



**M A E D A**

# Expansion of Shek Wu Hui Sewage Treatment Works

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Monthly EM&A Report No. 6  
for May 2006

June 2006

Report no: 01284R0152

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June 2006

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**Certified by Environmental Team Leader  
Sharifah Or**



# Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
<b>2</b>	<b>Introduction .....</b>	<b>2</b>
2.1	Basic Information.....	2
2.2	Management Structure and Project Organisation .....	2
2.3	Construction Programme .....	3
2.4	Works Undertaken during the Reporting Month .....	3
2.5	Status of Environmental Permit/ Licence .....	3
<b>3</b>	<b>Environmental Status .....</b>	<b>4</b>
3.1	Works Undertaken during the Month with Illustrations .....	4
3.2	Project Area, Environmental Sensitive Receivers and Monitoring Locations .....	4
<b>4</b>	<b>Brief Summary of EM&amp;A Requirements.....</b>	<b>4</b>
4.1	Monitoring Parameters .....	4
4.2	Action and Limit Levels .....	5
4.3	Event and Action Plans .....	5
4.4	Environmental Mitigation Measures and Requirements.....	8
<b>5</b>	<b>Implementation Status of Environmental Protection and Pollution Control/ Mitigation Measures.....</b>	<b>8</b>
<b>6</b>	<b>Monitoring Results.....</b>	<b>8</b>
6.1	Monitoring Methodology .....	8
6.2	Name of Laboratory, Types of Equipment Used and Calibration Details .....	10
6.3	Parameters Monitored.....	11
6.4	Monitoring Locations .....	11
6.5	Monitoring Date, Time, Frequency and Duration, Weather Condition and Other Factors .....	12
6.6	Results and Graphical Plots of Monitoring Parameters.....	13
6.7	Factors Which Might Affect the Monitoring Results.....	15
6.8	QA/QC Results and Detection Limit .....	15
<b>7</b>	<b>Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions .....</b>	<b>16</b>
7.1	Non-compliance of Action and Limit Levels .....	16
7.2	Complaints Received .....	16
7.3	Notifications of Summons and Successful Prosecutions.....	16
7.4	Review of the Reasons and Implications of Non-compliance, Complaints, Summons and Prosecutions.....	16
7.5	Site Inspection .....	16

<b>8</b>	<b>Waste Management Status.....</b>	<b>18</b>
<b>9</b>	<b>Future Key Issues .....</b>	<b>18</b>
<b>10</b>	<b>Comments, Recommendations and Conclusions.....</b>	<b>19</b>

#### List of Tables

Table 2-1	Key Personnel Contact Names and Telephone Number for the Project	3
Table 2-2	Status of Permit/Licence for the Project	3
Table 4-3	Event/ Action Plan for Air Quality Monitoring	7
Table 4-4	Event/ Action Plan for Noise Monitoring	8
Table 6-5	Monitoring Equipment	11
Table 6-6	Air Quality Monitoring Locations	11
Table 6-7	Noise Monitoring Locations	11
Table 6-8	Sampling Schedule of Air Quality Monitoring	13
Table 6-9	Sampling Schedule of Noise Monitoring	13
Table 6-10	Air Quality Monitoring Results	15
Table 6-11	Noise Monitoring Results	15
Table 7-12	Summaries of Site Inspections and Recommendations	17

#### List of Appendices

<a href="#">Appendix 1</a>	<a href="#">Project Organization</a>
<a href="#">Appendix 2</a>	<a href="#">Construction Programme</a>
<a href="#">Appendix 3</a>	<a href="#">Location of Works</a>
<a href="#">Appendix 4</a>	<a href="#">Project Area, Environmental Sensitive Receiver and Monitoring Location</a>
<a href="#">Appendix 5</a>	<a href="#">Action and Limit Levels</a>
<a href="#">Appendix 6</a>	<a href="#">Environmental Requirement and Implementation Status</a>
Appendix 7	Calibration Records
<a href="#">Appendix 8</a>	<a href="#">Monitoring Results and Graphical Plots</a>
<a href="#">Appendix 9</a>	<a href="#">QA/QC Results and Detection Limit</a>
<a href="#">Appendix 10</a>	<a href="#">Cumulative Number of Complaint, Notification of Summon and Successful Prosecution</a>
<a href="#">Appendix 11</a>	<a href="#">Upcoming EM&amp;A Schedule</a>

# 1 Executive Summary

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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 May 2006.

## Breaches of Action and Limit Levels

### *Noise*

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

### *1-hr TSP*

No non-compliance of action/limit level was recorded at all monitoring stations for 1-hr TSP during the reporting month.

### *24-hr TSP*

No non-compliance of action/limit level was recorded at all monitoring stations for 24-hr TSP during the reporting month.

