# **Drainage Service Department**

# Monthly Environmental Monitoring & Auditing report for

# Contract No.DC/2006/11 Drainage Improvement in Southern Lantau

**August 2010** 

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# APPROVAL SHEET

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#### **EXECUTIVE SUMMARY**

This is the twenty-fifth monthly environmental Monitoring and audit (EM&A) report for "Drainage Improvement in Southern Lantau Investigation". The environmental permit number is "EP-237/2005/B". The report concludes the impact monitoring for the activities undertaken during the period of 1 August 2010 to 31 August 2010. The major activities in this reporting month include construction of fish ladder at Pak Ngan Heung (PNH) River, construction of inlet of Luk Tei Tong (LTT) bypass channel and provision of granite facing to concrete structures constructed.

Noise, water quality and ecological monitoring were performed. Results obtained were checked against the previously established Action / Limit (A/L) levels. Additionally, the implementation status of environmental mitigation measures, event / action plan and environmental complaint handling procedures were inspected during weekly site environmental audit.

In general, waste management was satisfactory during the reporting month.

Impact monitoring for construction noise was conducted in the reporting period. No exceedance of A/L level was reported.

Furthermore, impact monitoring for water quality was conducted. Total 49 non-compliance events of water quality criteria were recorded in this reporting period while 7 of them were believed to be mainly attributed to improper site practice and insufficient of water quality mitigation measures on site. As such, contractor was advised to implement necessary corrective actions and mitigation measures as to minimize further deterioration of water quality.

During ecological monitoring survey, no White-shouldered Starling was recorded breeding in the watch tower. There was no sign of disturbance from the Project to the watch tower. The watch tower may not be suitable for birds as nesting habitat. In addition, no disturbance on the flora and fauna in the river channels were observed during the ecological monitoring.

There was no complaint, notification of any summons and successful

prosecutions against the project received during the reporting period.

Construction activities being carried out in this reporting period will be continued in the upcoming month. It is expected that noise, air and water quality impacts will be resulted from the works. With reference to the EM&A manual and mitigation measure report, mitigation measures are proposed to be taken, if necessary.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement.

#### 1. Introduction

This is the twenty-fifth monthly Environmental Monitoring and Audit (EM&A) Report for "Drainage Improvement in Southern Lantau Investigation" project (Environmental Permit No. EP-237/2005/B)

# 2. Project Information

#### 2.1 Construction program

The "Drainage Improvement in Southern Lantau Investigation" project will be completed by January 2011. The project comprises the following:

- Construction of approximately 80m long gabion with natural bed in Pak Ngan Heung River, approximately 180m of three cells 3m x 2m box culvert and approximately 100m of rectangular channel at Pak Ngan Heung River;
- Construction of approximately 250m of 0.75m wide U-Channel at Ling Tsui Tau Village in Mui Wo;
- Construction of bypass channel of about 350m and 240m long of gabion channels at Luk Tei Tong River respectively; and
- Widening three existing bottlenecks with gabion lined at Tai Tei Tong (TTT) River

Appendix A shows the construction program and location plan of the project.

# 2.2 Project organization

The Main Contractor, Yick Hing Construction Company Limited, has commissioned Environmental Pioneers & Solutions Limited and Ecosystems Limited as the Environmental Team, which comprises the environmental team leader, the ecologists and the environmental technicians to undertake the environmental monitoring and audit work for this project.

The environmental management structure and is shown in Fig 2.2.1.

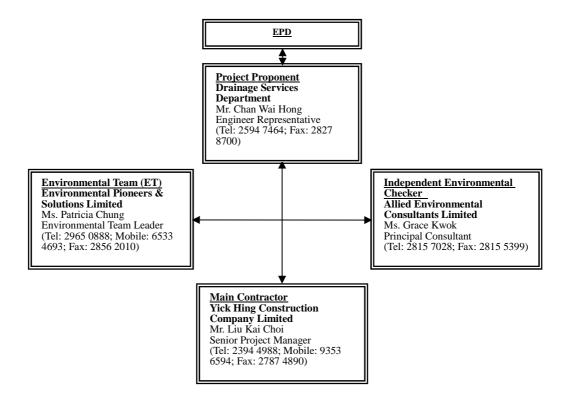


Figure. 2.2.1 Environmental Management structure for the project

#### 2.3 Key personal contact information chart

Detailed contact of key persons involved in environmental aspect of the project is shown in Appendix B.

