
Serial No. :	2448529	,	2461996

Client :

Hyder Consulting Limited
47/F, Hopewell Centre,
183 Queen's Road East,
Wanchai, Hong Kong.

Calibration Conditions :

Air Temperature :	23.0	°C
Air Pressure :	101.1	kPa
Relative Humidity :	61	%

Test Specifications :

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

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

Test Result :

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

Date of Calibration : 30 May, 2005
Calibrated By :


Fox Ng

Certificate issued : 31 May, 2005
Approved signatory :


Jacky Leung

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

CERTIFICATE OF CALIBRATION

Certificate No. : 2KS050510-1

Page 2 of 2

Results :

List of performed (sub) test with test status:

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

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

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

Calibration Equipment :

Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999				
Digital Multi-meter	Datron 1281	27361	28 Sep, 2004	HKSCS (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1551627	22 Jun, 2004	NPL via B&K (UKAS)

Calibrated By : *Rox Ng*
Date : 30 May, 2005

Checked By : *Judy*
Date : 31 May, 2005

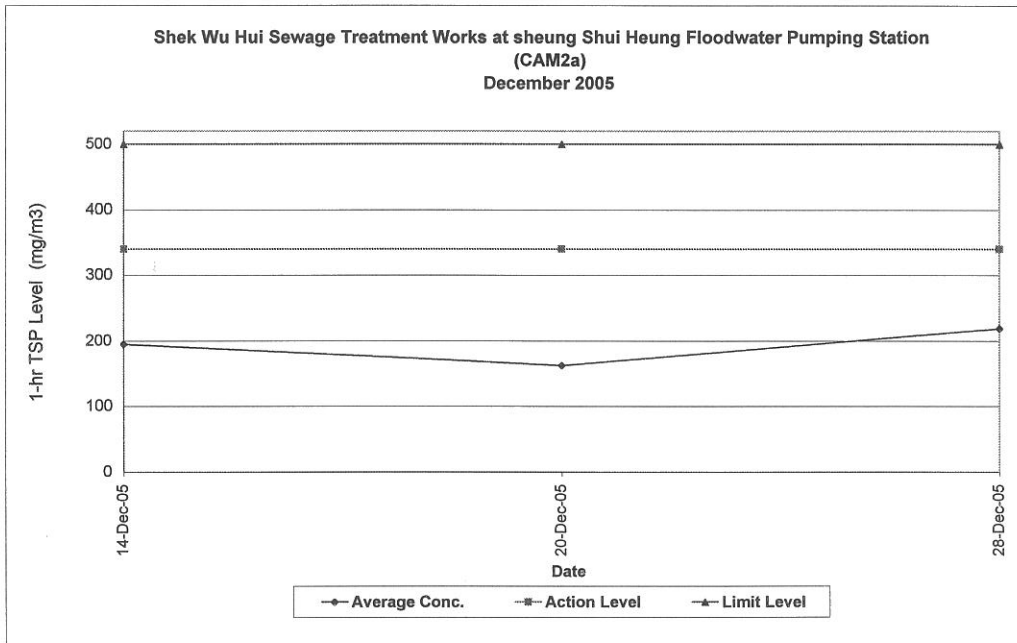
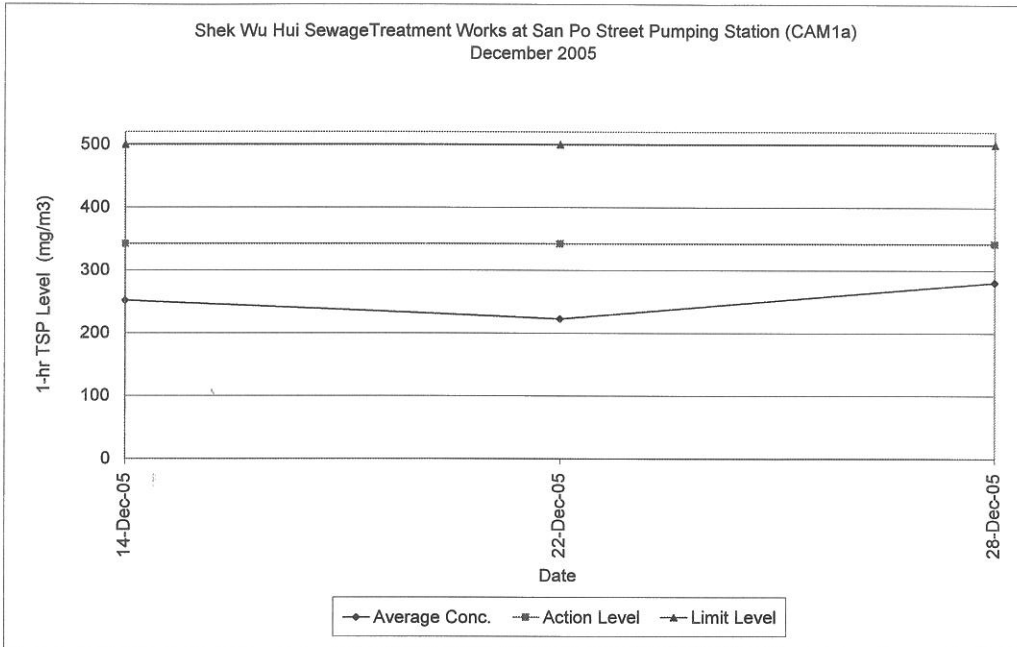
Appendix 7

