



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. 41

OCTOBER 2009

for

Biwater Man Lee Limited

Submitted by

Kingsford Environmental (H.K.) Ltd.

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PROJECT NAME: **Supply and Installation of Electrical and Mechanical Equipment for Expansion of Shek Wu Hui Sewage Treatment Works**

PROJECT NO.: 81869

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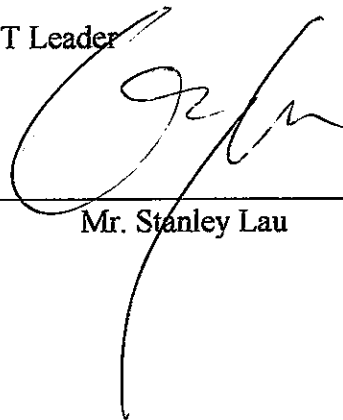
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EXECUTIVE SUMMARY

This is the forty-first 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 site activities in this month consisted of E&M installation of Waste Gas Burner and fine tuning of Deodourizing System in Section 10. Reinstatement work in old site office area was fully completed. Provision training of Deodourizing System to plant staff of ST1 was on 27 Oct 2009. The defects rectification of Air Blowers, BR5 unit, RAS/SAS Pumping Station, FSTs & Sludge Dewatering System (Section 6, 7, 8 & 9) was in progress.

Site inspections by an Environmental Team were carried out on 6, 15 and 22 of October 2009 with the representatives of the Engineer. Joint site audit was conducted on 13 October 2009 with the representatives of Engineer, IEC, E&M Contractor and ET.

No deficiency was found during the site inspections in October 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 13 October 2009 with all of the parties (DSD, E&M contractors, ETs, and the IEC) involved.

There was no EPD visit during October 2009 and no abatement notice or prosecution was raised by EPD. There was no complaint received or notification of summons or successful prosecution in October 2009.

There was no reporting change during the reporting month.

No remaining works as regards E&M equipment are conduct in the coming month and the project are anticipated to be completed by October of 2009. Therefore, no hand-held breakers, bulldozer, concrete lorry mixer, dump truck and hand-held poker, vibratory, etc would be used and the impact of noise and dust to the nearest sensitive receiver can be negligible. Therefore, the environmental monitoring and audit are terminated at 19th October, 2009.

1 Introduction

This is the forty-first 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 October 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 site activities in this month consisted of E&M installation of Waste Gas Burner and fine tuning of Deodourizing System in Section 10. Reinstatement work in old site office area was fully completed. Provision training of Deodourizing System to plant staff of ST1 was on 27 Oct 2009. The defects rectification of Air Blowers, BR5 unit, RAS/SAS Pumping Station, FSTs & Sludge Dewatering System (Section 6, 7, 8 & 9) 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 October 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*
<i>Switch Room for RAS/SAS Pumping Station No. 2</i>	

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*
<i>RAS/SAS Pumping Station No.2</i>	
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*
<i>Final Sedimentation Tank (FST) Nos. 9 & 10</i>	
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*
<i>Sludge Press House Extension</i>	
Installation of E&M equipment	18 July 08 – 17 May 09*
Testing and commissioning	18 May 09 – 30 July 09*
Defects rectification of Dewatering System	31 July 09 – 30 July 10*
<i>Deodourizers & Waste Gas Burner</i>	
Installation of E&M equipment	18 July 08 – 27 Aug 09*
Testing & commissioning for Deodourizers	28 Aug 09 - 29 Sept 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, 15 and 22 of October 2009 with the representatives of the Engineer. Joint site audit was conducted on 13 October 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 site activities in this month consisted of E&M installation of Waste Gas Burner and fine tuning of Deodourizing System in Section 10. Reinstatement work in old site office area was fully completed. Provision training of Deodourizing System to plant staff of ST1 was on 27 Oct 2009. The defects rectification of Air Blowers, BR5 unit, RAS/SAS Pumping Station, FSTs & Sludge Dewatering System (Section 6, 7, 8 & 9) 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.

Owing to destruction work in old site office area, packaging waste or construction waste was disposed to the landfills & the public fill reception facility by the licensed waste collector this month.

The type and quantity of waste for final disposal during October 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 October 2009

Types of Waste	Quantity
Inert C&D Material	83.38 tonne
Non-inert C&D Waste	9.74 tonne
Chemical Waste	Nil
General Refuse*	1.32 m ³

* Included the site office

5 Summary of Deficiencies and Remedial Actions

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

6 Summary of Complaints and Remedial Actions

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

No Complaint was received in October 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 October 2009.

8 Monthly Environmental Auditing for the Coming Months

No remaining works as regards E&M equipment are conduct in the coming month and the project are anticipated to be completed by October of 2009. Therefore, no hand-held breakers, bulldozer, concrete lorry mixer, dump truck and hand-held poker, vibratory, etc would be used and the impact of noise and dust to the nearest sensitive receiver can be negligible. Therefore, the environmental monitoring and audit are terminated at 19th October, 2009.

9 Conclusions and Comments

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

Appendix 1

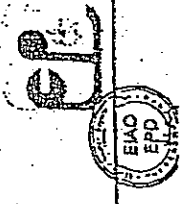
Contact Information of Key Environmental Personnel

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. Ben Yuen (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**