## Complaints Log

During this reporting month, no environmental complaint was received.

## Notifications of Any Summons and Successful Prosecutions

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

## Reporting Changes

There was no reporting change during the reporting month.

## Future Key Issues

The construction activities for the coming three months will include the construction of mini piles, cable/ utilities diversion, relocation of FeCl<sub>3</sub> tank, excavation, pile cap construction, sheet piling work, sub-structure and superstructure construction, pipe works and internal/ external finishing.

## 2 Introduction

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### 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 HILL Hong Kong Limited (formerly known as 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 HILL	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:

- Excavation
- Cable / utilities diversion
- Construction of bund wall of FeCl<sub>3</sub> tank
- Construction of chemical waste storage area

## 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 was made to EPD pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation (Form NA was submitted)	22 Sep 2005	N/A	N/A	N/A
Registration as a chemical waste producer	26 Sep 2005	4 Nov 2005	WPN: 5213-624-M2446-06	N/A
Effluent Discharge Licence	11 Nov 2005	20 Dec 2005	Licence No.: W5/11287/1	19 Dec 2010
Application for Exemption Account for Disposal of Construction Waste	12 Dec 2005	Approved by EPD on 31 Dec 05	Application No.: RN/00134	25 Sep 2008

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

## 3 Environmental Status

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### 3.1 Works Undertaken during the Month with Illustrations

The site has been subdivided into different Works Areas/Portions as illustrated in Appendix 3. Cable/ utilities diversion was undertaken at Portion 2. Excavation was undertaken at Portions 1, 2 and 3. Construction of bund wall for FeCl<sub>3</sub> tank was undertaken at Portion 1. Construction of chemical waste storage area was undertaken at Portion 3.

### 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

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### 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 should be measured at the selected air monitoring locations in accordance with the EM&A Manual. These two parameters are aimed to indicate the impacts of construction dust on air quality.

#### 4.1.2 Noise

The construction noise level should be 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, three consecutive  $L_{eq(5\text{ min})}$  are employed for comparison with the Noise Control Ordinance (NCO) criteria.

Other noise parameters such as  $L_{10}$  and  $L_{90}$  should also be 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. Appendix 5 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 4-3 should be triggered immediately.

### 4.2.2 Noise

The Action and Limit Levels for construction noise are defined in Appendix 5. If valid non-compliance of the criteria occurs, actions in accordance with the Event and Action Plan in Table 4-4 should be implemented. If construction works are undertaken during the restricted hours, a construction noise permit under NCO shall be obtained by the Contractor.

## 4.3 Event and Action Plans

The Event and Action Plans for air quality and noise monitoring are shown in Tables 4-3 and 4-4, respectively.

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

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

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	discuss the remedial actions to be taken; <ul style="list-style-type: none"> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>		until the exceedance is abated.	

**Table 4-3 Event/ Action Plan for Air Quality Monitoring**

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

EVENT	Action			
	ET	IEC	ER	CONTRACTOR
	keep IEC, EPD and ER informed of the results; <ul style="list-style-type: none"> <li>If exceedance stops, cease additional monitoring.</li> </ul>			

**Table 4-4** 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 6.

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

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The status of the mitigation measures implemented by the Contractor is listed in Appendix 6.

## 6 Monitoring Results

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### 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 followed 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 was 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 was collected and returned to the laboratory for drying in a desiccator followed by accurate weighing. Respective 1-hour and 24-hour TSP levels were calculated from the ratio of the mass of particulates retained on the filter paper to the total volume of air sampled.

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

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

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., was 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 would be carried out every two months. Five-point calibration would be carried out every six months. All the calibration data were converted into standard temperature and pressure condition.

Orific HVS Calibration Kit model G2523 was used for the calibration of HVSs. Calibration of calibration kit would be carried out annually. Appendix 7 presents the monitoring equipment calibration records.

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 was checked using an acoustic calibrator (B&K Type 4230) generating a known sound pressure level at a known frequency. Measurements were 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 would be calibrated annually. Appendix 7 presents the monitoring equipment calibration records.

Table 6-5 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
High Volume Sampler	Anderson	GBM 2000 H1	0138
High Volume Sampler	Anderson	GBM 2000 H1	1097
High Volume Sampler	Anderson	GBM 2000 H1	1101
Orific HVS Calibration Kit	Tisch Environmental	G2523	517N