Monitoring Results and Graphical Plots

Shek Wu Hui Sewage Treatment Works

Air Quality Impact Monitoring Results (1-Hour TSP)

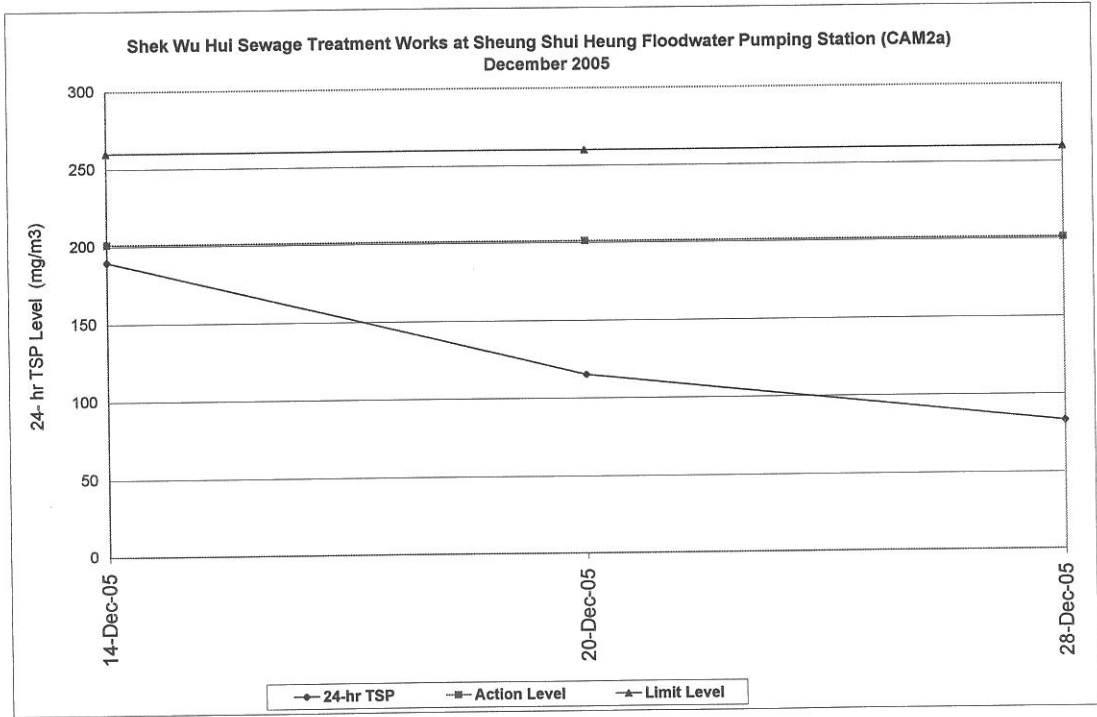
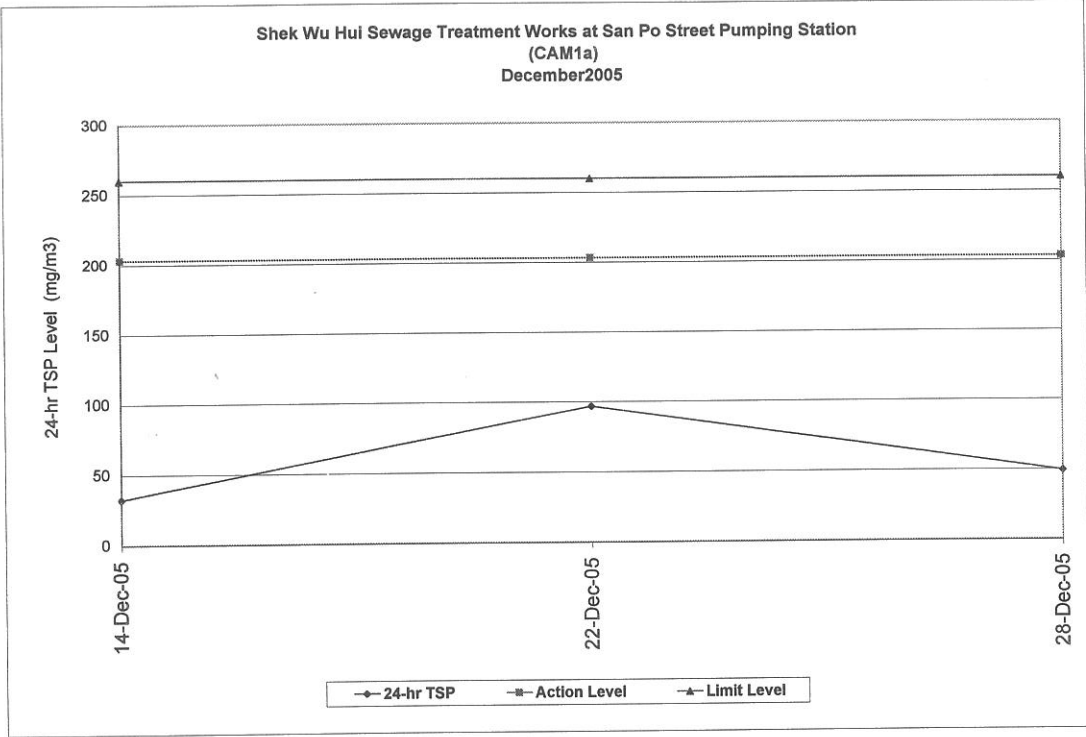
Location	Monitoring Date	Weather Conditions	Wind Speed (m/s)	Wind Direction	Temp (oC)	Time (mins)	Flow-I (m3/min)	Flow-F (m3/min)	Flow-avg (m3/min)	Volume (m3)	Weight (g)	1-hr TSP (ug/m3)	Average 1-Hr TSP (ug/m3)	Action/Limit Levels (ug/m3)	Remark						
San Po Street Pumping Station CAM1a	14-Dec-05	Cloudy	2.1	S	15.5	64.2	1.550895	1.519145	1.53502	98.55	0.0253	256.7	252.1	342.7/500							
		Cloudy	2.5	S	15.5	68.4	1.582645	1.519145	1.550895	106.08	0.0266	250.8									
		Cloudy	2	S	15.5	78.0	1.550895	1.519145	1.53502	119.73	0.0298	248.9									
	20-Dec-05	-	-	-	-	-	-	-	-	-	-	-	-			342.7/500	HVS was out of order				
		-	-	-	-	-	-	-	-	-	-	-									
		-	-	-	-	-	-	-	-	-	-	-									
	22-Dec-05	Cloudy	4	NE	13.6	60.6	1.456105	1.456105	1.456105	88.24	0.0214	242.5	222.7					342.7/500			
		Cloudy	2	NE	13.6	59.4	1.486426	1.456105	1.471265	87.39	0.0202	231.1									
		Cloudy	3.5	NE	13.6	59.4	1.486426	1.456105	1.471265	87.39	0.0170	194.5									