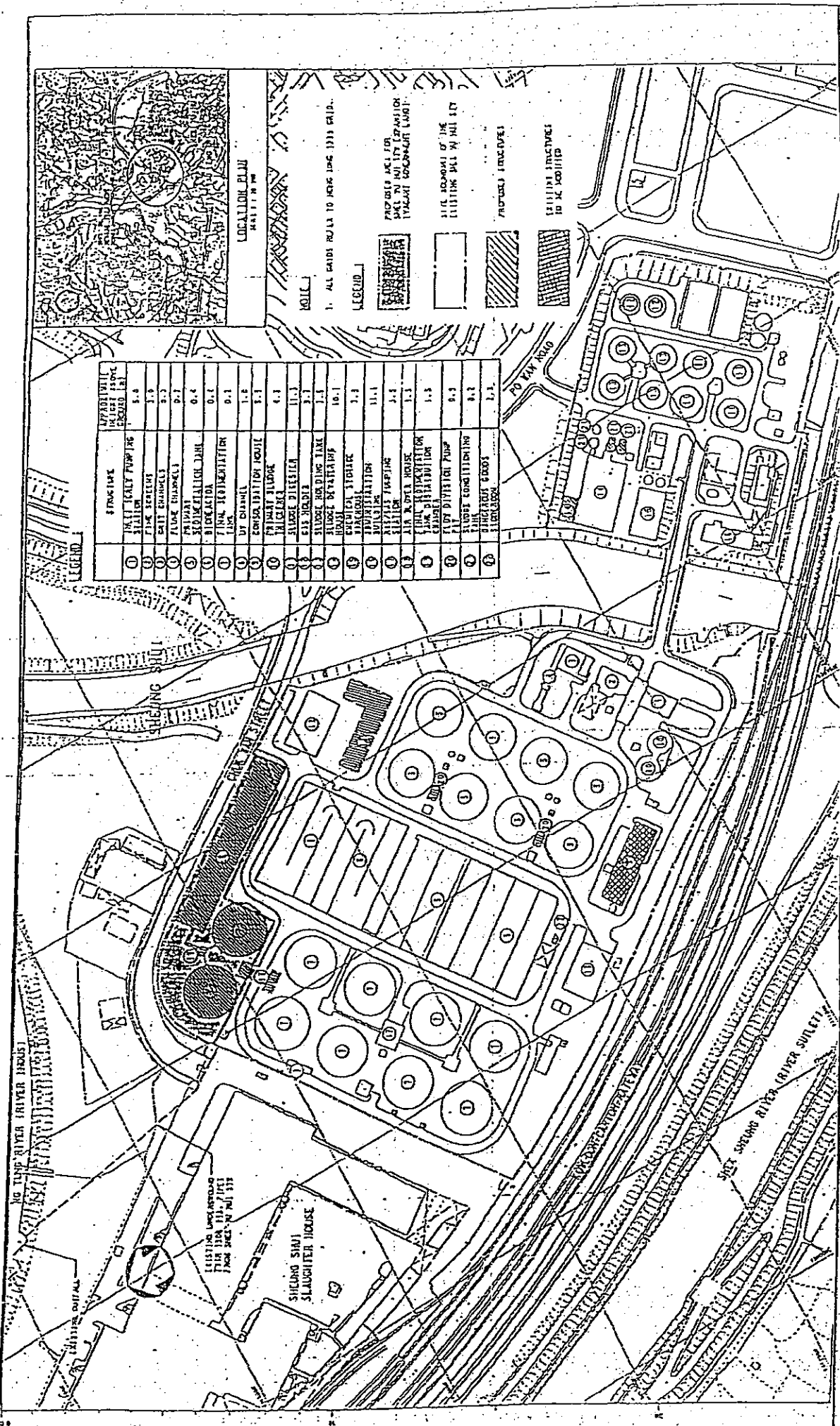


Environmental Permit No. : EP-218/2005

環境許可證編號 : EP-218/2005

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

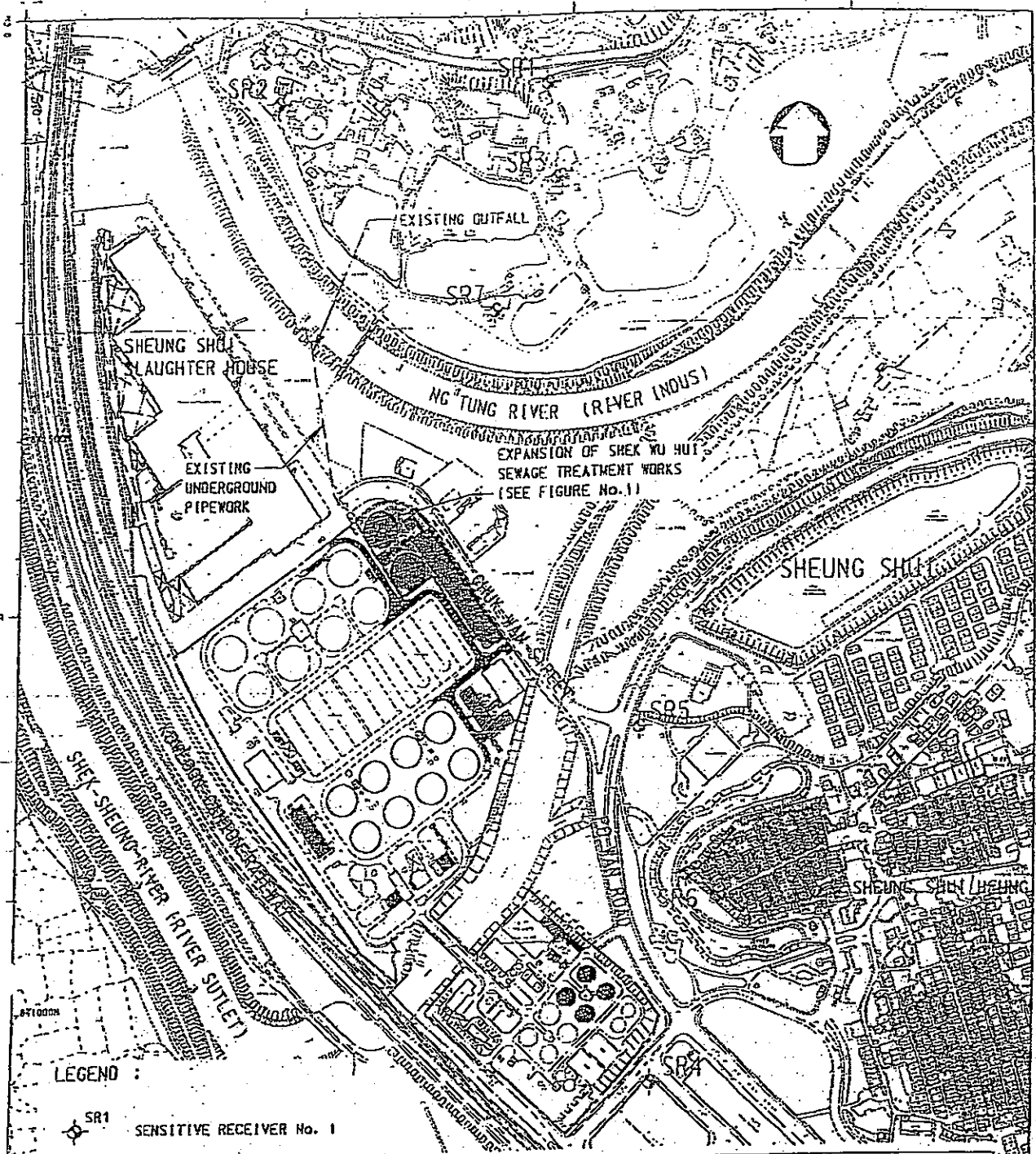


STRUCTURE	APPROXIMATE HEIGHT FROM EXISTING LEVEL
1. AERATION TANK	5.0
2. PRIMARY SLUDGE THICKENER	3.0
3. SECONDARY CLARIFIER	3.0
4. TANK HOUSE	2.7
5. AERATION TANK	0.4
6. BLOWER HOUSE	0.1
7. TANK HOUSE	0.1
8. CONTROL ROOM	1.2
9. LABORATORY	1.2
10. ADMINISTRATIVE BUILDING	4.3
11. OFFICE	11.3
12. GYM	11.3
13. STORAGE FOR DING TANK	1.1
14. STORAGE FOR DING TANK	10.1
15. CHEMICAL STORAGE	1.1
16. LABORATORY	11.1
17. STORAGE FOR DING TANK	2.1
18. STORAGE FOR DING TANK	11.1
19. STORAGE FOR DING TANK	1.1
20. STORAGE FOR DING TANK	1.1
21. STORAGE FOR DING TANK	0.1
22. STORAGE FOR DING TANK	0.1
23. STORAGE FOR DING TANK	1.1