**Table 6-5 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, IEC and EPD prior the commencement of monitoring. These alternative locations for air quality monitoring are summarised in Table 6-6 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 6-6 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 6-7 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	4 May 2006	1400-1700	3 X 1 hour	Fine
	10 May 2006	0953-1259	3 X 1 hour	Sunny
	16 May 2006	0935-1238	3 X 1 hour	Cloudy
	23 May 2006	1011-1307	3 X 1 hour	Cloudy
	27 May 2006	0910-1210	3 X 1 hour	Rainy
CAM2a	3 May 2006*	0915-1211	3 X 1 hour	Fine
	4 May 2006	1420-1720	3 X 1 hour	Fine
	10 May 2006	1005-1306	3 X 1 hour	Sunny
	16 May 2006^	1030-1335	3 X 1 hour	Cloudy
	23 May 2006	1000-1258	3 X 1 hour	Cloudy
	27 May 2006	0920-1220	3 X 1 hour	Rainy
24-hr TSP				
CAM1a	4 May 2006	1700-1700	24 hours	Fine
	10 May 2006	1330-1330	24 hours	Sunny
	16 May 2006	1242-1241	24 hours	Cloudy
	23 May 2006	1310-1310	24 hours	Cloudy
	27 May 2006	1210-1210	24 hours	Rainy
CAM2a	3 May 2006*	1211-1209	24 hours	Fine
	4 May 2006	1720-1720	24 hours	Fine
	10 May 2006	1301-1300	24 hours	Sunny
	16 May 2006^	1347-1345	24 hours	Cloudy



Station	Date	Time	Duration	Weather Condition
	23 May 2006	1300-1300	24 hours	Cloudy
	27 May 2006	1220-1220	24 hours	Rainy

Note:

\* Replacement of the dust monitoring scheduled on 29 April 2006.

^ The HVS was replaced before the monitoring on 16 May 2006 due to the mechanical failure of the previous HVS.

**Table 6-8 Sampling Schedule of Air Quality Monitoring**

Station	Date	Time	Duration	Weather Condition
NM1	4 May 2006	1425-1455	30 minutes	Fine
	10 May 2006	1000-1030	30 minutes	Sunny
	16 May 2006	1045-1115	30 minutes	Cloudy
	23 May 2006	1015-1145	30 minutes	Cloudy
NM2	4 May 2006	1630-1700	30 minutes	Fine
	10 May 2006	1116-1146	30 minutes	Sunny
	16 May 2006	1140-1210	30 minutes	Cloudy
	23 May 2006	1125-1155	30 minutes	Cloudy

**Table 6-9 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 6-10 and detailed in Appendix 8. Graphical plots of the monitoring results are also provided in Appendix 8.

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	4 May 2006	74.2	103.4	342.7/500	203.3/260
		97.0			
		109.3			
	10 May 2006	110.0	93.7		
		107.0			
		54.2			
16 May 2006	189.9	79.6			

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
		153.3			
		178.4			
		158.5			
	23 May 2006	168.6	178.6		
		151.6			
		224.1			
	27 May 2006	76.6	53.6		
		114.3			
		227.0			
3 May 2006 <sup>#</sup>	102.6				
	72.0				
	4 May 2006	112.1	75.9		
115.2					
110.1					
10 May 2006	96.9	48.4			
	59.9				
	61.5				
16 May 2006 <sup>^</sup>	162.8	67.1			
	228.2				
	161.1				
23 May 2006	125.0	138.4			
	128.1				
	111.5				
27 May 2006	140.9	34.8			
	58.6				

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
		85.7			

Note:

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

# Replacement of the dust monitoring was scheduled on 29 April 2006.

^ The HVS was replaced before the monitoring on 16 May 2006 due to the mechanical failure of the previous HVS.

**Table 6-10 Air Quality Monitoring Results**

Noise monitoring results are summarised in Table 6-11 and detailed in Appendix 8. Graphical plots of the monitoring results are also provided in Appendix 8. As all monitoring was conducted at free field condition, a facade correction of 3dB(A) was applied to each of the noise measurements.

Station	Date	Measured Noise Level, dB(A)			Limit Level for $L_{eq}(30 \text{ min})$ , dB(A)
		$L_{90}(30\text{min})$	$L_{10}(30\text{min})$	$L_{eq}(30\text{min})$	
NM1	4 May 2006	54.6	59.6	58.1	75
	10 May 2006	54.5	64.3	60.7	
	16 May 2006	57.6	64.3	61.9	
	23 May 2006	57.1	63.0	60.7	
NM2	4 May 2006	50.8	53.5	52.6	
	10 May 2006	52.1	59.1	56.4	
	16 May 2006	49.3	54.1	52.6	
	23 May 2006	51.8	57.7	55.7	

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 6-11 Noise Monitoring Results**

## 6.7 Factors Which Might Affect the Monitoring Results

Dust from other sources such as roads with the movement of heavy vehicles in the vicinity of the monitoring stations would affect the air quality monitoring results.

## 6.8 QA/QC Results and Detection Limit

The quality assurance (QA) / quality control (QC) results and detection limit are shown in Appendix 9.

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

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### 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 Appendix 10.