	28-Dec-05	Rainy	1.1	S	19.8	60.0	1.334823	1.304503	1.319663	79.18	0.0231	291.7	280.6							342.7/500	
		Rainy	2.7	S	19.8	58.8	1.304503	1.304503	1.304503	76.70	0.0222	289.4									
		Rainy	3.2	S	19.8	56.4	1.274182	1.243862	1.259022	71.01	0.0185	260.5									
Sheung Shui Heung Floodwater Pumping Station CAM2a	14-Dec-05	Cloudy	3	S	17	66.6	1.777714	1.718238	1.747976	116.42	0.0237	203.6	195.3	340.2/500							
		Cloudy	3.2	S	17	69.0	1.569548	1.599286	1.584417	109.32	0.0219	200.3									
		Cloudy	2.7	S	17	67.8	1.896666	1.747976	1.822321	123.55	0.0225	182.1									
	20-Dec-05	Fine	3.7	E	18.7	61.8	1.6885	1.658762	1.673631	103.43	0.0186	179.8	162.7			340.2/500					
		Fine	3.6	E	18.7	60.0	1.53981	1.53981	1.53981	92.39	0.0146	158.0									
		Fine	3.5	E	18.7	61.8	1.420858	1.420858	1.420858	87.81	0.0132	150.3									
	28-Dec-05	Rainy	0.4	S	19.3	58.2	1.658762	1.629024	1.643893	95.67	0.0220	229.9	219.1					340.2/500			
		Rainy	0.3	S	19.3	58.8	1.599286	1.569548	1.584417	93.16	0.0196	210.4									
		Rainy	0.5	S	19.3	57.0	1.510072	1.480334	1.495203	85.23	0.0185	217.1									



