



**CONTRACT NO. DE/2005/03**

**SUPPLY AND INSTALLATION OF ELECTRICAL AND MECHANICAL EQUIPMENT FOR  
EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS**

***ENVIRONMENTAL MONITORING AND AUDIT***  
**MONTHLY EM&A REPORT NO. 36**

**MAY 2009**

*for*

**Biwater Man Lee Limited**

*Submitted by*

**Kingsford Environmental (H.K.) Ltd.**

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## TABLE OF CONTENTS

Approval & Distribution Sheet  
Executive Summary

- 1 Introduction
- 2 Work Activities during the Month
- 3 Status of Environmental Protection
- 4 Site Inspections
- 5 Summary of Deficiencies and Remedial Actions
- 6 Summary of Complaints and Remedial Actions
- 7 Summary of Summons and Prosecutions
- 8 Monthly Environmental Auditing for the Coming Months
- 9 Conclusions and Comments

### Tables:

- Table 1 Work Activities for May 2009  
Table 2 Status of Permits and Licenses  
Table 3 Type and Quantity of Waste Disposed of in May 2009

### Appendices :

- 1 Contact Information of Key Environmental Personnel
- 2 Sensitive Receivers, Locations of Monitoring and Control Stations, Action and Limited Levels and Event/Action Plan
- 3 Construction Programme
- 4 Environmental Requirements and Implementation Status
- 5 Site layout plan and Site Inspection Checklists
- 6 Deficiency Investigation Reports
- 7 Complaint Reports
- 8 Summons and Prosecutions Records
- 9 Permits

## APPROVAL & DISTRIBUTION SHEET

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## EXECUTIVE SUMMARY

This is the thirty-sixth monthly Environmental Monitoring and Audit (EM&A) Report for the Drainage Services Department Contract No. DE/2005/03 entitled "Supply and Installation of Electrical and Mechanical Equipment for Expansion of Shek Wu Hui Sewage Treatment Works". This report contains the results of the environmental monitoring for verification of mitigation implementation conducted by the Environmental Team (ET) of the E&M Contractor as required in the contract.

For the environmental monitoring activities, Action and Limit (A/L) Levels are defined levels of impact recorded which represent levels at which a prescribed response is required. Action Limit is an indication of a deteriorating ambient environment for which appropriate remedial actions are likely to be necessary to prevent environmental quality from falling outside the Limit Levels. If these are exceeded, construction works should not be preceded without appropriate remedial action, including critical review of the methods. Baseline monitoring was conducted by the Civil Contractor in December 2005 (Report No. 01284R0012).

The activities in this month consisted of E&M installation of feed pumps & associated pipe work at Filter Press House Extension & underground sludge conditioning tanks (Section 9). The air ductworks for Deodorizers are under fabrication & installation (Section 10). The defects rectification of SAS thickening system in SAS Consolidation House (Section 5) and BR5 unit & associated equipment (Section 6, 7 & 8) was in progress.

Site inspections by an Environmental Team were carried out on 6, 12, 18 and 27 of May 2009 with the representatives of the Engineer. Joint site audit was conducted on 7 May 2009 with the representatives of Engineer, IEC, E&M Contractor and ET.

No deficiency was found during the site inspections in May 2009. Work activities and mitigation measures were in compliance with the environmental protection regulations, contract requirement and environmental permit.

The monthly EM&A meeting was held on 7 May 2009 with all of the parties (DSD, E&M contractors, ETs, and the IEC) involved.

There was no EPD visit during May 2009 and no abatement notice or prosecution was raised by EPD.

There was no complaint received or notification of summons or successful prosecution in May 2009.

There was no reporting change during the reporting month.

The planned activities for June 2009 - August 2009 as regards E&M equipment are mainly the Installation and Testing & Commissioning (if required) for i) Filter Press at New Press House Extension, ii) Sludge Conditioning Tank Nos.3 & 4, iii) Ferric Chloride Storage Tank at Bunded Area, iv) Deodorizers at Inlet Work & Sludge Holding Tanks, v) Waste Gas Burner: Defects for SAS Thickening System in SAS Consolidation House (Section 5) and BR5 unit & associated equipment (Section 6, 7 & 8) are scheduled to rectify:

## 1 Introduction

This is the thirty-sixth monthly Environmental Monitoring and Audit (EM&A) Report for the Drainage Services Department Contract No. DE/2005/03 entitled "Supply and Installation of Electrical and Mechanical Equipment for Expansion of Shek Wu Hui Sewage Treatment Works". The report was prepared by the Environmental Team, Kingsford Environmental (H.K.) Ltd., of the E&M Contractor, Biwater Man Lee Limited. This report is submitted to the Client, the Drainage Services Department, and the Independent Environmental Checker, CH2M HILL Hong Kong Limited, for the project. In addition, this report will be submitted to EPD in accordance with the requirement of the environmental permit (EP218-2005) and EM&A manual of the project.

This report only presents the results of the environmental auditing of the project activities regarding the E&M equipment installation conducted in the month of May 2009. The auditing works include regular site inspections for verification of the mitigation measures implementation as recommended in the EM&A Manual and as detailed in the Project Profile for the project.

The contact information for the key personnel is shown in Appendix 1.

The job nature of the E&M contractor is mainly for installation of E&M equipment, all hand-held's breakers, bulldozer, concrete lorry mixer, dump truck and hand-held's poker, vibratory would not be frequently used so that the impact from noise and dust would be low. Also, the distance to the nearest sensitive receivers is long. Therefore, the potential environmental impact imposed to the sensitive receivers would be low. Routine environmental monitoring would be considered when deficiency is found or complaint is received.

The sensitive receivers, locations of monitoring and control stations, action and limited levels and event/action plan are shown in Appendix 2.

## 2 Work Activities during the Month

The activities in this month consisted of E&M installation of feed pumps & associated pipe work at Filter Press House Extension & underground sludge conditioning tanks (Section 9). The air ductworks for Deodorizers are under fabrication & installation (Section 10). The defects rectification of SAS thickening system in SAS Consolidation House (Section 5) and BR5 unit & associated equipment (Section 6, 7 & 8) was in progress.

The activities and dates of occurrence of each activity are summarized below in Table 1. The Construction Program is shown in Appendix 3.

**Table 1: Work Activities for May 2009**

<i>SAS Consolidation House</i>	
Defects rectification of SAS thickening system	7 May 08 – 6 May 09*
<i>Air Blower House No.2</i>	
Installation of E&M equipment	1 Apr 08 – 3 Nov 08*
Testing and commissioning of Air Blowers	4 Nov 08 – 28 Nov 08*
Defects rectification of Air Blowers	29 Nov 08 – 29 Nov 09*
<i>Bioreactor No.5</i>	
Installation of E&M equipment	18 Mar 08 – 30 Oct 08*
Testing and commissioning	1 Nov 08 – 23 Feb 09*
Defects rectification of Bioreactor No.5	24 Feb 09 – 23 Feb 10*
<i>Flow Division Pump Pit No.1 (FD1)</i>	
Installation of E&M equipment	18 Mar 08 – 30 Oct 08*
Testing and commissioning	1 Nov 08 – 23 Feb 09*
Defects rectification of FD1	24 Feb 09 – 23 Feb 10*
<i>Flow Division Pump Pit No.2 (FD2)</i>	
Installation of E&M equipment	8 Sept 08 – 15 Nov 08*
Testing and commissioning	16 Nov 08 – 23 Feb 09*
Defects rectification of FD2	24 Feb 09 – 23 Feb 10*

<b><i>Switch Room for RAS/SAS Pumping Station No. 2</i></b>	
Installation of E&M equipment	11 Apr 08 – 15 Nov 08*
Testing and commissioning	8 Nov 08 – 23 Feb 09*
Defects rectification of Switchroom	24 Feb 09 – 23 Feb 10*
<b><i>RAS/SAS Pumping Station No.2</i></b>	
Installation of E&M equipment	28 Apr 08 – 15 Nov 08*
Testing and commissioning	16 Nov 08 – 23 Feb 09*
Defects rectification of RAS/SAS P/S	24 Feb 09 – 23 Feb 10*
<b><i>Final Sedimentation Tank (FST) Nos. 9 &amp; 10</i></b>	
Installation of E&M equipment	11 Apr 08 – 14 Dec 08*
Testing and commissioning	15 Dec 08 – 23 Feb 09*
Defects rectification of FST No.9 & 10	24 Feb 09 – 23 Feb 10*
<b><i>Sludge Press House Extension</i></b>	
Installation of E&M equipment	18 July 08 – 17 May 09*
<b><i>Deodourizers &amp; Waste Gas Burner</i></b>	
Installation of E&M equipment	18 July 08 – 17 July 09*

\* *Scheduled dates only for completion of the activities*

### **3 Status of Environmental Protection**

#### *Air Quality*

Appropriate mitigation measures for the activities are in place. Plastic covers with stakes/weights are readily available and used for covering of exposed material for control of dust. Water spray is available for dust suppression, if necessary.