# 3. Construction Stage

# 3.1 Construction activities in the reporting month

Major activities in the reporting month included the followings:

- 1. Construction of the inlet of LTT bypass channel.
- 2. Construction of gabion wall at PNH River.
- 3. Construction of granite facing for concrete structures.

# 3.2 Construction activities for the coming month

Construction activities aforementioned will be continued in the upcoming month.

#### 3.3 Environmental Status

Appendix A shows the drawing of the project area.

Locations of the monitoring and control stations with environmental sensitive receivers are presented in Section 4.3, 5.3 and 6.3 for noise, water and ecological monitoring respectively.

## 4. Noise Monitoring

#### 4.1 Monitoring Parameters and Methodology

The construction noise level was measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{eq~(30minutes)}$  was used as the monitoring parameter for the impact monitoring in the time period between 0700 to 1900 hours on normal weekdays. For all other time period,  $L_{eq~(5minutes)}$  was employed for comparison with the Noise Control Ordinance (NCO) criteria.

Noise measurement results obtained from each monitoring location were recorded in the Construction Noise Monitoring Data Sheet (Appendix E) immediately after the measurement. As supplementary information for data auditing, statistical results  $L_{10}$  and  $L_{90}$  were also be recorded for reference.

In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action plan in Table 4.5.2, shall be carried out. This additional monitoring shall be carried out until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

# **4.2** Monitoring Equipment

The sound level meters and calibrators comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum (TM) to the Noise Control Ordinance was deployed as monitoring equipment for noise measurement.

Noise measurement was not be made in the presence of fog, rain, wind with a steady speed exceeding 5ms<sup>-1</sup> or wind with gust exceeding 10ms<sup>-1</sup>. Thus wind speed was checked by the portable wind speed indicator capable of measuring the wind speed in m/s. Table 4.2.1 summarizes the equipment list for noise monitoring

14	Table 4.2.1 Equipment List for Noise Womtoring										
Equipment	Manufacturer & Model No.	Precision Grade	Qty								
Integrated sound level meter	ACO Japan, model 6224	IEC 651 Type 1 IEC 804 Type 1	1								
Windscreen	Microtech gefell model W2	N/A	1								
Acoustical calibrator	B & K, model 4231	IEC 942 Type 1	1								
Wind speed indicator	Kestrel K1000	N/A	1								
Remarks: Calibration	details for the sound level me	ter is given in Append	lix C for								

Table 4.2.1 Equipment List for Noise Monitoring

reference

# 4.3 Monitoring Locations

According to the Baseline Monitoring Report issued in May 2008 for the captioned project, four locations where are alternative from the locations proposed in EM&A manual, were designated for baseline noise monitoring. For the data validation, impact noise monitoring was undertaken in the same locations during the construction phase of the project. The proposed monitoring locations are summarized in Table 4.3.1. Figure 4.3.1 shows the Noise Monitoring Locations

Noise measurement in each monitoring locations were taken at a point 1m from the exterior of the selected premises and at a height with no disturbance to the dweller and least obstructed view.

Identification No.	Noise Monitoring Locations
N1	No. 73, Village House, Ling Tsui Tau Tsuen (ground level)
N2	No. 31, Village House, Ling Tsui Tau Tsuen (ground level)
N3	Fence wall outside No. 5 village house adjacent to Luk Tei Tong River Outlet (ground level)
N4	No. 23, Village House, Tai Tei Tong River (ground level)

Table 4.3.1 Noise Monitoring Locations during Construction Phase

In accordance with the requirements in the EM&A manual, weekly impact monitoring was conducted. For the time period between 0700 and 1900 hours on normal weekdays, and noise parameter of  $L_{eq~(30minutes)}$  was measured. As if the construction works were carried out during restricted period (ie. 1900-2300, 2300-0700 of next day and Sundays / general holiday), impact monitoring that comprises 3 consecutive  $L_{eq~(5minutes)}$  would be carried out.