Shek Wu Hui Sewage Treatment Works

Air Quality Impact Monitoring Results (24-Hour TSP)

Location	Monitoring Date	Weather Conditions	Wind Speed (m/s)	Wind Direction	Temp (oC)	Timer-I	Timer-F	Time (mins)	Flow-I (m ³ /min)	Flow-F (m ³ /min)	Volume (m ³)	Weight-I (g)	Weight-f (g)	Weight. (g)	24-hr TSP (ug/m ³)	Action/Limit Levels (ug/m ³)	Remark	
San Po Street Pumping Station CAM1a	14-Dec-05	Cloudy	2	S	15.5	450429	452824	1437	1.55	1.55	2228.64	2.8834	2.956	0.0726	32.6	203.3/260		
	20-Dec-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-			HVS was out of order
	22-Dec-05	Cloudy	5.2	NE	13.6	352720	355116	1437.6	1.49	1.49	2136.89	2.8767	3.0838	0.2071	96.9			
	28-Dec-05	Rainy	1.2	S	19.8	355410	357805	1437	1.18	1.06	1613.15	2.8686	2.9483	0.0797	49.4			
Sheung Shui Heung Floodwater Pumping Station CAM2a	14-Dec-05	Cloudy	2.5	S	17	481275	483671	1437.6	1.78	1.75	2534.27	2.8644	3.3454	0.481	189.8	201.6/260		
	20-Dec-05	Fine	3.5	E	18.7	483978	486373	1437	1.78	1.78	2554.58	2.8839	3.1779	0.294	115.1			
	28-Dec-05	Rainy	0.2	S	19.3	488693	491090	1438.2	1.68	1.68	2413.15	2.8689	3.0698	0.2009	83.3			