### Water Quality

The plastic covers for exposed soil, etc. are available for minimization of silt in the run-off water during rainstorms, if necessary. Sandbags will be provided for preventing surface run-off discharging directly into public drain area. Note that wastewater generated from the off-site project office was collected in a storage tank and tanker-away regularly by a licensed collector.

Anti-mosquito preventive measures, e.g. regular removal of stagnant water (if possible) and/or spraying larvicide (if necessary) at any site area, are taken for mosquito control and prevention, particularly for control of Dengue Fever and Japanese Encephalitis diseases.

### Noise

Plants with low noise emittance are preferred and are operated / maintained to reduce noise. In this reporting month, work was carried out during normal working hours (7am – 7pm Monday to Saturday) or otherwise specified in the contract. In the event of a schedule change such that construction work would be performed during the restricted hours (11pm – 7am and during general public holidays including Sundays), a Construction Noise Permit would be required.

### Waste / Chemical Management

The construction waste materials are preferred to be removed promptly from the site. Recyclable hard inert C&D materials should be taken to a public filling area (Tuen Mun Area 38) whereas the non-inert C&D waste should be disposed of to WENT landfill at Nim Wan or other disposal site approved by the control authority. Note that the inert C&D materials should be reduced, reused and recycled if possible, before disposal. Any substance identified as chemical waste would be disposed of properly by a licensed collector. A trip ticket system for the disposal of C&D waste should be conducted as required by the Waste Management Plan. Rubbish bins are provided on-site for collecting general refuses as necessary. The general refuse would be removed regularly and disposed to landfills by a licensed collector. A proper record of each waste disposal, including the new bar-coded disposal delivery form, would be kept to verify proper handling and disposal.

The status of permits and licenses is summarized in Table 2 and shown in Appendix 9.

**Table 2: Status of Permits and Licenses**

Description	Permit No.	Valid Period		Ref.	Status
		From	To		
Environmental Permit	EP-218/2005	16/06/05	End of Project	PS1.39*	Granted
Register as Chemical Waste Producer	WPN 5517-624-B1 039-02	14/06/07	End of Project	Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354)	Granted

\* Particular Specification of Contract No. DE/2005/03

The implementation status of mitigation measures from EM&A Manual is attached in Appendix 4.

#### 4 Site Inspections

Site inspections by an Environmental Team were carried out on 6, 12, 18 and 27 of May 2009 with the representatives of the Engineer. Joint site audit was conducted on 7 May 2009 with the representatives of Engineer, IEC, E&M Contractor and ET.

The inspected site locations were marked on a site layout plan and the location code was recorded on the checklist. The site layout plan is shown in Appendix 5.

The activities in this month consisted of E&M installation of feed pumps & associated pipework at Filter Press House Extension & underground sludge conditioning tanks (Section 9). The air ductworks for Deodorizers are under fabrication & installation (Section 10). The defects rectification of SAS thickening system in SAS Consolidation House (Section 5) and BR5 unit & associated equipment (Section 6, 7 & 8) was in progress.

No deficiency was found during this month. Inspection checklists are annexed in Appendix 5. Whereas all of the environmental aspects were inspected in the work areas, the most applicable descriptions are addressed below.

Air Quality

No dusty material was found from the site areas or activities this month.

Water Quality

No surface run-off was observed during the site inspections this month. Note that the regular inspections and preventive measures for the mosquitoes are being conducted and recorded at least weekly by the Contractor.

Noise

During this month, the work activities and equipment used did not generate significant noise. In this reporting month, no work was carried out during general public holidays including Sundays.

Waste / Chemical Management

Refuse bins and waste storage/sorting area were provided for the collection of general refuse and sorting the C&D materials.

No packaging waste or construction waste was disposed of to landfill by the licensed waste collector this month.

The type and quantity of waste for final disposal during May 2009 is shown in Table 3. Note that a record of each disposal is being kept.

**Table 3: Type and Quantity of Waste Disposed of in May 2009**

Types of Waste	Quantity
Inert C&D Material	Nil
Non-inert C&D Waste	Nil
Chemical Waste	Nil
General Refuse*	1.32 m <sup>3</sup>

\* Included the site office

## **5 Summary of Deficiencies and Remedial Actions**

There was no deficiency noted from the site inspections in May 2009.

## **6 Summary of Complaints and Remedial Actions**

There was no EPD visit in May 2009 and no abatement notice nor prosecution was raised by EPD.

No Complaint was received in May 2009. In the event of complaints, the procedure for handling of the complaints is detailed in the EM&A Manual.

## **7 Summary of Summons and Prosecutions**

No notification of summons and prosecutions occurred in May 2009.

## **8 Monthly Environmental Auditing for the Coming Months**

The planned activities for June 2009 - August 2009 as regards E&M equipment are mainly the Installation and Testing & Commissioning (if required) for i) Sludge Press House Extension, ii) Sludge Conditioning Tank Nos.3 & 4, iii) Ferric Chloride Storage Tank at Bunded Area, iv) Deodourizers at Inlet Work & Sludge Holding Tanks, v) Waste Gas Burner;

Defects for SAS Thickening System in SAS Consolidation House (Section 5) and BR5 unit & associated equipment (Section 6, 7 & 8) are scheduled to rectify.

The planned activities for the coming three months (June 2009 – August 2009) as regards E&M equipment are to carry out installation, testing and commissioning for the following system/area:-

- Sludge Press House Extension
- Sludge Conditioning Tank Nos. 3 and 4
- Bunded Area for Ferric Chloride Storage Tank.
- Deodourizers at Inlet Work & Sludge Holding Tanks
- Waste Gas Burner

The anticipated environmental issues for June 2009 – August 2009 will be as follows:-

- Sludge Press House Extension
  - The anticipated environmental issues will be related to:-
    - the waste disposal from the E&M equipment installation.



- Sludge Conditioning Tank Nos. 3 and 4
  - The anticipated environmental issues will be related to:-
    - the waste disposal from the E&M equipment installation.
- Bunded Area for Ferric Chloride Storage Tank
  - The anticipated environmental issues will be related to:-
    - waste disposal from the E&M equipment installation.
- Deodourizers at Inlet Work & Sludge Holding Tanks
  - The anticipated environmental issues will be related to:-
    - waste disposal from the E&M equipment installation.
- Waste Gas Burner
  - The anticipated environmental issues will be related to:-
    - waste disposal from the E&M equipment installation.

## **9 Conclusions and Comments**

The required weekly site inspections have been conducted. No deficiency was noted during the reporting month.

## **Appendix 1**

### **Contact Information of Key Environmental Personnel**

### Contact Information for Key Personnel

Name	Title	Telephone	Fax
Mr. K. K. Cheung (DSD)	Engineer's Representative	2594-7338	2827-8532
Mr. Ben Yuen (BML)	Deputy Site Agent	2671-2350	2671-2351
Mr. Kenneth Leung (BML)	Deputy Site Agent	2671-2350	2671-2351
Mr. S. M. Ho (BML)	Site Waste Manager/ Co-ordinator	2671-2350	2671-2351
Mr. Stanley Lau (KEL)	ET Leader	2612-2817	2614-7012
Mr. Tony Yeung (KEL)	ET Site Inspector	2612-2817	2614-7012
Mr. Y. T. Tang (CH2M)	The Independent Environmental Checker	3105-8686	2891-0305



**Appendix 2**

**Sensitive Receivers,  
Location of Monitoring and Control Station,  
Action and Limited Levels  
and  
Event/Action Plan**