- NOTE:**
- ALL RAISED BUILDS TO ABOVE 100% 100% GRAD.
- LEGEND:**
- PROPOSED ASSET FOR SHEK WU HUI SEWAGE TREATMENT WORKS
 - EXISTING ASSET OF THE SHEK WU HUI SEWAGE TREATMENT WORKS
 - PROPOSED IMPROVEMENTS
 - EXISTING IMPROVEMENTS TO BE MAINTAINED

LOCATION PLAN





LEGEND :

SR1 SENSITIVE RECEIVER No. 1

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 XAI 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	Figure No. 2	Scale 1:5 000
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Office SEWERAGE PROJECTS DIVISION WATER SUPPLY SERVICES DEPARTMENT		

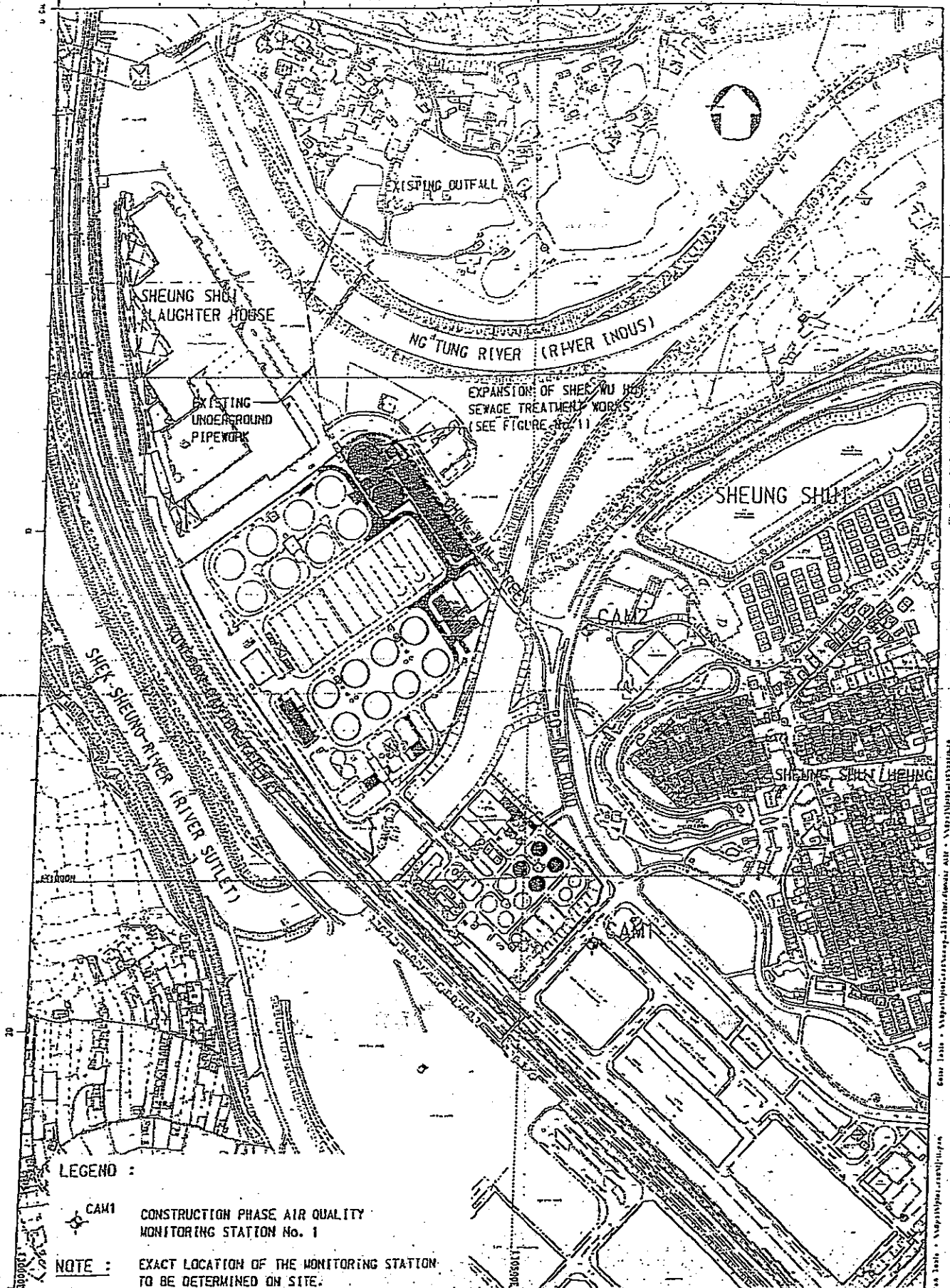


Fig. 2.1 - Location of Proposed Air Quality Monitoring Station

Scale: 1:5 000

Office: SEWAGE PROJECTS DIVISION

Figure Title
EXPANSION OF SHEK WU HUI
SEWAGE TREATMENT WORKS
LOCATION PLAN OF PROPOSED AIR QUALITY

Figure No.	2.1	Scale	1:5 000
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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 ⁽¹⁾	Limit Level
TSP (24 hour average)	<ul style="list-style-type: none"> • BL ≤ 200 g m⁻³, AL = (BL * 1.3 + LL)/2 • BL > 200 g m⁻³, AL = LL 	260 g m ⁻³
TSP (1 hour average)	<ul style="list-style-type: none"> • BL ≤ 384 g m⁻³, AL = (BL * 1.3 + LL)/2 • BL > 384 g m⁻³, AL = LL 	500 g m ⁻³
H ₂ S (at ASRs only)	<ul style="list-style-type: none"> • BL ≤ 1.92 ppb, AL = (BL * 1.3 + LL)/2 • BL > 1.92 ppb, AL = LL 	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