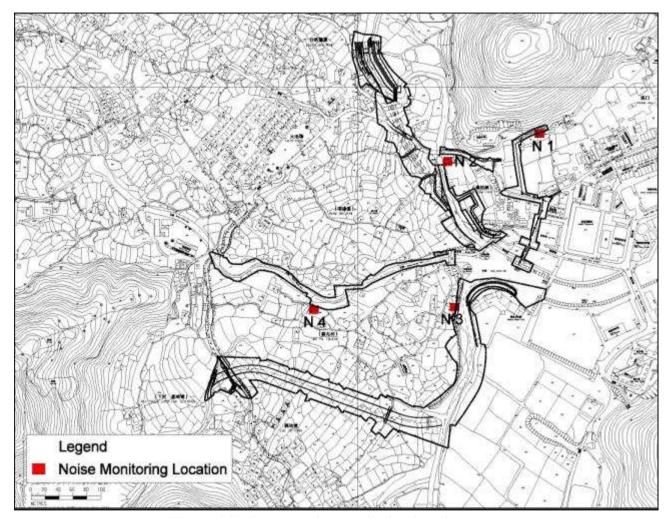


Figure 4.3.1 Impact noise monitoring locations

# 4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 4.4.1. The results, ranged between 47.4 dB(A) and 62.8 dB(A), were within the limit levels and therefore, no exceedance was found.

Table 4.4.1 Noise monitoring results

Table 4.4	Table 4.4.1 Noise Monitoring Results for the reporting month											
Location	Parameter	Date	Time	L <sub>Aeq</sub> dB(A)	Limit dB(A)	Exceedance	Weather					
N1	L <sub>eq 30mins</sub>	2-Aug-10	13:05	60.8	75	N	Sunny					
N1	L <sub>eq 30mins</sub>	9-Aug-10	12:35	59.8	75	N	Sunny					
N1	L <sub>eq 30mins</sub>	19-Aug-10	13:00	62.8	75	N	Sunny					
N1	L <sub>eq 30mins</sub>	23-Aug-10	12:45	53.5	75	N	Sunny					
N1	L <sub>eq 30mins</sub>	30-Aug-10	13:40	61.1	75	N	Sunny					
N2	L <sub>eq 30mins</sub>	2-Aug-10	12:33	47.9	75	N	Sunny					
N2	L <sub>eq 30mins</sub>	9-Aug-10	12:00	50.3	75	N	Sunny					
N2	L <sub>eq 30mins</sub>	19-Aug-10	12:20	47.4	75	N	Sunny					
N2	L <sub>eq 30mins</sub>	23-Aug-10	12:05	50.2	75	N	Sunny					
N2	L <sub>eq 30mins</sub>	30-Aug-10	11:50	45.3	75	N	Sunny					
N3*	L <sub>eq 30mins</sub>	2-Aug-10	12:00	47.9	75	N	Sunny					
N3*	L <sub>eq 30mins</sub>	9-Aug-10	11:20	51.5	75	N	Sunny					
N3*	L <sub>eq 30mins</sub>	19-Aug-10	13:00	62.8	75	N	Sunny					
N3*	L <sub>eq 30mins</sub>	23-Aug-10	11:25	52.6	75	N	Sunny					
N3*	L <sub>eq 30mins</sub>	30-Aug-10	11:10	48.6	75	N	Sunny					
N4	L <sub>eq 30mins</sub>	2-Aug-10	12:50	53.9	75	N	Sunny					
N4	L <sub>eq 30mins</sub>	9-Aug-10	10:30	53.2	75	N	Sunny					
N4	L <sub>eq 30mins</sub>	19-Aug-10	12:20	58.7	75	N	Sunny					
N4	L <sub>eq 30mins</sub>	23-Aug-10	10:50	55.1	75	N	Sunny					
N4	L <sub>eq 30mins</sub>	30-Aug-10	10:40	48.6	75	N	Sunny					

Remarks: Raw datasheet for noise monitoring are attached in Appendix E for reference. Remark\*: The equivalent noise level of N3 is corrected by +3 dB from the raw data result due to the fact that free field measurement was carried out in the location.