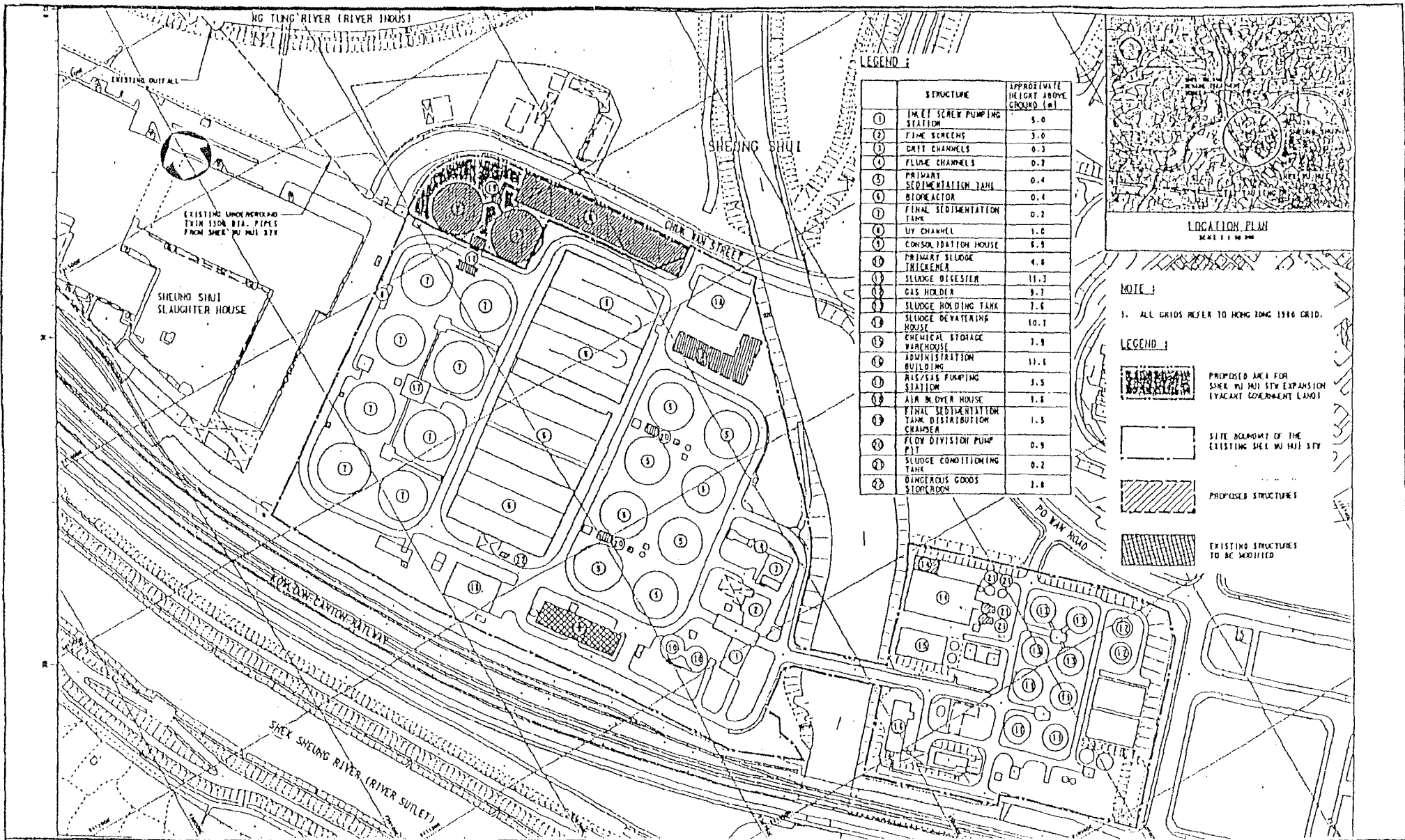


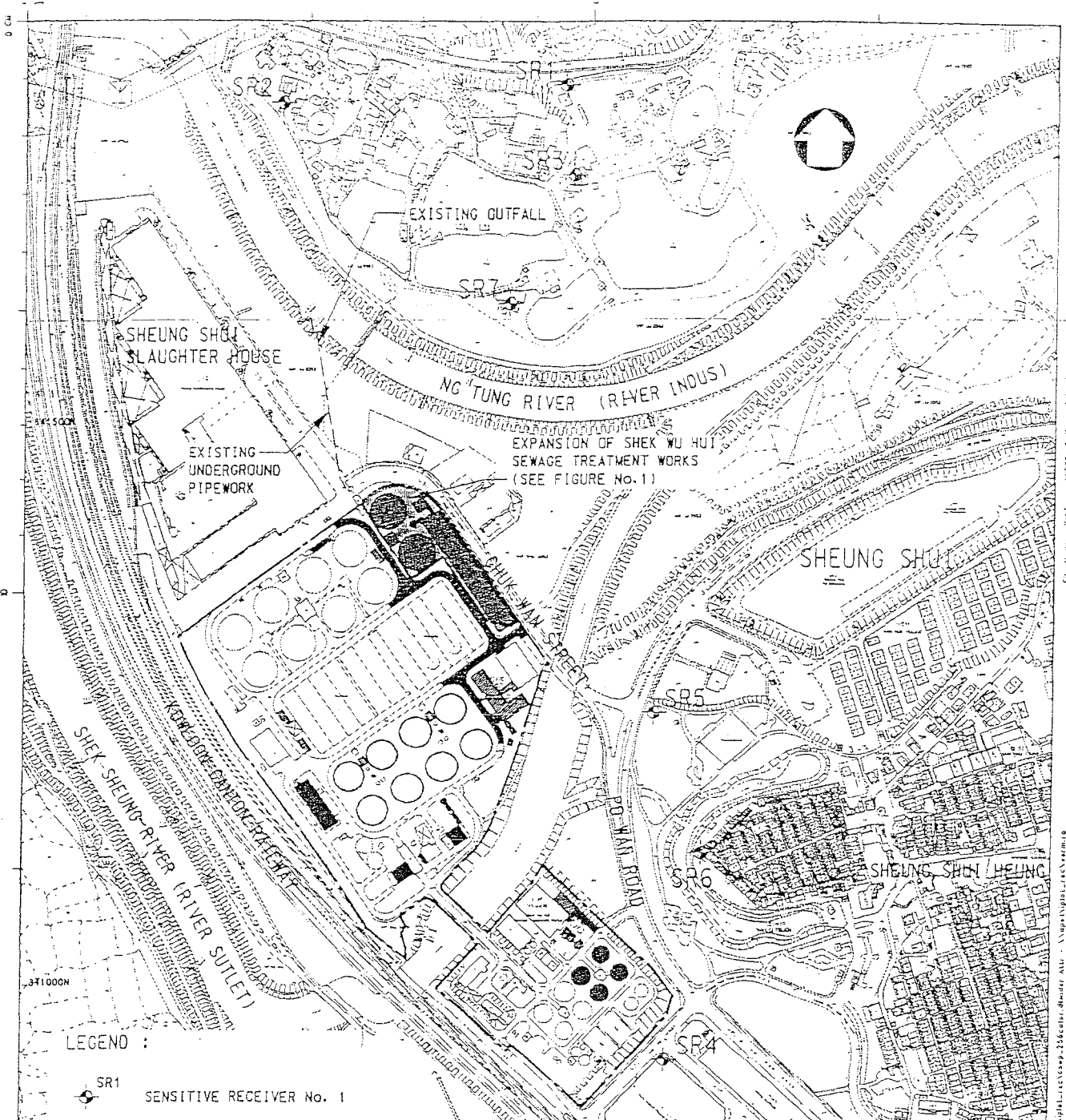
Figure 1- Expansion of Shek Wu Hui Sewage Treatment Works – General Layout of Shek Wu Hui Sewage Treatment Works Upon Project Completion