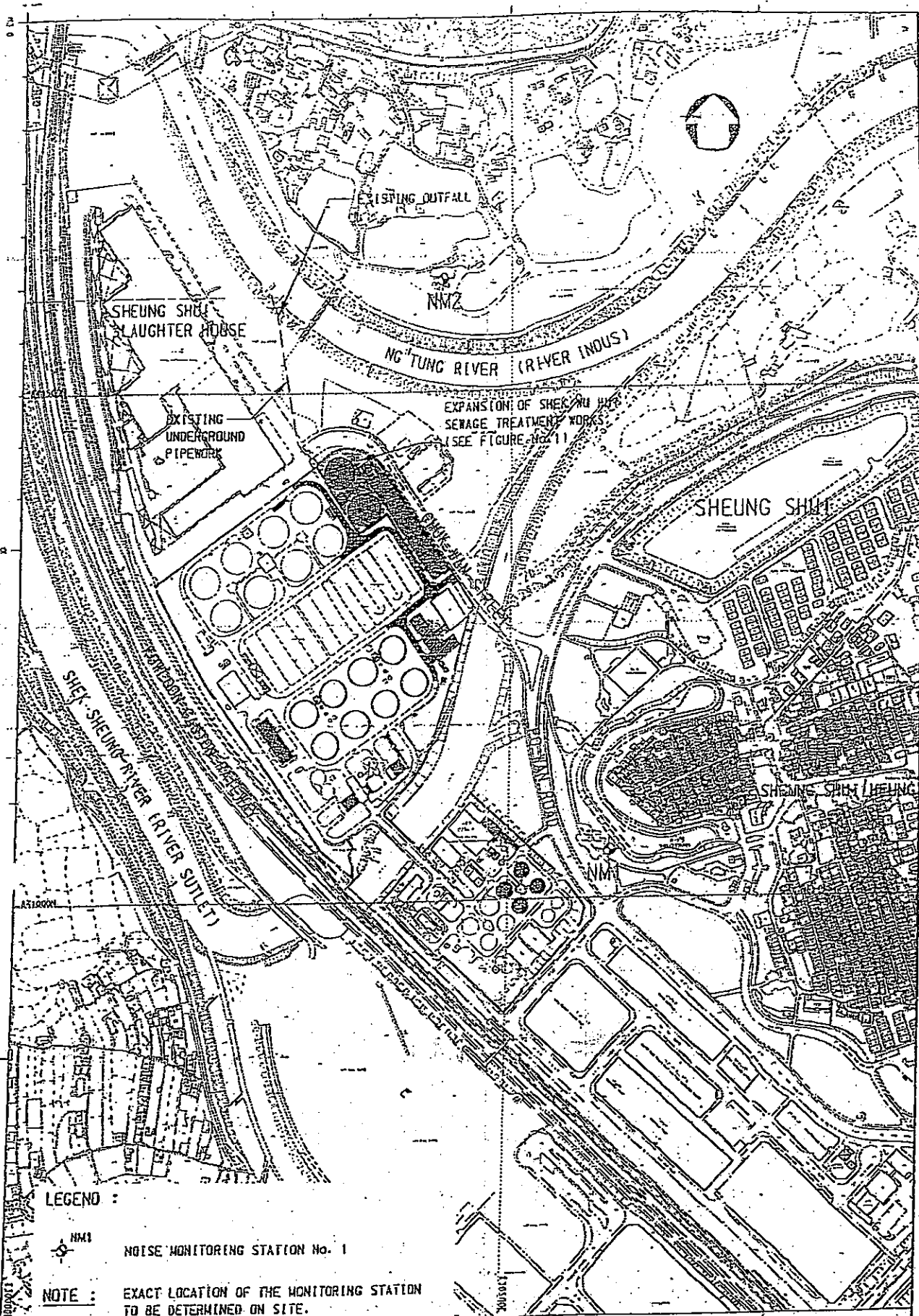
(1) BL = Baseline level, AL = Action level, LL = Limit level.

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			CONTRACTOR
	ST	IBC	ER	
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET. 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 6. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures, to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions, whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 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.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of work as determined by the ER until the exceedance is abated.



SHEUNG SHUI SEWERAGE TREATMENT WORKS (EXPANSION) - NOISE MONITORING STATION - PLAN
 SHEUNG SHUI SEWERAGE TREATMENT WORKS (EXPANSION) - NOISE MONITORING STATION - PLAN

LEGEND :


NM1 NOISE MONITORING STATION No. 1

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

Figure title
EXPANSION OF SHEK WU HUI SEWAGE TREATMENT WORKS
 LOCATION PLAN OF PROPOSED NOISE MONITORING STATION (CONSTRUCTION ONLY)

Figure No.	5.1	Scale	1:5 000
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	DRAINAGE SERVICES DEPARTMENT		

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)