# 4.5 Action and Limit level for Construction noise

The Action and Limit (A/L) levels for construction noise are defined in Table 4.5.1. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 4.5.2 should be carried out.

There was no exceedance recorded in the reporting month.

Table 4.5.1 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	75dB(A)							

Remarks: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

Table 4.5.2 Event / Action Plan for Construction Noise

EVENT	ACTION												
	ET	IC(E)	ER	Contractor									
Action Level	<ol> <li>Notify IC(E) and Contractor;</li> <li>Carry out investigation;</li> <li>Report the results of investigation to the IC(E), ER and Contractor;</li> <li>Discuss with the Contractor and formulate remedial measures;</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol> <li>Review the analysed results submitted by the ET;</li> <li>Review the proposed remedial measures by the Contractor and advise ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	notification of failure in writing;	Submit noise     mitigation proposals     to IC(E);     Implement Noise     mitigation     proposals.									
Limit Level	1. Identify source; 2. Inform IC(E), ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IC(E), ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), 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 Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;  3. Supervise the implementation of remedial measures.	<ol> <li>Confirm receipt of notification of failure in writing;</li> <li>Notify Contractor;</li> <li>Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>Ensure remedial measures properly implemented;</li> <li>If exceedance continues, consider what portion of the work</li> </ol>	for remedial actions to IC(E) 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									

# **4.6** Noise Mitigation Measures

The following mitigation measures were observed from the weekly site inspection in the reporting month:

- Use of quiet powered mechanical equipment (PME)
- Implementation of the following good site practices:
  - Only well-maintained and regularly serviced plant should be operated on site;
  - Silencers or mufflers on construction equipment;
  - Mobile plant, if any, should be sited as far from noise sensitive receivers as possible; and
  - 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.

# 5. Water Monitoring

#### 5.1 Water Quality Monitoring Parameters and methodology

Turbidity in Nephelometric Turbidity Unit (NTU), Dissolved Oxygen (DO) in mg/L and Suspended Solids (SS) in mg/L are required to measure in this project. Turbidity, DO was measured in-situ while water samples were delivered to Accredited HOKLAS Laboratory for analysis of SS.

Other relevant data such as monitoring location, time, water depth, temperature, salinity, weather conditions and any other special phenomena and work underway at the construction site were recorded during sampling.

According to the requirement of the EM&A manual, two consecutive measurements for parameters of DO concentration, DO saturation and Turbidity are required to be taken at each monitoring location. When the difference in value between the first and second reading of DO or Turbidity is more than 25%, the reading would be discarded and further reading would be taken.

# **5.2** Monitoring Equipment

Turbidity, DO, Salinity, pH and temperature was measured by an instrument complied with the following requirements:

The instrument is a portable as well as weatherproof multimeter complete with cable and uses a DC power source. It is capable of measuring:

- A turbidity between 0-800NTU;
- A dissolved Oxygen level in the range of 0-20mg/L and 0-200% saturation;
- A temperature of 0-50°C;
- Salinity in the range of 0-40ppt;
- pH in the range of 0-14.

Suspended solid was determined by the water samples collected from the monitoring locations for further analysis in accredited HOKLAS laboratory. Water samples were contained by polythene bottles, packed in ice (cooled in 4°C without frozen) and delivered to the laboratory for analysis as soon as possible after collection. Duplicate samples from each independent sampling event were undertaken during impact monitoring.