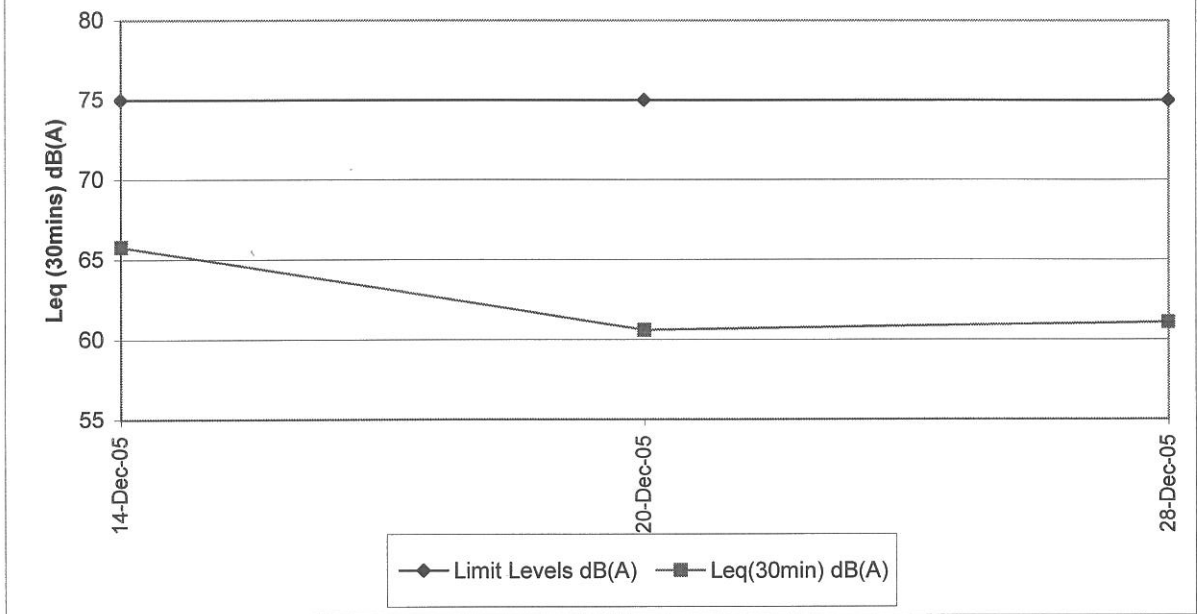
Shek Wu Hui Sewage Treatment Works

Noise Impact Monitoring Results

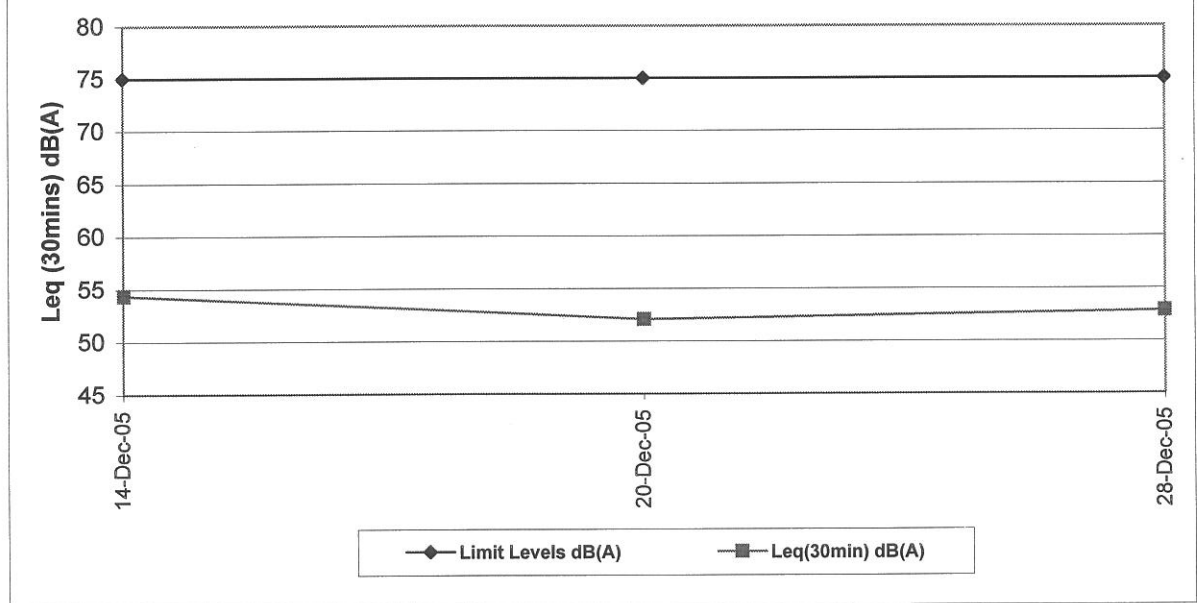
Monitoring Locations	Date	Weather Conditions	Temperature	Wind Speed	Wind Direction	Start Time	End Time	Limit Levels dB(A)	L _{eq(30min)}	L _{10(30min)}	L _{90(30min)}	Remark
			(°C)	(m/s)					dB(A)	dB(A)	dB(A)	
Wai Loi Tsuen NM1	14-Dec-05	Cloudy	14.7	0.9	S	10:00	10:30	75	65.8	67.5	58.5	
	20-Dec-05	Sunny	18.7	2.4	E	10:10	10:40		60.6	63.0	56.5	
	28-Dec-05	Cloudy	18.7	5	S	09:45	10:15		61.1	63.0	56.0	
Temporary Domestic Structure NM2	14-Dec-05	Cloudy	14.7	1	S	11:20	11:50	75	54.4	56.2	50.8	
	20-Dec-05	Sunny	18.7	2.9	E	11:20	11:50		52.1	54.0	47.3	
	28-Dec-05	Cloudy	18.7	5	S	10:45	11:15		52.9	54.0	47.3	