圖一 - 石湖墟污水處理廠擴建工程 - 石湖墟污水處理廠於工程完成後的平面圖

Environmental Permit No. : EP-218/2005

環境許可證編號 : EP-218/2005



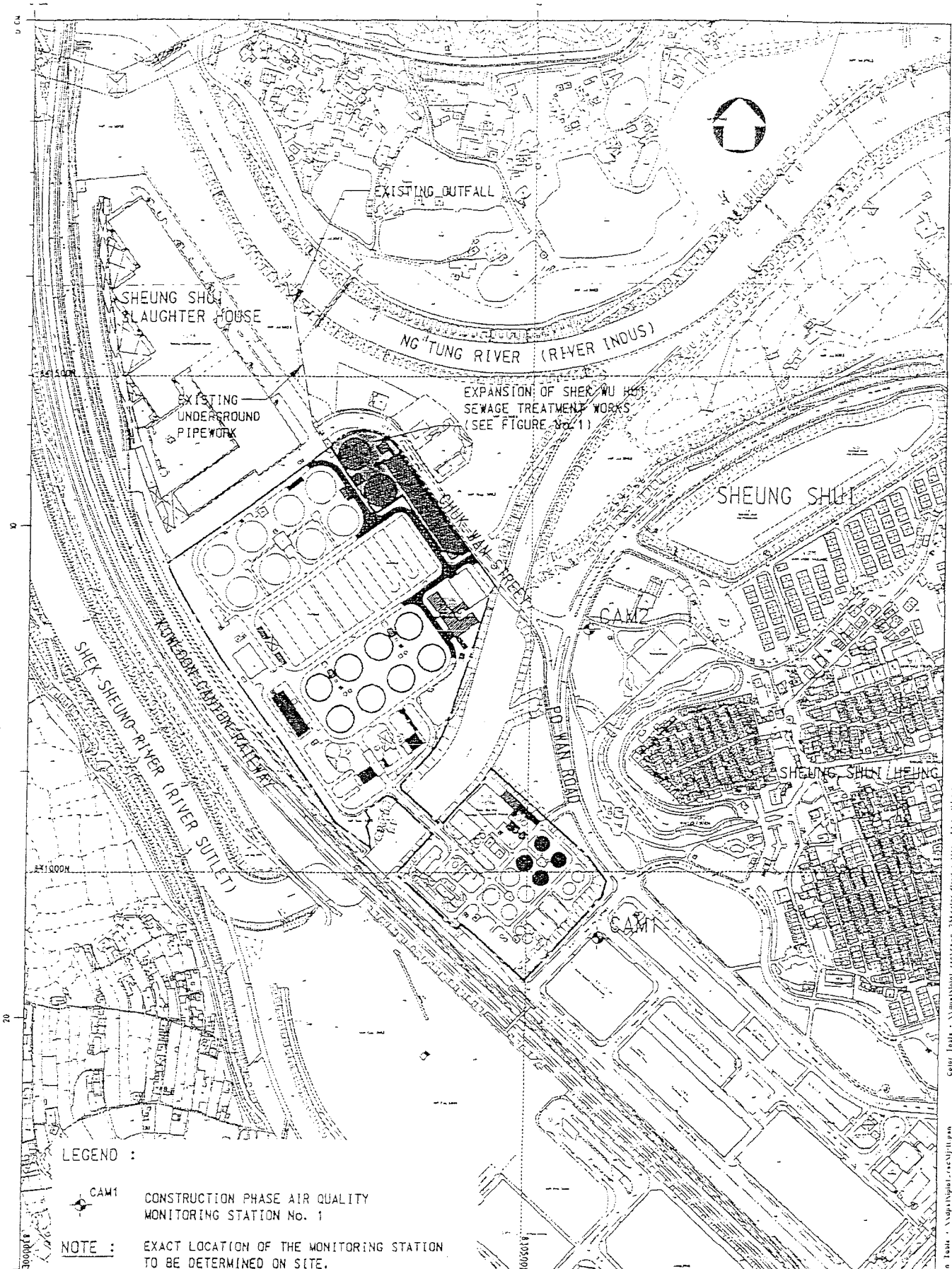


EXISTING SENSITIVE RECEIVERS	TYPE OF USE	TYPE OF SENSITIVE RECEIVERS (ASR / NSR)
SR1 ANCESTOR OF LIU TEMPLE (TAK YEUNG TONG)	WORSHIP	ASR & NSR
SR2 FU TEI AU TSUEN	RESIDENTIAL	ASR & NSR
SR3 FU TEI AU TSUEN	RESIDENTIAL	ASR & NSR
SR4 WAREHOUSE / TRADING AREA	INDUSTRIAL	ASR ONLY
SR5 SHEUNG SHUI HEUNG SITTING-OUT AREA AND BASKETBALL COURT	RECREATIONAL OPEN SPACE	ASR ONLY
SR6 YAI LOI TSUEN	RESIDENTIAL	ASR & NSR
SR7 TEMPORARY DOMESTIC STRUCTURE	RESIDENTIAL	ASR & NSR


NOTE : THERE ARE NO PLANNED SENSITIVE RECEIVERS IN THE VICINITY OF SHEK WU HUI SEWAGE TREATMENT WORKS.

Figure Title EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS  LOCATION PLAN OF SENSITIVE RECEIVERS	Figure No.  2	Scale  1:5 000
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Figure Title	Figure No.	Scale
EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS	2.1	1:5 000
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Office	SEWAGE PROJECTS DIVISION	
 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION		

olfactory senses to detect any odour.

2.6.9 The observer should bring along a log book to record the findings. The log book should be kept in the plant office where it can be inspected when necessary. The findings should include the following:

- the prevailing weather condition;
- the wind direction;
- location where odour is spotted;
- possible source of odour;
- perceived intensity of the odour; and
- duration of odour.

2.6.10 The perceived intensity is to be divided into 5 levels which are ranked in the descending order as follows:

- Extreme
- Strong
- Moderate
- Slight
- Not detectable

## 2.7 Compliance Assessment

→ 2.7.1 Action and Limit (A/L) levels that provide an appropriate framework for the interpretation of monitoring results have to be agreed between ET, IEC, EPD and the Engineer before commencement of the air quality monitoring. The air quality monitoring data shall be checked against the agreed A/L levels. Recommended A/L levels are listed in Table 2.5.

Table 2.5 Proposed Action and Limit Levels for Impact Monitoring

Parameter	Action Level <sup>(1)</sup>	Limit Level
TSP (24 hour average)	<ul style="list-style-type: none"> <li>• <math>BL \leq 200 \text{ g m}^{-3}</math>, <math>AL = (BL * 1.3 + LL)/2</math></li> <li>• <math>BL &gt; 200 \text{ g m}^{-3}</math>, <math>AL = LL</math></li> </ul>	260 $\text{g m}^{-3}$
TSP (1 hour average)	<ul style="list-style-type: none"> <li>• <math>BL \leq 384 \text{ g m}^{-3}</math>, <math>AL = (BL * 1.3 + LL)/2</math></li> <li>• <math>BL &gt; 384 \text{ g m}^{-3}</math>, <math>AL = LL</math></li> </ul>	500 $\text{g m}^{-3}$
H <sub>2</sub> S (at ASRs only)	<ul style="list-style-type: none"> <li>• <math>BL \leq 1.92 \text{ ppb}</math>, <math>AL = (BL * 1.3 + LL)/2</math></li> <li>• <math>BL &gt; 1.92 \text{ ppb}</math>, <math>AL = LL</math></li> </ul>	2.5 ppb
Incidence of odour complaints	Any incidence of odour complaint received through the Odour Complaint Register	Two or more complaints through the Odour Complaint Register within three months

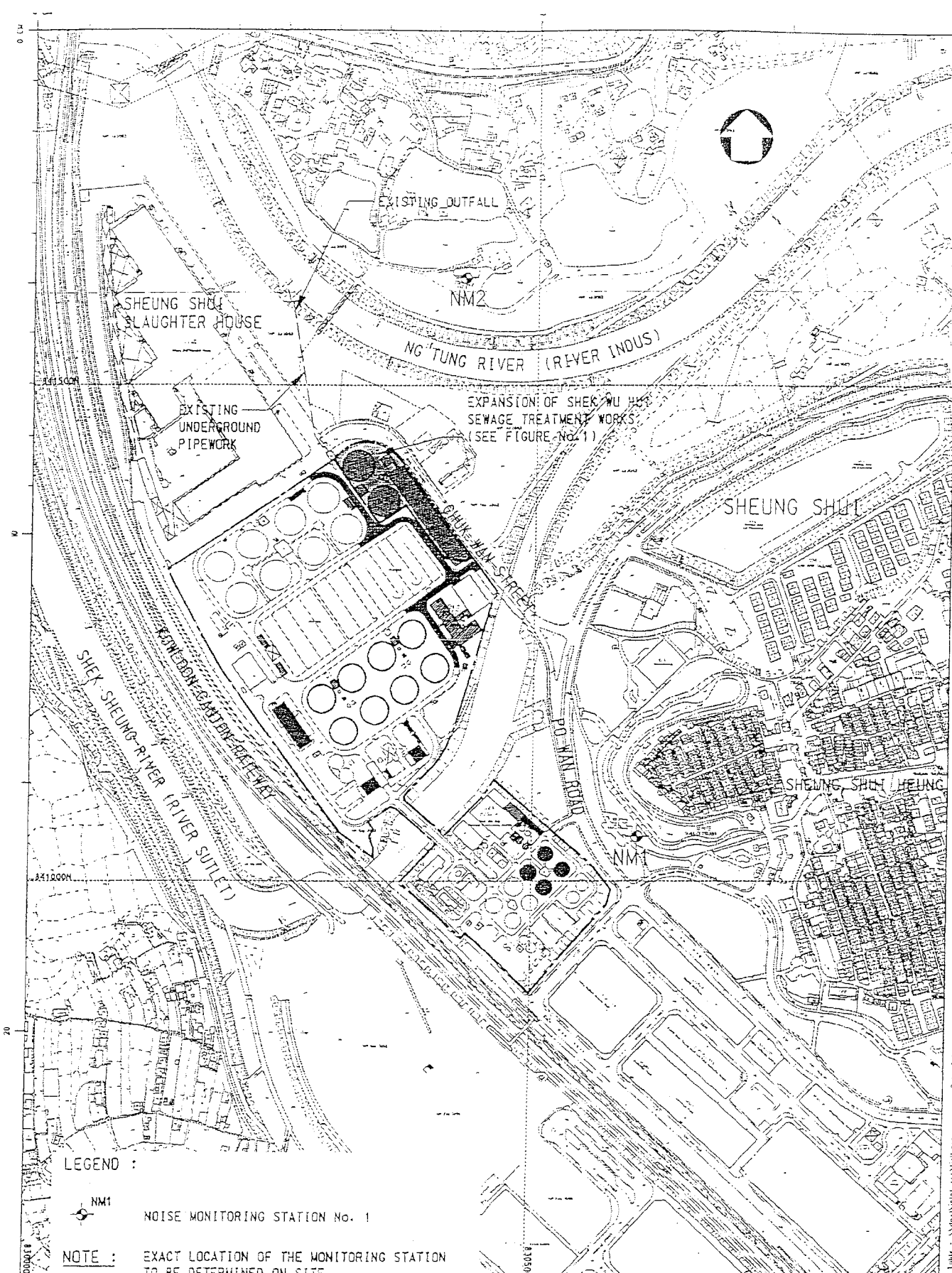
(1) BL = Baseline level, AL = Action level, LL = Limit level.