### 7.3 Notifications of Summons and Successful Prosecutions

No notification of summons or successful prosecution was recorded during the reporting month. The cumulative number of notifications of summons and successful prosecutions are shown in Appendix 10.

### 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 during the reporting period.

#### 7.4.2 Complaints, Summons and Prosecutions

No complaints, summons and prosecutions were recorded during the reporting period.

### 7.5 Site Inspection

Weekly site inspections were carried out on 3, 8, 17 and 26 May 2006. 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 7-12.

Inspection Date	Deficiencies	Recommendation	Status	Note / Reminder
3 May 06	1. Silty water overflowing onto the DSD road was observed.	1. The Contractor was requested to carry out mitigation measures to avoid silty water entering the storm drain.	1. Concrete bund was constructed to prevent muddy water overflowing into the drain on the DSD road.	1. Due to the heavy rainstorm in the morning, stagnant water was observed at several areas. The Contractor was reminded to inspect and maintain both the surface channels and mosquito control measures after rainstorms.
8 May 06	1. There was no preventive action provided for the gullies at Portion 2 to avoid sand/silt washing into the drainage system. 2. There was a potential of mosquito breeding inside the wheel washing bay at Portion 3.	1. The Contractor was recommended to provide sand bags around the gullies. 2. The Contractor was recommended to provide larvicide for the stagnant water.	1. The gullies at Portion 2 were sealed by concrete as observed on 17 May 2006. 2. Larvicide was applied to the wheel washing bay and recycling of stagnant water was observed during the inspection on 17 May 2006.	N.A.
17 May 06	1. There was not enough protection for the gullies at Portion 2. Silty water would potentially enter the storm drains.	1. The Contractor was reminded to provide more sand bags and replace the broken sand bags to protect the drains.	1. The protection of gullies at Portion 2 was improved by providing more sand bags surrounding the gullies as observed on 26 May 2006.	1. The Contractor was reminded to inspect and maintain the mosquito and sediment control after rainstorm.
26 May 06	1. Water was observed in drip tray at the storage area near site office. 2. Stagnant water was observed on tarpaulin sheet at the storage area near the site office.	1. The Contractor was reminded to remove the water in drip tray. 2. The Contractor was reminded to remove the stagnant water.	1. Water in drip tray was drained as observed on 1 June 2006. 2. Stagnant water was removed as observed on 1 June 2006.	N.A.

**Table 7-12 Summaries of Site Inspections and Recommendations**

The site audit conducted by IEC was carried out on 26 May 2006 and the Contractor has undertaken appropriate actions in response to the IEC's findings.

EPD conducted site visit on 29 May 2006 and inspected the effluent discharge, the chemical storage area and the ticket of chemical waste collection. They noted that the concrete cover for sealing two gullies at Portion 2 was broken and no muddy

water was discharged to the gullies at the time of inspection. They recommended the Contractor to seal the gullies to avoid muddy water discharge.

There was no outstanding issue or deficiency for the observations arising during the weekly site inspections. However, the Contractor was reminded to inspect and maintain the surface channels and mosquito control measures after rainstorm.

## 8 Waste Management Status

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

- Inert C&D materials – 2,338 m<sup>3</sup>; and
- General Refuse – 52m<sup>3</sup>.
- Chemical waste – 20L

C&D materials were disposed of at Tuen Mun Area 38 public fill, in which 63m<sup>3</sup> were delivered to Tuen Mun Area 38 sorting facilities. General refuse was collected and disposed of at NENT Landfill properly. Chemical waste was produced and collected by licensed chemical waste collector during 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

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The construction activities for the coming three months are summarized below:

- Construction of mini piles
- Cable / utilities diversion
- Relocation of FeCl<sub>3</sub> tank
- Excavation
- Pile cap construction
- Sheet piling work
- Sub-structure and superstructure construction
- Pipe works
- Internal / external finishing

The upcoming EM&A schedule for the future three months is shown in Appendix 11.

## 10 Comments, Recommendations and Conclusions

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EM&A works have been undertaken in May 2006 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 or successful prosecution was recorded during the reporting month.

Four 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

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## Project Organization

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# Appendix 2

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Construction Programme

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# Appendix 3

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Location of Works

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# Appendix 4

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Project Area, Environmental Sensitive Receiver and  
Monitoring Location

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# Appendix 5

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## Action and Limit Levels

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# Appendix 6

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## Environmental Requirements and Implementation Status

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# Appendix 7

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## Calibration Records

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# Appendix 8

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## Monitoring Results and Graphical Plots

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# Appendix 9

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QA/QC Results and Detection Limit

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# Appendix 10

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Cumulative Statistics of Complaint, Notification of  
Summons and Successful Prosecution

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# Appendix 11

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Upcoming EM&A Schedule

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