Note: A façade correction of 3 dB(A) was applied to each measurement result.

**Shek Wu Hui Sewage Treatment Works
Noise Impact Monitoring Results at Wai Loi Tsuen (NM1)
December 2005**



**Shek Wu Hui Sewage Treatment Works
Noise Impact Monitoring Results at Temporary Domestic Structure (NM2)
December 2005**



Appendix 8

QA/QC Results and Detection Limit

Client: Hyder Consulting Ltd
 Contact: Mr Coleman Ng
 Date of Issue: 30/12/2005
 Client Reference:

TSP MONTHLY QUALITY CONTROL REPORT



TOTAL P.01
P.01

ANALYSIS DESCRIPTION	Date of receipt	Initial Weight of the Lab Blank	Final Weight of the Lab Blank	Weighing Date	Weight Difference
UNIT					g
Limit Of Reporting					0.001
ALS Batch No					
HK47916	14/12/2005	3.6260	3.6261	16/12/2005	<0.0010
HK47994	16/12/2005	3.5382	3.5383	21/12/2005	<0.0010
HK48045	20/12/2005	3.5382	3.5383	21/12/2005	<0.0010
HK48088	21/12/2005	3.5383	3.5382	23/12/2005	<0.0010
HK48089	22/12/2005	3.5383	3.5382	23/12/2005	<0.0010
HK48121	24/12/2005	3.5383	3.5383	28/12/2005	<0.0010
HK48135	24/12/2005	3.5383	3.5383	28/12/2005	<0.0010
HK48175	28/12/2005	3.5383	3.5384	30/12/2005	<0.0010
HK48176	28/12/2005	3.5383	3.5384	30/12/2005	<0.0010

Hyder Consulting Limited
 3 JAN 2006
 Job No: 2006-186
 Site: [Handwritten]
 To: [Handwritten]
 Date received in lab: [Handwritten]
 For Action: [Handwritten] Date: [Handwritten]

[Signature]
 Godfrey K F Chan
 Supervisor - Inorganics

ALS Environmental

ALS Technichem (HK) Pty Ltd

P.01/01
 +852 2610 2021
 ALS TECHNICHEM
 03-JAN-2006 11:50

98%
 +852 2610 2021
 03-JAN-2006 11:50

Appendix 9

Upcoming EM&A Schedule

Expansion of Shek Wu Hui Sewage Treatment Works
Impact Monitoring Programme – January 2006 (Tentative)