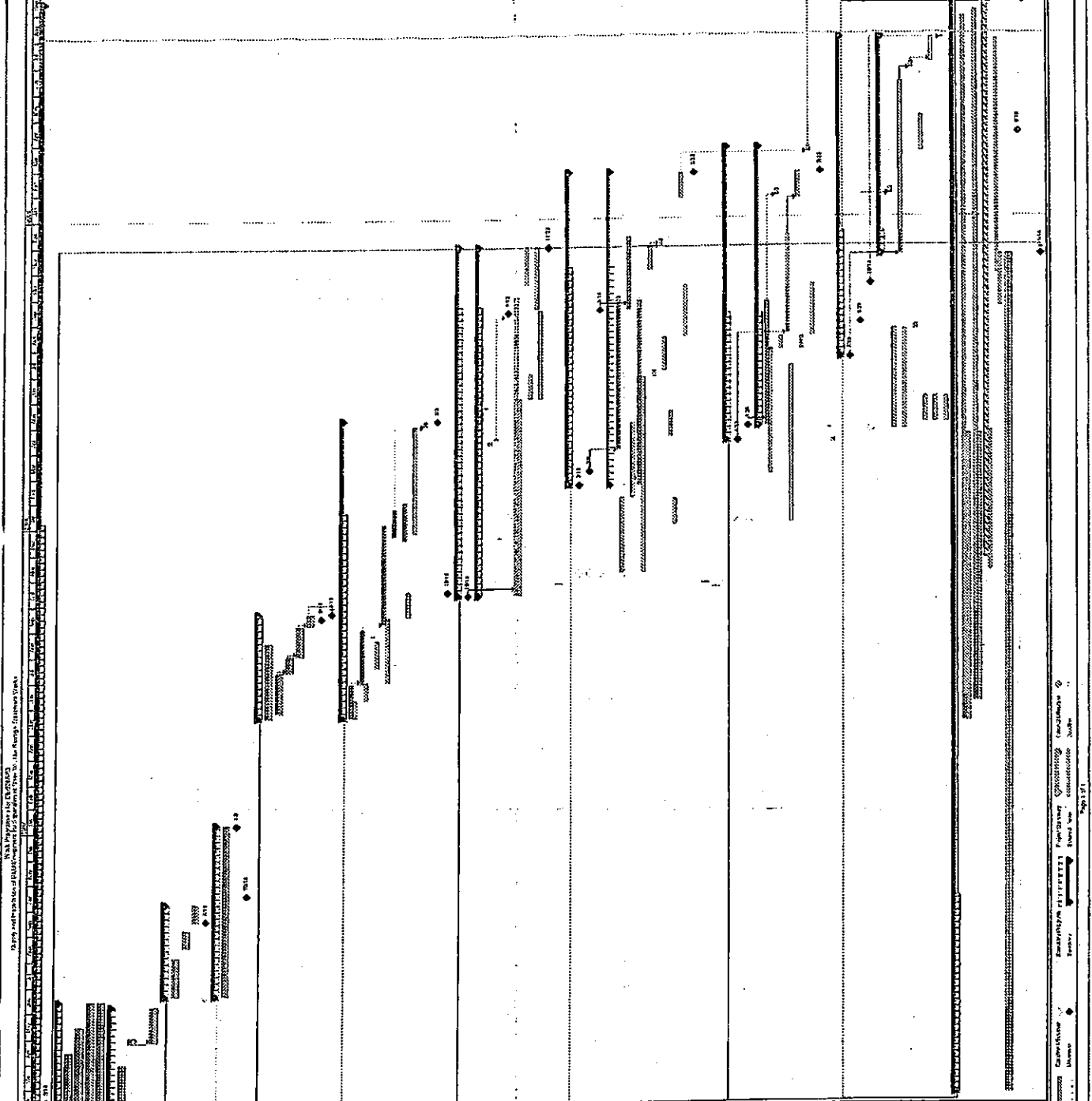
Table 5.3 Event/Action Plan for Construction Noise

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

Appendix 3

Construction Programme

Work proposed in this section is necessary for the completion of the project and is shown in the Plans and Specifications.



Item No.	Description	Quantity	Unit	Price	Total
1	Concrete Curb and Gutter	100	Linear Feet	12.50	1250.00
2	Concrete Base	100	Sq. Yds.	15.00	1500.00
3	Concrete Subgrade	100	Sq. Yds.	10.00	1000.00
4	Water Pipe (12 inch dia.)	100	Linear Feet	10.00	1000.00
5	Water Pipe (6 inch dia.)	100	Linear Feet	5.00	500.00
6	Sewer Pipe (12 inch dia.)	100	Linear Feet	12.00	1200.00
7	Sewer Pipe (6 inch dia.)	100	Linear Feet	6.00	600.00
8	Electrical Conduit (2 inch dia.)	100	Linear Feet	3.00	300.00
9	Electrical Conduit (1 1/2 inch dia.)	100	Linear Feet	2.00	200.00
10	Gravel (1/2 inch)	100	Cu. Yds.	1.50	150.00
11	Gravel (3/4 inch)	100	Cu. Yds.	1.50	150.00
12	Gravel (1 inch)	100	Cu. Yds.	1.50	150.00
13	Gravel (1 1/2 inch)	100	Cu. Yds.	1.50	150.00
14	Gravel (2 inch)	100	Cu. Yds.	1.50	150.00
15	Gravel (3 inch)	100	Cu. Yds.	1.50	150.00
16	Gravel (4 inch)	100	Cu. Yds.	1.50	150.00
17	Gravel (6 inch)	100	Cu. Yds.	1.50	150.00
18	Gravel (8 inch)	100	Cu. Yds.	1.50	150.00
19	Gravel (12 inch)	100	Cu. Yds.	1.50	150.00
20	Gravel (18 inch)	100	Cu. Yds.	1.50	150.00
21	Gravel (24 inch)	100	Cu. Yds.	1.50	150.00
22	Gravel (30 inch)	100	Cu. Yds.	1.50	150.00
23	Gravel (36 inch)	100	Cu. Yds.	1.50	150.00
24	Gravel (42 inch)	100	Cu. Yds.	1.50	150.00
25	Gravel (48 inch)	100	Cu. Yds.	1.50	150.00
26	Gravel (54 inch)	100	Cu. Yds.	1.50	150.00
27	Gravel (60 inch)	100	Cu. Yds.	1.50	150.00
28	Gravel (66 inch)	100	Cu. Yds.	1.50	150.00
29	Gravel (72 inch)	100	Cu. Yds.	1.50	150.00
30	Gravel (78 inch)	100	Cu. Yds.	1.50	150.00
31	Gravel (84 inch)	100	Cu. Yds.	1.50	150.00
32	Gravel (90 inch)	100	Cu. Yds.	1.50	150.00
33	Gravel (96 inch)	100	Cu. Yds.	1.50	150.00
34	Gravel (102 inch)	100	Cu. Yds.	1.50	150.00
35	Gravel (108 inch)	100	Cu. Yds.	1.50	150.00
36	Gravel (114 inch)	100	Cu. Yds.	1.50	150.00
37	Gravel (120 inch)	100	Cu. Yds.	1.50	150.00
38	Gravel (126 inch)	100	Cu. Yds.	1.50	150.00
39	Gravel (132 inch)	100	Cu. Yds.	1.50	150.00
40	Gravel (138 inch)	100	Cu. Yds.	1.50	150.00
41	Gravel (144 inch)	100	Cu. Yds.	1.50	150.00
42	Gravel (150 inch)	100	Cu. Yds.	1.50	150.00
43	Gravel (156 inch)	100	Cu. Yds.	1.50	150.00
44	Gravel (162 inch)	100	Cu. Yds.	1.50	150.00
45	Gravel (168 inch)	100	Cu. Yds.	1.50	150.00
46	Gravel (174 inch)	100	Cu. Yds.	1.50	150.00
47	Gravel (180 inch)	100	Cu. Yds.	1.50	150.00
48	Gravel (186 inch)	100	Cu. Yds.	1.50	150.00
49	Gravel (192 inch)	100	Cu. Yds.	1.50	150.00
50	Gravel (198 inch)	100	Cu. Yds.	1.50	150.00
51	Gravel (204 inch)	100	Cu. Yds.	1.50	150.00
52	Gravel (210 inch)	100	Cu. Yds.	1.50	150.00
53	Gravel (216 inch)	100	Cu. Yds.	1.50	150.00
54	Gravel (222 inch)	100	Cu. Yds.	1.50	150.00
55	Gravel (228 inch)	100	Cu. Yds.	1.50	150.00
56	Gravel (234 inch)	100	Cu. Yds.	1.50	150.00
57	Gravel (240 inch)	100	Cu. Yds.	1.50	150.00
58	Gravel (246 inch)	100	Cu. Yds.	1.50	150.00
59	Gravel (252 inch)	100	Cu. Yds.	1.50	150.00
60	Gravel (258 inch)	100	Cu. Yds.	1.50	150.00
61	Gravel (264 inch)	100	Cu. Yds.	1.50	150.00
62	Gravel (270 inch)	100	Cu. Yds.	1.50	150.00
63	Gravel (276 inch)	100	Cu. Yds.	1.50	150.00
64	Gravel (282 inch)	100	Cu. Yds.	1.50	150.00
65	Gravel (288 inch)	100	Cu. Yds.	1.50	150.00
66	Gravel (294 inch)	100	Cu. Yds.	1.50	150.00
67	Gravel (300 inch)	100	Cu. Yds.	1.50	150.00
68	Gravel (306 inch)	100	Cu. Yds.	1.50	150.00
69	Gravel (312 inch)	100	Cu. Yds.	1.50	150.00
70	Gravel (318 inch)	100	Cu. Yds.	1.50	150.00
71	Gravel (324 inch)	100	Cu. Yds.	1.50	150.00
72	Gravel (330 inch)	100	Cu. Yds.	1.50	150.00
73	Gravel (336 inch)	100	Cu. Yds.	1.50	150.00
74	Gravel (342 inch)	100	Cu. Yds.	1.50	150.00
75	Gravel (348 inch)	100	Cu. Yds.	1.50	150.00
76	Gravel (354 inch)	100	Cu. Yds.	1.50	150.00
77	Gravel (360 inch)	100	Cu. Yds.	1.50	150.00
78	Gravel (366 inch)	100	Cu. Yds.	1.50	150.00
79	Gravel (372 inch)	100	Cu. Yds.	1.50	150.00
80	Gravel (378 inch)	100	Cu. Yds.	1.50	150.00
81	Gravel (384 inch)	100	Cu. Yds.	1.50	150.00
82	Gravel (390 inch)	100	Cu. Yds.	1.50	150.00
83	Gravel (396 inch)	100	Cu. Yds.	1.50	150.00
84	Gravel (402 inch)	100	Cu. Yds.	1.50	150.00
85	Gravel (408 inch)	100	Cu. Yds.	1.50	150.00
86	Gravel (414 inch)	100	Cu. Yds.	1.50	150.00
87	Gravel (420 inch)	100	Cu. Yds.	1.50	150.00
88	Gravel (426 inch)	100	Cu. Yds.	1.50	150.00
89	Gravel (432 inch)	100	Cu. Yds.	1.50	150.00
90	Gravel (438 inch)	100	Cu. Yds.	1.50	150.00
91	Gravel (444 inch)	100	Cu. Yds.	1.50	150.00
92	Gravel (450 inch)	100	Cu. Yds.	1.50	150.00
93	Gravel (456 inch)	100	Cu. Yds.	1.50	150.00
94	Gravel (462 inch)	100	Cu. Yds.	1.50	150.00
95	Gravel (468 inch)	100	Cu. Yds.	1.50	150.00
96	Gravel (474 inch)	100	Cu. Yds.	1.50	150.00
97	Gravel (480 inch)	100	Cu. Yds.	1.50	150.00
98	Gravel (486 inch)	100	Cu. Yds.	1.50	150.00
99	Gravel (492 inch)	100	Cu. Yds.	1.50	150.00
100	Gravel (498 inch)	100	Cu. Yds.	1.50	150.00