### Event and Action Plan (EAP) for Air Quality


2.7.2 The EAP is based on the prescription of procedures and actions associated with the measurement of certain defined levels of air pollution recorded by the environmental monitoring process and the agreed A/L levels. In case TSP A/L level exceedances occur, the ET, the IEC, the Engineer and the Contractor shall observe the relevant actions of the respective EAP listed in Tables 2.6 whereas relevant sections in DSD shall be responsible for the implementation of the EAP as listed in Table 2.7 in the event of odour exceedance/complaint for construction and operational phase respectively.

**Table 2.6 Event/Action Plan for Air Quality Monitoring (Construction Phase)**


EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	<ol 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> </ol>	<ol style="list-style-type: none"> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>Rectify any unacceptable practice;</li> <li>Amend working methods if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol 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>Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>Repeat measurements to confirm findings;</li> <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> </ol>	<ol 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> <li>Supervise implementation of remedial measures.</li> </ol>	<ol 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> </ol>	<ol style="list-style-type: none"> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>Inform Contractor, IEC, ER, 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> </ol>	<ol 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 ER on the effectiveness of the proposed remedial measures;</li> <li>Supervise implementation of remedial measures.</li> </ol>	<ol 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> </ol>	<ol style="list-style-type: none"> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>Notify IEC, ER, Contractor and EPD;</li> <li>Identify source, investigate the causes 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 discuss the remedial actions to be taken;</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> </ol>	<ol 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> </ol>	<ol style="list-style-type: none"> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consolidation 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 until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within three 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> </ol>



**LEGEND :**

 **NM1**  
NOISE MONITORING STATION No. 1

**NOTE :** EXACT LOCATION OF THE MONITORING STATION TO BE DETERMINED ON SITE.

<p>Figure Title</p> <p>EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS</p>	<p>Figure No.</p> <p style="text-align: center;">5.1</p>	<p>Scale</p> <p style="text-align: center;">1:5 000</p>
<p>COPYRIGHT RESERVED</p>		
<p>LOCATION PLAN OF PROPOSED NOISE MONITORING STATION (CONSTRUCTION PHASE ONLY)</p>	<p>Office SEWERAGE PROJECTS DIVISION</p> <p> DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>	

File Name : E:\1\ham\_41228463\_1\p\06061527803\_1\p\06061527803\_1.dwg  
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## 5.6 Impact Monitoring for Construction Noise

5.6.1 Noise monitoring shall be carried out at all designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:

- one set of measurements between 0700 and 1900 hours on normal weekdays.

5.6.2 If construction works are extended to include works during the hours of 1900 - 0700. Applicable permits under NCO shall be obtained by the Contractor.

5.6.3 In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action Plan in Table 5.3, shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

5.6.4 Before commencement of impact monitoring, the ET Leader shall inform IEC of the impact monitoring programme such that the IEC can conduct an on-site audit to ensure the accuracy of the monitoring results.

## → 5.7 Event and Action Plan (EAP) for Construction Noise

5.7.1 The Action and Limit levels for construction noise are defined in Table 5.2. Shall non-compliance of the criteria occur, action in accordance with the Action Plan in Table 5.3 shall be implemented.

Table 5.2 Action and Limit Levels for Construction Noise

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



Table 5.3 Event/Action Plan for Construction Noise

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

## Appendix 3

### Construction Programme



**Appendix 4**

**Environmental Requirements  
and  
Implementation Status**

## APPENDIX B IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

## Implementation Schedule for Air Quality Control

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 1 S1.7.1	Dust mitigation measures stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i> shall be incorporated to control dust emission from the Site. Notice shall be given to the authority prior to commencement of works.	Work sites / during construction period	Contractor		√		Air Pollution Control (Construction Dust) Regulation
Annex 1 S1.7.6 – S1.7.9	Exposed area of inlet screw pumping station excluding its inlet chamber; and sludge holding tanks should be covered, with the foul air drawn through deodourizers and discharged after treatment. Exposed area of grit channels, flume channels and effluent launder channels of primary sedimentation tanks should be covered.	SWHSTW / during design and operation stage	DSD	√		√	

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

\* D = Design, C = Construction and O = Operation

**Implementation Schedule for Water Quality Control**

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	The practices outlined in Practice Note for Professional Persons on Construction Site Drainage, Professional Persons 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.	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> <li>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.</li> <li>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 <math>0.1\text{m}^3\text{s}^{-1}</math> a sedimentation basin of <math>30\text{m}^3</math> would be required and for a flow rate of <math>0.5\text{m}^3\text{s}^{-1}</math> the basin would be <math>150\text{m}^3</math>. The detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of construction.</li> <li>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.</li> <li>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.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage (Cont'd)</i></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> 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.</li> <li>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.</li> <li>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.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance



PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	<p><i>Construction Runoff and Drainage (Cont'd)</i></p> <ul style="list-style-type: none"> <li>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.</li> <li>On-site drainage system should be equipped with oil interceptors to separate oil/fuel from contaminated storm water.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.4.4	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> <li>Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.4.4	<p><i>Sewage from Construction Workforce</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.5.3 – S2.5.11	The implementation programme of the village sewerage should be monitored to achieve the target sewerage connection to communal sewers.	SWHSTW/ During the operation period	DSD			√	ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref#	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.5.12	Standby equipment will provide further safeguard on proper functioning of all key treatment facilities e.g. standby air blowers to ensure adequate air supply for the biological treatment process and standby pumps to prevent any overflow of sewage due to mechanical failure of pumps. In the remote case that untreated effluent is discharged, an emergency contingency plan has been formulated to minimize the impact of emergency discharges and facilitate subsequent management of emergency. If there is a power failure, the plant manager will start up the emergency generator to provide electricity supplies for the pumps and regularly monitor the quality of effluent discharge.	SWHSTW/ During the design and operation period	DSD	√		√	ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.7.2	Routine monitoring of the effluent quality from the SWHSTW should be conducted in order to satisfy the conditions of the WPCO discharge licence.	SWHSTW/ During the operation period	DSD			√	ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