Detailed calibration records of the multimeter were shown in Appendix C for reference.

# **5.3** Monitoring Locations

Seven locations included a control station in upstream of each stream/ river, a monitoring station at the end of each stream/ river of the works area and a monitoring station at Silver River were proposed for the impact water quality monitoring. Water samples were collected at mid-depth of each proposed monitoring stations for measurements and sample collection. The Location Plan is shown in Figure 5.3.1 for reference.

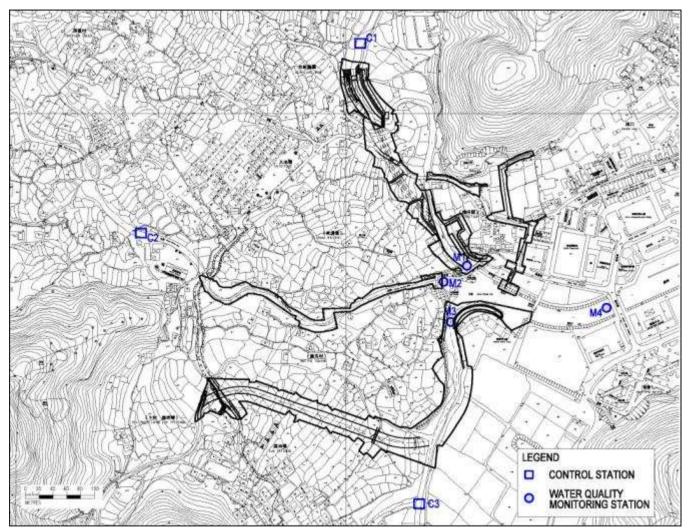


Figure 5.3.1 Water Quality Monitoring Locations

# **5.4** Monitoring Frequency

Impact water quality monitoring was undertaken three days per week and at ebb tides during the course of the construction river works. Upon the completion of the construction works, the monitoring exercises at the designated monitoring stations will be continued for four weeks in the same manner as the impact monitoring.

### 5.5 Monitoring Results and Interpretation

Water quality monitoring was carried out fifteen times in this reporting month. Detailed on-site measurements and laboratory analysis reports including QA/QC results are shown in Appendix F1 and F2 respectively, while Table 5.5.1 presents consolidated results throughout the reporting month.

Total 49 exceedance events on parameters of turbidity and suspended solids were recorded in this reporting month according to the established level. Findings from the investigations showed most of the exceedance events were mainly caused by natural fluctuation and deficiencies of site practice.

As 7 events were suspected to be related to improper site practices, contractor was seriously reminded to review the site conditions and implement corrective actions as well as mitigation measures as soon as possible to minimize further deterioration of water quality.

Detailed information of the exceedance events and action taken were presented in Section 7.

Table 5.5.1 Water quality monitoring results in August 2010

	M1			M2			М3			M4		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	0.0	102.0	11.8	0.0	3.1	0.4	0.0	38.8	5.1	0.0	38.8	5.1
DO (mg/l)	7.0	8.6	8.0	7.4	8.4	8.0	7.2	9.9	8.3	7.2	9.9	8.3
Suspended Solid (mg/l)		81.0	11.5	1.0	6.3	2.4	4.3	10.8	7.7	2.7	27.9	6.6

		<b>C</b> 1		C2			СЗ		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	0.0	4.9	0.8	0.0	1.4	0.2	0.0	11.9	6.5
DO (mg/l)	7.0	8.3	7.7	7.5	8.5	8.1	4.8	8.3	6.7
Suspended Solid (mg/l)	1.0	4.6	2.3	1.0	2.3	1.2	3.1	10.7	6.9

<sup>\*</sup> Remarks: Detection limit for Turbidity, DO and SS are 1 NTU, 0.1 mg/L and 1 mg/L respectively.

# 5.6 Action and limit level for Water Quality

Based on the criteria stipulated in EM&A manual Section 4.8 and baseline water quality monitoring data obtained, the A/L levels are shown in Table 5.6.1 and Table 5.6.2. If the water quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event and Action Plan in Table 5.6.3 should be taken.