Appendix 4

**Environmental Requirements
and
Implementation Status**

APPENDIX B IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

Implementation Schedule for Air Quality Control

PP Ref ⁱⁱ	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 deodorizers 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 ^a	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>Construction Runoff and Drainage</p> <ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed, and internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1m³/s a sedimentation basin of 30m³ would be required and for a flow rate of 0.5m³/s the basin would be 150m³. The detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of construction. Ideally, construction works should be programmed to minimize surface excavation works during the rainy season (April to September). All exposed earth areas should be compacted and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means. 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. 	Work site / During the construction period	Contractor	√		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance	

EP Ref	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	<p>Construction Runoff and Drainage (Cont'd)</p> <ul style="list-style-type: none"> All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and, particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storms events, especially for areas located near steep slopes. 	Work site / During the construction period	Contractor		✓		ProPECC PN 1/94; WPCO, Waste Disposal Ordinance

PP Ref ^d	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 2 S2.4.4	<p>Construction Runoff and Drainage (Cont'd)</p> <ul style="list-style-type: none"> All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing bay should be provided at every site exits and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. On-site drainage system should be equipped with oil interceptors to separate oil/fuel from contaminated storm water. 	Work site / During the construction period	Contractor	✓			ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.4.4	<p>General Construction Activities</p> <ul style="list-style-type: none"> Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. 	Work site / During the construction period	Contractor	✓			ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.4.4	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> Sewage from construction workforce should be handled by portable chemical toilets or sewage holding tanks with the sewage regularly collected by a reputable sewage collector for disposal at, for example, SWHSTW. Sewage from on-site toilets should be diverted to and stored within sewage holding tanks for later disposal. 	Work site / During the construction period	Contractor	✓			ProPECC PN 1/94; WPCO, Waste Disposal Ordinance
Annex 2 S2.5.3 - S2.5.11	<p>The implementation programme of the village sewerage should be monitored to achieve the target sewerage connection to communal sewers.</p>	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	✓		N	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			N	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 ¹	Environmental Protection Measures	Location / Timing	Implementation Agent ²	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"> The levels of structures should be designed such that excavation could be minimized as far as practicable. Excavated materials generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal. Control measures recommended under the prevailing ETWB circulars should be strictly followed to ensure proper management of the C&D materials with an aim to minimize the generation of C&D material and maximize the use of inert C&D material. 	Work site / During the planning and design stage	DSD	✓		ProPECCPN 1/94; WPCO, Waste Disposal Ordinance	