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

\* D = Design, C = Construction and O = Operation

## Implementation Schedule for Waste Management

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S3.5.1	<p><i>Waste Reduction Measures at Planning and Design Stage</i></p> <ul style="list-style-type: none"> <li>The levels of structures should be designed such that excavation could be minimized as far as practicable.</li> <li>Excavated materials generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.</li> <li>Control measures recommended under the prevailing ETWB circulars should be strictly followed to ensure proper management of the C&amp;D materials with an aim to minimize the generation of C&amp;D material and maximize the use of inert C&amp;D material.</li> </ul>	Work site / During the planning and design stage	DSD	√			ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S3.5.1	<p><i>Waste Reduction Measures at Construction Stage</i></p> <ul style="list-style-type: none"> <li>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&amp;D materials and to minimize their generation during the course of construction.</li> <li>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&amp;D materials at the earliest stage, so as to minimise the need for subsequent sorting.</li> <li>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.</li> <li>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.</li> <li>Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>Maximising the use of reusable steel formwork to reduce the amount of C&amp;D material.</li> <li>Prior to disposal of C&amp;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.</li> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> <li>Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S3.5.2 – S3.5.5	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• training of site personnel in proper waste management and chemical waste handling procedures;</li> <li>• Provision of sufficient waste disposal points and regular collection for disposal;</li> <li>• appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;</li> <li>• regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;</li> <li>• a Waste Management Plan should be prepared and should be submitted to the Engineer for approval; and</li> <li>• a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.</li> <li>• In order to monitor the disposal of C&amp;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.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S 3.5.6	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material;</li> </ul>	Work sites / During the construction period	Contractor		√		EIAO-TM and Noise Control Ordinance
Annex 3 S 3.5.7	<p><i>Construction and Demolition Material</i></p> <ul style="list-style-type: none"> <li>The C&amp;D material generated from the site formation and demolition works should be sorted on-site into inert C&amp;D material (that is, public fill) and C&amp;D waste. In order to minimise the impact resulting from collection and transportation of C&amp;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&amp;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&amp;D material and to facilitate the sorting process.</li> </ul>	Work sites / During the construction period	Contractor		√		EIAO-TM and Noise Control Ordinance

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S 3.5.8	<p><i>Chemical Wastes</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	Work sites / During the construction period	Contractor		√		EIAO-TM and Noise Control Ordinance

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

\* D = Design, C = Construction and O = Operation

## Implementation Schedule for Noise Control

PP Ref <sup>#</sup>	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 4 S4.7.1	Use of quiet PME	Work sites / During the construction period	Contractor		√		EIAO-TM and Noise Control Ordinance
Annex 4 S4.7.3	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase;</li> <li>• 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;</li> <li>• Mobile plant should be sited as far away from NSRs as possible;</li> <li>• 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;</li> <li>• 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</li> <li>• Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	Work sites / During the construction period	Contractor		√		EIAO-TM and Noise Control Ordinance

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

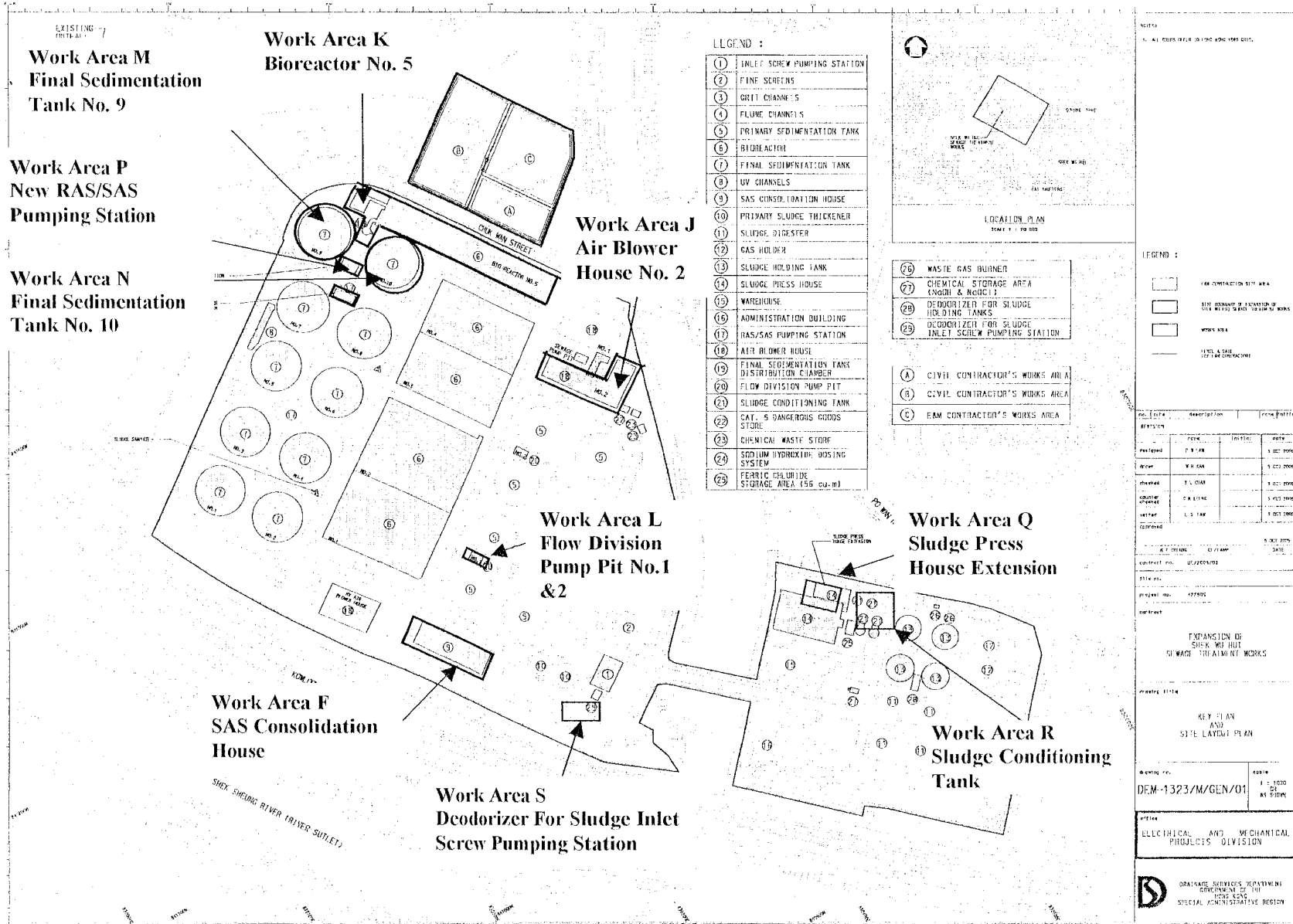
\* D = Design, C = Construction and O = Operation



**Appendix 5**

**Site layout plan  
and  
Site Inspection Checklists**

# Shek Wu Hui STW – Expansion E&M Works EM&A Site Inspection – May 2009 Site Layout



**Work Area M**  
Final Sedimentation  
Tank No. 9

**Work Area P**  
New RAS/SAS  
Pumping Station

**Work Area N**  
Final Sedimentation  
Tank No. 10

**Work Area K**  
Bioreactor No. 5

**Work Area J**  
Air Blower  
House No. 2

**Work Area L**  
Flow Division  
Pump Pit No.1  
& 2

**Work Area F**  
SAS Consolidation  
House

**Work Area S**  
Deodorizer For Sludge Inlet  
Screw Pumping Station

**Work Area Q**  
Sludge Press  
House Extension

**Work Area R**  
Sludge Conditioning  
Tank

**LEGEND :**

①	INLET SCREW PUMPING STATION
②	FINE SCREENS
③	GRIT CHANNELS
④	FLUME CHANNELS
⑤	PRIMARY SEDIMENTATION TANK
⑥	BIOREACTOR
⑦	FINAL SEDIMENTATION TANK
⑧	UV CHANNELS
⑨	SAS CONSOLIDATION HOUSE
⑩	PRIMARY SLUDGE THICKENER
⑪	SLUDGE DIGESTER
⑫	GAS HOLDER
⑬	SLUDGE HOLDING TANK
⑭	SLUDGE PRESS HOUSE
⑮	WAREHOUSE
⑯	ADMINISTRATION BUILDING
⑰	GAS/SAS PUMPING STATION
⑱	AIR BLOWER HOUSE
⑲	FINAL SEDIMENTATION TANK DISTRIBUTION CHAMBER
⑳	FLOW DIVISION PUMP PIT
㉑	SLUDGE CONDITIONING TANK
㉒	CAT. 5 DANGEROUS GOODS STORE
㉓	CHEMICAL WASTE STORE
㉔	SODIUM HYDROXIDE DOSING SYSTEM
㉕	FERRIC CHLORIDE STORAGE AREA (56 CU.M)

**LEGEND :**

㉖	WASTE GAS BURNER
㉗	CHEMICAL STORAGE AREA (GASOL & RESIN)
㉘	DECOLORIZER FOR SLUDGE HOLDING TANKS
㉙	DECOLORIZER FOR SLUDGE INLET SCREW PUMPING STATION