Table 5.6.1 Water quality criteria for monitoring

Parameters		Action	Limit		
DO in mg/L (mid-depth)	-	5%-ile of baseline data	-	4mg/L	
SS in mg/L (mid-depth)	-	95%-ile of baseline data; or 120% of control station's SS on the same day of measurement		99%-ile of baseline; or 130% of control station's SS on the same day of measurement	
Turbidity in NTU (mid-depth)	-	95%-ile of baseline data; or 120% of control station's turbidity on the same day of measurement		99%-ile of baseline; or 130% of control station's turbidity on the same day of measurement	

Table 5.6.2 Action and Limit Levels established according to baseline data

	Monitoring locations												
Parameters	M	[1	M	[2	M	[3	M4						
1 at affecters	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level					
Turbidity (NTU)	15.2	16.9	5.3	6.5	16.8	26.0	16.2	18.0					
DO (mg/L)	5.7	4.0	6.2	4.0	5.9	4.0	5.9	4.0					
SS (mg/L)	12.2	12.8	3.1	4.2	12.4	17.7	13.9	15.2					

#### Remarks:

For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits

For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Table 5.6.3 Event and action Plan for Water Quality

E\/ENIT		ACTION								
EVENT		ET		IC(E)		ER	Contractor			
Action Level being exceed by one sampling day	<ol> <li>2.</li> <li>3.</li> <li>4.</li> <li>6.</li> </ol>	Repeat in situ measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Repeat measurement on next day of exceedance.	2.	Discuss with ET and Contractor on the mitigation measures; Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures.	2.	make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	confirm notification of the non-compliance in writing; 2. Rectify unacceptable transport practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and			
Action level being exceed by more than two consecutive sampling days	<ol> <li>2.</li> <li>3.</li> <li>4.</li> <li>6.</li> <li>7.</li> </ol>	Repeat in situ measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Ensure mitigation measures are implemented; prepare to increase the monitoring frequency to daily Repeat measurement on next day of exceedance	3.	Discuss with ET and Contractor on the mitigation measures; Review	2.	make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and			
Limit level being exceeded by one sampling day	1. 2. 3. 4. 5.	Repeat in situ measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit Level	2.	Discuss with ET and Contractor on the mitigation measures; Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures.	2.	make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	c confirm notification of the non-compliance in writing; 2. Rectify unacceptable t practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and			

#### **5.7** Water Quality Mitigation Measures

# **Construction Run-off and Drainage**

The site practices outlined in ProPECC PN 1/94 'Construction Site Drainage' should be followed as far as practicable during both construction and operation phase of the drainage improvement works in order to minimize surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge.

As recommended in the final EM&A manual, attention would be paid especially construction run-off and drainage, general construction activities, sewage discharged from construction workforce and river channel excavation works.

Contractor was recommended to provide sufficient water treatment facilities for accumulated site water and excavation activities carried out nearby river channel. Earth bunds should be provided to the construction site in / next to the river channel to form an enclosed, dry environment to minimize water quality impact.

#### 5.8 Water Monitoring Schedule for the Next reporting period

Water monitoring scheduled for the next reporting period are 1, 3, 6, 8, 10, 13, 16, 17, 20, 22, 24, 27, 29 and 30 September 2010.

#### 6. Ecology Monitoring

#### **6.1 Ecological Monitoring Parameters**

According to the Final EM&A Manual, a specific ecological monitoring programme of the improved section of PNH and LTT Rivers is recommended. The monitoring parameters required to measure in this project and survey methodology are described below:

- (1) Avifauna species and abundance: Birds will be surveyed quantitatively using transect count method. Birds within the river channel and on the riverbank will be identified and their abundance will be recorded.
- (2) Aquatic macroinvertebrate community species composition and abundance: Survey on aquatic fauna will focus on determination of the diversity and abundance of stream aquatic communities. Sampling methods, such as active searching, direct observation, netting, and kick sampling, will be determined according to the site conditions during field survey.
- (3) Fish community species composition and abundance: Sampling methods, such as active searching, direct observation, and hand netting, will be determined according to the site conditions during field survey.
- (4) Adult odonate community species composition and abundance: Adult dragonfly will be surveyed quantitatively using transect count method. Adult dragonflies within the river channel and on the riverbank will be identified and their abundance will be recorded. Species requiring close examination will be netted.
- (5) Aquatic, emergent and riparian vegetation community species composition and abundance: The area will be walked through. Plant species composition and their relative abundance will be recorded.
- (6) Surveys of White-shouldered Starling Sturnus sinensis will be conducted at the disused watchtowers next to LTT river. Breeding of the White-shouldered Starlings will be determined by checking signs of attempt to breed or sign of breeding which include carrying nesting materials, to-and-fro movement of adults carrying food, presence of recently fledged juveniles, etc. The number of breeding pairs and the site observation will be recorded whenever possible.

Water Quality Monitoring along LTT and PNH River as well as LTT bypass channel was carried out. Water quality monitoring will include Turbidity in Nephelometric Turbidity Unit (NTU), Dissolved Oxygen (DO) in mg/L and Suspended Solids (SS) in mg/L are required to measure in this project. Moreover, additional water monitoring parameters will be taken for the purposes of ecological monitoring of water quality in this project. The added information will include: BOD, Ammonia, Nitrate and Phosphate concentrations. Turbidity, DO, pH and water flow will be measured in-situ while water samples will be delivered to Accredited HOKLAS Laboratory accredited laboratory and the analyses followed the standard methods according to APHA Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, or equivalent for analysis of SS, BOD, Ammonia, Nitrate and Phosphate concentrations.

Other relevant data such as monitoring location, time, water depth, temperature, salinity, weather conditions and any other special phenomena and work underway at the construction site will be recorded during sampling.

According to the requirement of the EM&A manual, two consecutive measurements for parameters of DO concentration, DO saturation and Turbidity are required to be taken at each monitoring. When the difference in value between the first and second reading of DO or Turbidity is more than 25%, the reading will be discarded and further reading will be taken.

#### 6.2 Monitoring Equipment and Methodology

Turbidity, DO, Salinity, pH and Temperature will be measured by a instrument complied with the following requirements:

The instrument is a portable as well as weatherproof multimeter complete with cable and uses a DC power source. It is capable of measuring:

- A turbidity between 0-800NTU;
- A dissolved Oxygen level in the range of 0-20mg/L and 0-200% saturation;
- A temperature of 0-50°C;
- Salinity in the range of 0-40ppt;
- pH in the range of 0-14.

Suspended solid was determined by the water samples collected from the

monitoring locations for further analysis in accredited HOKLAS laboratory. Water samples were contained by polythene bottles, packed in ice (cooled in 4°C without frozen) and delivered to the laboratory for analysis as soon as possible after collection. Duplicate samples from each independent sampling event were undertaken during impact monitoring.

#### **6.3** Monitoring Locations

According to the Final EM&A Manual, the improved section of the river channels will be divided into 50m long sections, and ecological survey will be carried out in each of the 50m sections. A total of nine sections will be divided for the two rivers which include:

- Two sections for existing upstream of PNH river (i.e. the proposed 80m long trapezoidal channel)
- Two sections for existing downstream of PNH river (i.e. the proposed 100m long rectangular channel)
- Five sections for existing Luk Tei Tong River (i.e. the proposed 240m long trapezoidal channel)

The disused watchtowers are located at the confluence of the three rivers and next to LTT river.

The Location Plan for ecological is shown in Figure 6.1 for reference.

The improved sections of the river channels require to carrying out water quality monitoring for the ecological purpose. The sampling points for impact monitoring was undertaken in the same place as the baseline monitoring proposed, where include:

- Three points for existing of PNH river
- Three points for existing of Luk Tei Tong River

The Location Plan for ecological water monitoring is shown in Figure 6.2 for reference.