PP Ref	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"> Measures recommended in the ETWB TCW No. 15/2003 should be followed to require the contractor to prepare and implement an enhanced Waste Management Plan (WMP) to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. For the demolition works, the contractor shall submit a method statement for the works as part of the WMP. The Contractor shall include in the method statement the sequence of demolition and the work programme to facilitate effective recovery of reusable and/or recyclable portions of the C&D materials at the earliest stage, so as to minimise the need for subsequent sorting. Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. Separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors. Any unused chemicals or those with remaining functional capacity shall be recycled. Maximising the use of reusable steel formwork to reduce the amount of C&D material. Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill. Proper storage and site practices to minimise the potential for damage or contamination of construction materials. Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering. 	Work site / During the construction period	Contractor	✓		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 3 S3.5.2 - S3.5.5	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> • nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility. • training of site personnel in proper waste management and chemical waste handling procedures; • Provision of sufficient waste disposal points and regular collection for disposal; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • a Waste Management Plan should be prepared, and should be submitted to the Engineer for approval; and • a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed. • In order to monitor the disposal of C&D material at landfills and public filling facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. The measures recommended in ETWB TCW No. 31/2004 should be followed. 	Work site / During the construction period	Contractor		✓		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 3 S 3.5.6	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material; 	Work 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"> The C&D material generated from the site formation and demolition works should be sorted on-site into inert C&D material (that is, public fill) and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material comprising fill material should be reused on-site as backfilling material as far as practicable. C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill. A suitable area should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. 	Work sites / During the construction period	Contractor		✓		EIAO-TM and Noise Control Ordinance

PP Ref [#]	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation & Guidelines
				D	C	O	
Annex 3 S 3.5.8	<p>Chemical Wastes</p> <ul style="list-style-type: none"> When chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed waste collector to transport and dispose of the chemical wastes in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. 	Work sites / During the construction period	Contractor		Y		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*	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		Y		EAO-TM and Noise Control Ordinance
Annex 4 S4.7.3	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; Silencers or mufflers on construction equipment should be utilised, if found necessary, to further reduce noise, and should be properly maintained during the construction phase; Mobile plant should be sited as far away from NSRs as possible; Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; Plant known to emit noise strongly in one direction, should, where possible, be orientated so that the noise is directed away from nearby NSRs; and Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	Work sites / During the construction period	Contractor		Y		EAO-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

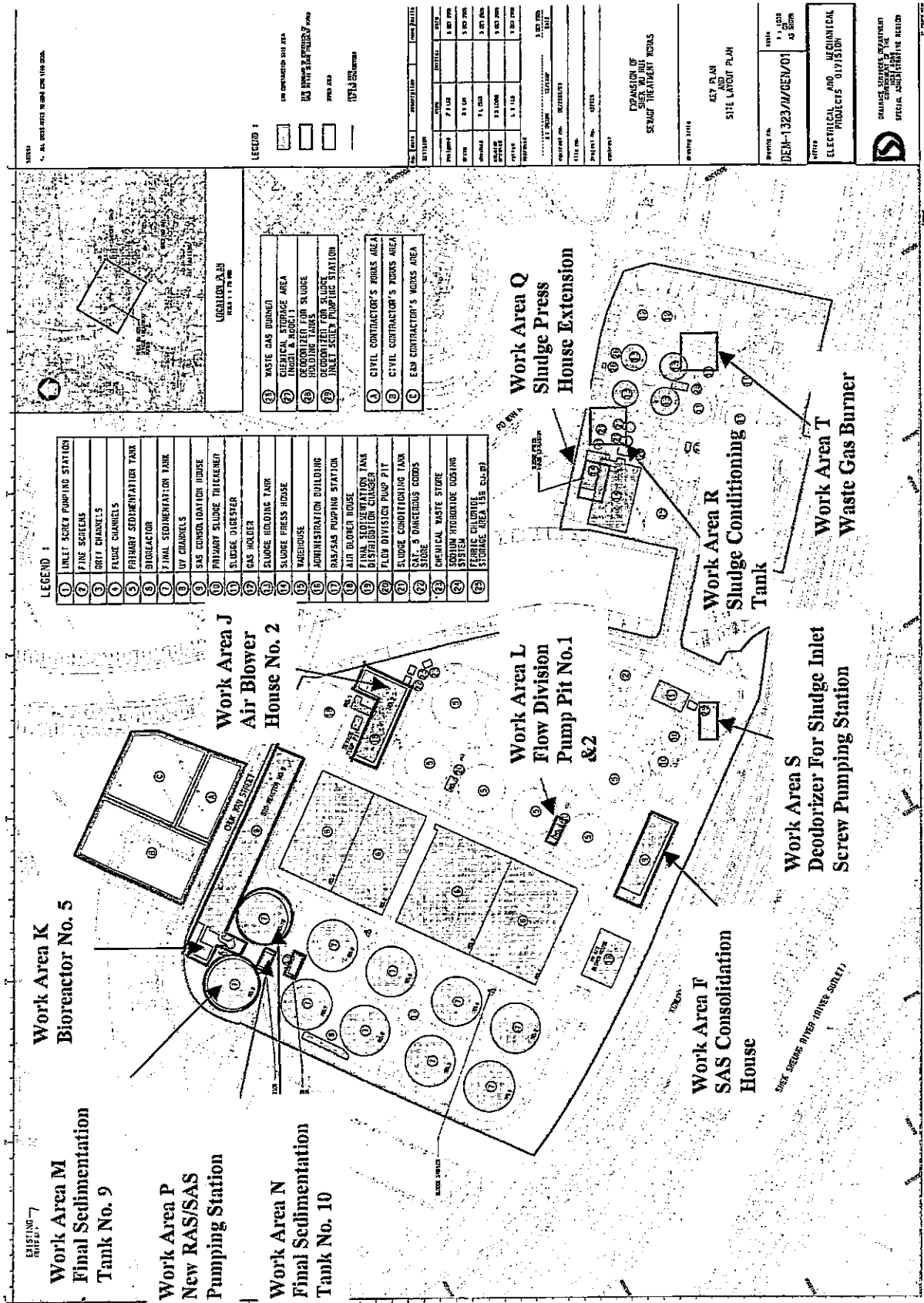
Site layout plan

and

Site Inspection Checklists

Shek Wu Hui STW – Expansion E&M Works EM&A Site Inspection – October 2009

Site Layout



LEGEND :