(A) CIVIL CONTRACTOR'S WORKS AREA  
(B) CIVIL CONTRACTOR'S WORKS AREA  
(C) E&M CONTRACTOR'S WORKS AREA

NO.	DESCRIPTION	PROVIDE	DATE
1	DESIGN	2009	10/05/09
2	CONSTRUCTION	2009	10/05/09
3	OPERATION	2009	10/05/09
4	MAINTENANCE	2009	10/05/09

EXPANSION OF  
SHEK WU HUI  
SEWAGE TREATMENT WORKS

KEY PLAN  
AND  
SITE LAYOUT PLAN

PROJECT NO.  
DEM-1323/M/GEN/01

DATE  
18/05/2009

ELECTRICAL AND MECHANICAL  
PROJECTS DIVISION

SEWERAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT

ENVIRONMENTAL SITE INSPECTION CHECKLIST

Inspection Date: 6th May 2009 Time: 9:30-10:30

Inspected By:

DSD Representative: M.H. Yuen, K.K. Cheung, M.K. Lau,

E&M Contractor Representative: S.M. Ho, Kenneth Leung, Y.H. Hung, Frankie Chan

Environmental Team Inspector: Tony Yeung

**Weather**

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature  °C Humidity  %

Wind  Calm  Light  Breeze  Strong Direction

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
<b>Air Quality - Dust</b>							
1	Water spray	F, J, K, L, M, N, O, P, Q, R, S			✓		
2	Cover debris				✓		
3	Wet & cover stockpile				✓		
4	Skip hoist				✓		
5	Vehicle washing				✓		
6	Clear of dusty material				✓		
7	Water spray on road				✓		
8	Cement bags				✓		
9	Dusty material				✓		
10	Cover belt conveyor				✓		
<b>Water Quality</b>							
11	Storm drains	F, J, K, L, M, N, O, P, Q, R, S			✓		
12	Sand/silt removal facilities				✓		
13	Exposed soil surface				✓		
14	Rainwater silt removal			✓			
15	Open stockpiles				✓		
16	Groundwater silt removal				✓		

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
17	Large object	F, J, K, L, M, N, O, P, Q, R, S			✓		
18	Sewage discharged		✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions	↓	✓				
<b>Noise Control</b>							
22	Comply with ordinance	F, J, K, L, M, N, O, P, Q, R, S	✓				
23	Working equipment & sound-reducing measures				✓		
24	Equipment condition		✓				
25	Well-maintained plant				✓		
26	Intermittent use of machines/plants				✓		
27	Noise in one direction				✓		
28	Silencers/mufflers				✓		
29	Away from NSRs				✓		
30	Trial for equipment/sound-reducing measures	↓			✓		
<b>Waste Disposal</b>							
31	Construction wastes	F, J, K, L, M, N, O, P, Q, R, S	✓				
32	Licensed waste collector				✓		
33	Removal of construction wastes		✓				
34	Waste storage areas		✓				
35	Windblown litter/dust				✓		
36	Waste disposal permits				✓		
37	Licensed waste disposal facilities		✓				
38	Careful design, planning & good site management				✓		
39	Bentonite slurries				✓		
40	Chemical wastes handling		✓				
41	Chemical waste storage		✓				
42	Condition of chemical waste storage area	↓	✓				

SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
 ENVIRONMENTAL MONITORING AND AUDIT

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, P, Q, R, S			✓		
44	General refuse		✓				
45	Chemical waste separation		✓				
46	Strictly prohibited of refuse burning		✓				
47	Environmental Permit and other documents on-site		✓				
48	Environmental Permit and license displayed		✓				
49	Waste records	↓	✓				

**Summary / Remarks<sup>(4)</sup>**

Installation works of E&M Equipment were observed at Sludge Press House Extension, Air Blower House No.2, Sludge Conditioning Tank and Deodorizer for Inlet Pumping Station.

No particular observation.

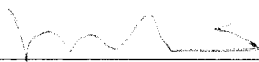
(Note: Refer to attached site layout)

**Signatures**

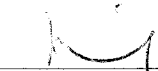
DSD Representative

E&M Contractor Representative

Name:


  
M. Chan

Name:

  
S. M. A.

Environmental Team Leader

Name:

  
S. Chan

- <sup>(1)</sup> Refer to Site Inspection Checklist Attachment for complete description (Summarized EM&A Manual) of referenced mitigation measure or requirement.
- <sup>(2)</sup> Indicate exact locations as indicated (by code) on the attached site layout.
- <sup>(3)</sup> Note actions/plans and responsible party regarding any non-compliance in this column.
- <sup>(4)</sup> To be filled out by the environmental team.

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

**ENVIRONMENTAL SITE INSPECTION CHECKLIST**

Inspection Date: 12th May 2009 Time: 14:00 - 15:00

Inspected By:

DSD Representative: M.H. Yuen  
K.K. Cheung, M.K. Law

E&M Contractor Representative: S.M. Ho, Kenneth Leung  
Y.H. Hong, Frankie Chan

Environmental Team Inspector: Tony Yeung

**Weather**

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature  °C Humidity  %

Wind  Calm  Light  Breeze  Strong Direction

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
<b>Air Quality - Dust</b>							
1	Water spray	F, S, K, L, M, N, O, P, Q, R, S			✓		
2	Cover debris				✓		
3	Wet & cover stockpile				✓		
4	Skip hoist				✓		
5	Vehicle washing				✓		
6	Clear of dusty material				✓		
7	Water spray on road				✓		
8	Cement bags				✓		
9	Dusty material				✓		
10	Cover belt conveyor				✓		
<b>Water Quality</b>							
11	Storm drains	F, S, K, L, M, N, O, P, Q, R, S			✓		
12	Sand/silt removal facilities				✓		
13	Exposed soil surface				✓		
14	Rainwater silt removal			✓			
15	Open stockpiles				✓		
16	Groundwater silt removal				✓		

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>	
			Yes	No	N/A	Unk		
17	Large object	F, S, K, L, M, N, O, P, Q, R, S			✓			
18	Sewage discharged	↓	✓					
19	Fuel/chemical storage		✓					
20	Storage area condition		✓					
21	Clean-up actions		✓					
<b>Noise Control</b>								
22	Comply with ordinance	F, S, K, L, M, N, O, P, Q, R, S	✓					
23	Working equipment & sound-reducing measures	↓			✓			
24	Equipment condition		✓					
25	Well-maintained plant				✓			
26	Intermittent use of machines/plants				✓			
27	Noise in one direction				✓			
28	Silencers/mufflers				✓			
29	Away from NSRs				✓			
30	Trial for equipment/sound-reducing measures				✓			
<b>Waste Disposal</b>								
31	Construction wastes		F, S, K, L, M, N, O, P, Q, R, S	✓				
32	Licensed waste collector	↓			✓			
33	Removal of construction wastes		✓					
34	Waste storage areas		✓					
35	Windblown litter/dust				✓			
36	Waste disposal permits				✓			
37	Licensed waste disposal facilities		✓					
38	Careful design, planning & good site management				✓			
39	Bentonite slurries				✓			
40	Chemical wastes handling		✓					
41	Chemical waste storage		✓					
42	Condition of chemical waste storage area		✓					

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, O, P, Q, R, S			✓		
44	General refuse		✓				
45	Chemical waste separation		✓				
46	Strictly prohibited of refuse burning		✓				
47	Environmental Permit and other documents on-site		✓				
48	Environmental Permit and license displayed		✓				
49	Waste records		✓				

**Summary / Remarks<sup>(4)</sup>**

Installation works of E&M Equipment were observed at Sludge Press House Extension, Air Blower House No. 2, Sludge Conditioning Tank and Deodorizer for Inlet Pumping Station.


No. particular observation.

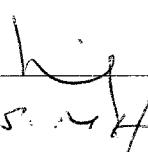
(Note: Refer to attached site layout)

**Signatures**

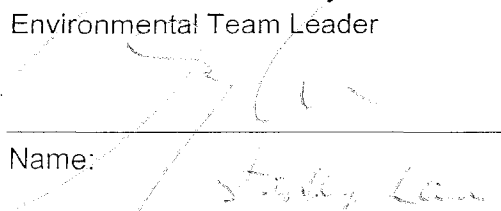
DSD Representative

E&M Contractor Representative

  
Name: M. K. Lam

  
Name: S. M. Ho

Environmental Team Leader

  
Name: Stacy Lam

- <sup>(1)</sup> Refer to Site Inspection Checklist Attachment for complete description (Summarized EM&A Manual) of referenced mitigation measure or requirement.
- <sup>(2)</sup> Indicate exact locations as indicated (by code) on the attached site layout.
- <sup>(3)</sup> Note actions/plans and responsible party regarding any non-compliance in this column.
- <sup>(4)</sup> To be filled out by the environmental team.