Date		Air	Noise	Site Inspection
1 Jan 06	Sun			
2 Jan 06	Mon			
3 Jan 06	Tue	✓	✓	
4 Jan 06	Wed			✓
5 Jan 06	Thu			
6 Jan 06	Fri			
7 Jan 06	Sat			
8 Jan 06	Sun			
9 Jan 06	Mon	✓	✓	
10 Jan 06	Tue			
11 Jan 06	Wed			✓
12 Jan 06	Thu			
13 Jan 06	Fri			
14 Jan 06	Sat	✓		
15 Jan 06	Sun			
16 Jan 06	Mon			
17 Jan 06	Tue			
18 Jan 06	Wed			✓
19 Jan 06	Thu			
20 Jan 06	Fri	✓	✓	
21 Jan 06	Sat			
22 Jan 06	Sun			
23 Jan 06	Mon			
24 Jan 06	Tue			
25 Jan 06	Wed			✓
26 Jan 06	Thu	✓	✓	
27 Jan 06	Fri			
28 Jan 06	Sat			
29 Jan 06	Sun			
30 Jan 06	Mon			
31 Jan 06	Tue			

Note:

Shaded area indicates public holiday.

Air – Monitoring of three 1-hour TSP and 24-hour TSP at both CAM1a and CAM2a

Noise – Noise measurements at both CNM1 and CNM2 between 0700 and 1900 on normal weekdays

Expansion of Shek Wu Hui Sewage Treatment Works

Impact Monitoring Programme – February 2006 (Tentative)

Date		Air	Noise	Site Inspection
1 Feb 06	Wed	✓	✓	✓
2 Feb 06	Thu			
3 Feb 06	Fri			
4 Feb 06	Sat			
5 Feb 06	Sun			
6 Feb 06	Mon			
7 Feb 06	Tue	✓	✓	
8 Feb 06	Wed			✓
9 Feb 06	Thu			
10 Feb 06	Fri			
11 Feb 06	Sat			
12 Feb 06	Sun			
13 Feb 06	Mon	✓	✓	
14 Feb 06	Tue			
15 Feb 06	Wed			✓
16 Feb 06	Thu			
17 Feb 06	Fri			
18 Feb 06	Sat	✓		
19 Feb 06	Sun			
20 Feb 06	Mon			
21 Feb 06	Tue			
22 Feb 06	Wed			✓
23 Feb 06	Thu			
24 Feb 06	Fri	✓	✓	
25 Feb 06	Sat			
26 Feb 06	Sun			
27 Feb 06	Mon			
28 Feb 06	Tue			

Note:

Shaded area indicates public holiday.

Air – Monitoring of three 1-hour TSP and 24-hour TSP at both CAM1a and CAM2a

Noise – Noise measurements at both CNM1 and CNM2 between 0700 and 1900 on normal weekdays

Expansion of Shek Wu Hui Sewage Treatment Works
Impact Monitoring Programme – March 2006 (Tentative)

Date		Air	Noise	Site Inspection
1 Mar 06	Wed			✓
2 Mar 06	Thu	✓	✓	
3 Mar 06	Fri			
4 Mar 06	Sat			
5 Mar 06	Sun			
6 Mar 06	Mon			
7 Mar 06	Tue			
8 Mar 06	Wed	✓	✓	✓
9 Mar 06	Thu			
10 Mar 06	Fri			
11 Mar 06	Sat			
12 Mar 06	Sun			
13 Mar 06	Mon			
14 Mar 06	Tue	✓	✓	
15 Mar 06	Wed			✓
16 Mar 06	Thu			
17 Mar 06	Fri			
18 Mar 06	Sat			
19 Mar 06	Sun			
20 Mar 06	Mon	✓	✓	
21 Mar 06	Tue			
22 Mar 06	Wed			✓
23 Mar 06	Thu			
24 Mar 06	Fri			
25 Mar 06	Sat	✓		
26 Mar 06	Sun			
27 Mar 06	Mon			
28 Mar 06	Tue			
29 Mar 06	Wed			✓
30 Mar 06	Thu			
31 Mar 06	Fri	✓	✓	

Note:

Shaded area indicates public holiday.

Air – Monitoring of three 1-hour TSP and 24-hour TSP at both CAM1a and CAM2a

Noise – Noise measurements at both CNM1 and CNM2 between 0700 and 1900 on normal weekdays