- ① INLET SCREEN PUMPING STATION
- ② FINE SCREENS
- ③ GRIFF CHANNELS
- ④ FLOCC CHANNELS
- ⑤ PRIMARY SEDIMENTATION TANK
- ⑥ BIOLOGICAL
- ⑦ FINAL SEDIMENTATION TANK
- ⑧ UV CHANNELS
- ⑨ SAS CONDENSATION HOUSE
- ⑩ PRIMARY SLUDGE THICKENER
- ⑪ SLUDGE DRESSER
- ⑫ GAS HOLDER
- ⑬ SLUDGE HOLDING TANK
- ⑭ SLUDGE PRESS HOUSE
- ⑮ WAREHOUSE
- ⑯ ADMINISTRATION BUILDING
- ⑰ RAS/SAS PUMPING STATION
- ⑱ AIR BLOWER HOUSE
- ⑲ FINAL SEDIMENTATION TANK DISTRIBUTION CHANGERS
- ⑳ FLOW DIVISION PUMP PIT
- ㉑ SLUDGE CONDITIONING TANK STORE
- ㉒ CAT & DANGEROUS GOODS STORE
- ㉓ CHEMICAL WASTE STORE
- ㉔ SODIUM HYDROXIDE DOSING SYSTEM
- ㉕ FERRIC CHLORIDE STORAGE AREA 15t CAPED

- ⑳ WASTE GAS BURNER
- ㉑ RESISTANT STORAGE AREA (WOOD & METAL)
- ㉒ DEODORIZER FOR SLUDGE HOLDING TANKS
- ㉓ DEODORIZER FOR SLUDGE INLET SCREW PUMPING STATION

- ① CIVIL CONTRACTOR'S WORKS AREA
- ② CIVIL CONTRACTOR'S WORKS AREA
- ③ E&M CONTRACTOR'S WORKS AREA

DATE: 11/11/09
SCALE: 1:1000

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	11/11/09
2	ISSUED FOR PERMIT	11/11/09
3	ISSUED FOR PERMIT	11/11/09
4	ISSUED FOR PERMIT	11/11/09

LEGEND :

- IN OPERATIONAL USE
- NOT OPERATIONAL
- PROPOSED
- EXISTING

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	11/11/09
2	ISSUED FOR PERMIT	11/11/09
3	ISSUED FOR PERMIT	11/11/09
4	ISSUED FOR PERMIT	11/11/09

EXPANSION OF SHEK WU HUI STW SEWAGE TREATMENT WORKS

PROJECT NO.: 11/11/09
DRAWING NO.: 11/11/09
SCALE: 1:1000
DATE: 11/11/09

DESIGNED BY: [Name]
CHECKED BY: [Name]
DATE: 11/11/09

PROJECT NO.: 11/11/09
DRAWING NO.: 11/11/09
SCALE: 1:1000
DATE: 11/11/09

WORK NO.: 11/11/09
DRAWING NO.: 11/11/09
SCALE: 1:1000
DATE: 11/11/09

DESIGNED BY: [Name]
CHECKED BY: [Name]
DATE: 11/11/09

PROJECT NO.: 11/11/09
DRAWING NO.: 11/11/09
SCALE: 1:1000
DATE: 11/11/09

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

ENVIRONMENTAL SITE INSPECTION CHECKLIST

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

Inspected By:

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

E&M Contractor Representative: Kenneth Leung
W.T. Fung, 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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
Air Quality - Dust							
1	Water spray	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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	↓			✓		
Water Quality							
11	Storm drains	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
17	Large object	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
18	Sewage discharged		✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions		✓				
Noise Control							
22	Comply with ordinance	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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				✓		
Waste Disposal							
31	Construction wastes	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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⁽⁴⁾

Installation works of E&M equipment were observed at Waste Gas Burner.


No particular observation.

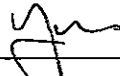
(Note: Refer to attached site layout)

Signatures

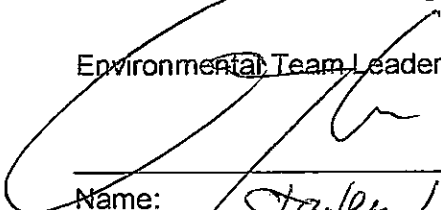
DSD Representative

E&M Contractor Representative


Name: M. K. Lau


Name: Ben Yuen

Environmental Team Leader


Name: Stanley Lau

- (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: 15th October 2009

Time: 2:30-3:30

Inspected By:

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

E&M Contractor Representative: Kenneth Leung
W.T. Fung, Frankie Chan

Environmental Team Inspector: Tony Yeung

Weather

Condition Sunny Fine Overcast Drizzle Rain Storm Hazy

Temperature 26 °C Humidity 70 %

Wind Calm Light Breeze Strong Direction N

Ref. No. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
Air Quality - Dust							
1	Water spray	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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				✓		
Water Quality							
11	Storm drains	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
17	Large object	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
18	Sewage discharged		✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions	↓	✓				
Noise Control							
22	Comply with ordinance	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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	↓			✓		
Waste Disposal							
31	Construction wastes	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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⁽⁴⁾

Installation works of EDM equipment were observed at Waste Gas Burner.


No particular observation.

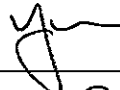
(Note: Refer to attached site layout)

Signatures

DSD Representative

E&M Contractor Representative


Name: MKLAM


Name: Ben Yuen

Environmental Team Leader


Name: Stanley Lau

- (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: 22nd October 2009 Time: 09:30 - 10:30

Inspected By:

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

E&M Contractor Representative: W.T. Fung, 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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
Air Quality - Dust							
1	Water spray	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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	↓			✓		
Water Quality							
11	Storm drains	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
17	Large object	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
18	Sewage discharged		✓				
19	Fuel/chemical storage		✓				
20	Storage area condition		✓				
21	Clean-up actions	↓	✓				
Noise Control							
22	Comply with ordinance	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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	↓			✓		
Waste Disposal							
31	Construction wastes	F, J, K, L, M, N, O, P, Q, R, S, T	✓				
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. ⁽¹⁾	Brief Description of Mitigation	Site Location ⁽²⁾	Activity Compliance				Action Required/ Responsible Party ⁽³⁾
			Yes	No	N/A	Unk	
43	Disposal of chemical wastes	F, J, K, L, M, N, O, P, Q, R, S, T			✓		
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⁽⁴⁾


Installation works of E&M equipment were observed at Waste Gas Burner.

No particular observation.

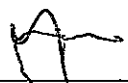
(Note: Refer to attached site layout)

Signatures

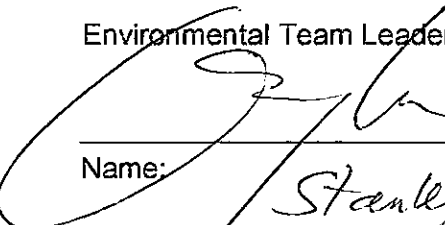
DSD Representative


Name: M. K. Lam

E&M Contractor Representative


Name: Ben Yuen

Environmental Team Leader


Name: Stanley Lau

- (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.

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)**