**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

**ENVIRONMENTAL SITE INSPECTION CHECKLIST**

Inspection Date: 13th May 2009

Time: 14:00-15:00

Inspected By:

DSD Representative: M.H. Yuen  
K.K. Cheung, M.K. Lau

E&M Contractor Representative: S.M. Ho, Kenneth Leung  
Y.H. Hong, Frankie Chan

Environmental Team Inspector: Tony Yeung

**Weather**

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature  °C Humidity  %

Wind  Calm  Light  Breeze  Strong Direction

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
<b>Air Quality - Dust</b>							
1	Water spray	F, S, K, L, M, W, N, O, P, Q, R, S			✓		
2	Cover debris				✓		
3	Wet & cover stockpile				✓		
4	Skip hoist				✓		
5	Vehicle washing				✓		
6	Clear of dusty material				✓		
7	Water spray on road				✓		
8	Cement bags				✓		
9	Dusty material				✓		
10	Cover belt conveyor				✓		
<b>Water Quality</b>							
11	Storm drains	F, S, K, L, M, W, N, O, P, Q, R, S			✓		
12	Sand/silt removal facilities				✓		
13	Exposed soil surface				✓		
14	Rainwater silt removal			✓			
15	Open stockpiles				✓		
16	Groundwater silt removal				✓		

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
17	Large object	F, S, K, L, M, N, O, P, Q, R, S			✓		
18	Sewage discharged		✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions		✓				
<b>Noise Control</b>							
22	Comply with ordinance	F, S, K, L, M, N, O, P, Q, R, S	✓				
23	Working equipment & sound-reducing measures				✓		
24	Equipment condition		✓				
25	Well-maintained plant				✓		
26	Intermittent use of machines/plants				✓		
27	Noise in one direction				✓		
28	Silencers/mufflers				✓		
29	Away from NSRs				✓		
30	Trial for equipment/sound-reducing measures				✓		
<b>Waste Disposal</b>							
31	Construction wastes	F, S, K, L, M, N, O, P, Q, R, S	✓				
32	Licensed waste collector				✓		
33	Removal of construction wastes		✓				
34	Waste storage areas		✓				
35	Windblown litter/dust				✓		
36	Waste disposal permits				✓		
37	Licensed waste disposal facilities		✓				
38	Careful design, planning & good site management				✓		
39	Bentonite slurries				✓		
40	Chemical wastes handling		✓				
41	Chemical waste storage		✓				
42	Condition of chemical waste storage area		✓				

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, O, P, Q, R, S			✓		
44	General refuse		✓				
45	Chemical waste separation		✓				
46	Strictly prohibited of refuse burning		✓				
47	Environmental Permit and other documents on-site		✓				
48	Environmental Permit and license displayed		✓				
49	Waste records	↓	✓				

**Summary / Remarks<sup>(4)</sup>**

Installation works of E&M Equipment were observed at Sludge Press House Extension, Air Blower House No. 2, Sludge Conditioning Tank and Decolorizer for Inlet Pumping Station.

No particular observation.

(Note: Refer to attached site layout)

**Signatures**

DSD Representative

E&M Contractor Representative

\_\_\_\_\_  
Name: M. K. Au

\_\_\_\_\_  
Name: S. N. Ho

Environmental Team Leader

\_\_\_\_\_  
Name: Stanley Chan

- (1) Refer to Site Inspection Checklist Attachment for complete description (Summarized EM&A Manual) of referenced mitigation measure or requirement.
- (2) Indicate exact locations as indicated (by code) on the attached site layout.
- (3) Note actions/plans and responsible party regarding any non-compliance in this column.
- (4) To be filled-out by the environmental team.

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

**ENVIRONMENTAL SITE INSPECTION CHECKLIST**

Inspection Date: 27<sup>th</sup> May 2004 Time: 9.30 - 10.30

Inspected By:

DSD Representative: M.H. Yuen  
K.K. Cheung, M.K. Lam

E&M Contractor Representative: S.M. Ho, Kenneth Leung  
Y.H. Hong, Frankie Chan

Environmental Team Inspector: Tony Yeung

**Weather**

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature  °C Humidity  %

Wind  Calm  Light  Breeze  Strong Direction

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
<b>Air Quality - Dust</b>							
1	Water spray	F, J, K, L, M, N, O, P, Q, R, S			✓		
2	Cover debris				✓		
3	Wet & cover stockpile				✓		
4	Skip hoist				✓		
5	Vehicle washing				✓		
6	Clear of dusty material				✓		
7	Water spray on road				✓		
8	Cement bags				✓		
9	Dusty material				✓		
10	Cover belt conveyor				✓		
<b>Water Quality</b>							
11	Storm drains	F, J, K, L, M, N, O, P, Q, R, S			✓		
12	Sand/silt removal facilities				✓		
13	Exposed soil surface				✓		
14	Rainwater silt removal			✓			
15	Open stockpiles				✓		
16	Groundwater silt removal				✓		

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
17	Large object	F, S, K, L, M, N, O, P, Q, R, S			✓		
18	Sewage discharged	↓	✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions	↓	✓				
<b>Noise Control</b>							
22	Comply with ordinance	F, S, K, L, M, N, O, P, Q, R, S	✓				
23	Working equipment & sound-reducing measures				✓		
24	Equipment condition		✓				
25	Well-maintained plant				✓		
26	Intermittent use of machines/plants				✓		
27	Noise in one direction				✓		
28	Silencers/mufflers				✓		
29	Away from NSRs				✓		
30	Trial for equipment/sound-reducing measures	↓			✓		
<b>Waste Disposal</b>							
31	Construction wastes	F, S, K, L, M, N, O, P, Q, R, S	✓				
32	Licensed waste collector				✓		
33	Removal of construction wastes		✓				
34	Waste storage areas		✓				
35	Windblown litter/dust				✓		
36	Waste disposal permits				✓		
37	Licensed waste disposal facilities		✓				
38	Careful design, planning & good site management				✓		
39	Bentonite slurries				✓		
40	Chemical wastes handling		✓				
41	Chemical waste storage		✓				
42	Condition of chemical waste storage area	↓	✓				

**SHEK WU HUI SEWAGE TREATMENT WORKS – CONTRACT NO. DE/2005/03  
ENVIRONMENTAL MONITORING AND AUDIT**

Ref. No. <sup>(1)</sup>	Brief Description of Mitigation	Site Location <sup>(2)</sup>	Activity Compliance				Action Required/ Responsible Party <sup>(3)</sup>
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, W, C, P, Q, R, S			✓		
44	General refuse		✓				
45	Chemical waste separation		✓				
46	Strictly prohibited of refuse burning		✓				
47	Environmental Permit and other documents on-site		✓				
48	Environmental Permit and license displayed		✓				
49	Waste records	↓	✓				

**Summary / Remarks<sup>(4)</sup>**

Installation works of E&M Equipment were observed at Sludge Press House Extension, Air Blower House No 2, Sludge Conditioning Tank and Deodorizer for Inlet Pumping Station.

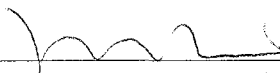
No particular observation.

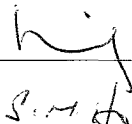
(Note: Refer to attached site layout)

**Signatures**

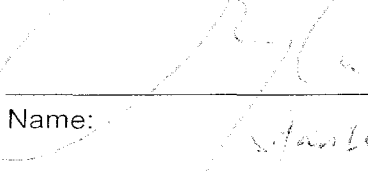
DSD Representative

E&M Contractor Representative

Name:   
Nik Lau

Name:   
S.M.H.

Environmental Team Leader

Name:   
Stanley Leung

- <sup>(1)</sup> Refer to Site Inspection Checklist Attachment for complete description (Summarized EM&A Manual) of referenced mitigation measure or requirement.
- <sup>(2)</sup> Indicate exact locations as indicated (by code) on the attached site layout.
- <sup>(3)</sup> Note actions/plans and responsible party regarding any non-compliance in this column.
- <sup>(4)</sup> To be filled out by the environmental team.

**Appendix 6**

**Deficiency Investigations Reports**

**(Not Applicable)**

**Appendix 7**

**Complaint Reports**

**(Not Applicable)**



**Appendix 8**

**Summons and Prosecutions Records**

**(Not Applicable)**

## **Appendix 9**

### **Permits**

- **Environmental Permit (Same as in June 2006 Report)**
- **Notification from EPD regarding The Completion of Registration as a Chemical Waste Producer (Same as in June 2007 Report)**