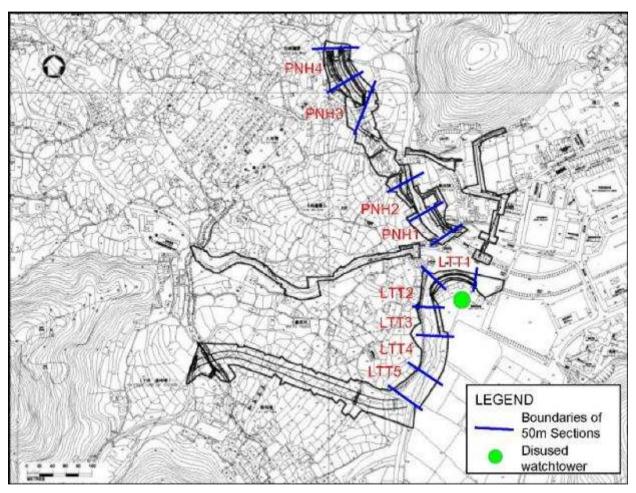


Figure 6.1 Ecological Monitoring Locations

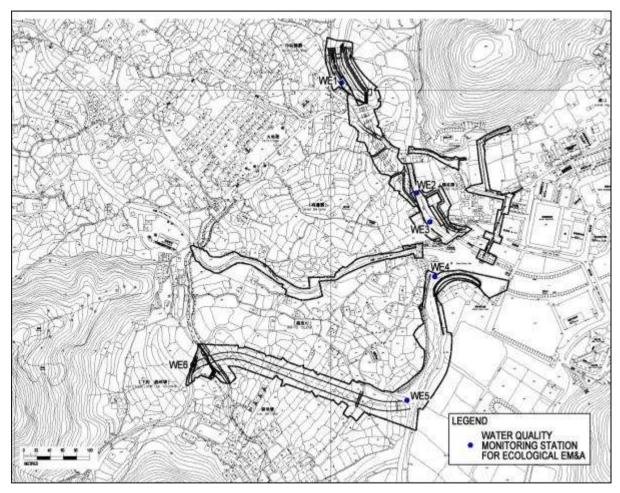


Figure 6.2 Ecological Water Quality monitoring locations

# **6.4** Monitoring Frequency

As proposed, ecological impact monitoring was carried out once for each monitoring location in the reporting month.

#### 6.5 Monitoring results

## Pak Ngan Heung Stream N and S sections

## **Vegetation**

Surveys were conducted on 19 August 2010. During the current monitoring session, new rock gabion wall was under construction. Stream bank and stream bed of PNH3 was completely cleared. Stream bank of PNH4 was mostly cleared and the old weir and associated vegeation was removed as part of the site clearance works under the project.

The walk through survey recorded a total of 23 species, including 13 trees, 1 shrub, 4 herb and 2 grass species (Appendix D1) on PNH N section. 16 of the species recorded are natives, while 7 were exotics. Remnants of vegetation including native trees (e.g. *Macaranga tanarius*) and grasses species (e.g. *Microstegium ciliatum*) were still seen along the east stream bank. No species of conservation interest was recorded. No quantitative surveys were carried out on both PNH3 and PNH4 due to vegetation clearance and construction works on stream banks as part of the site clearance works under the project.

During the current monitoring session, construction work ongoing along PNH S section. Vegetation was only found on remnants of the old concrete bank. A total of 5 species recorded, 3 of which were native and 2 were exotic. It was composed of isolated individuals of mangrove (*Kandelia obovata*), exotic shrub (*Lantana camara*) and native trees (*Ficus supbera*) (Appendix D2). No species of conservation interest was recorded.

#### Terrestrial Fauna

Surveys were conducted on 23 August 2010.

Two species of birds were recorded in the proposed work area of the Pak Ngan Heung River (Table 6.5.2). Both are common in Hong Kong.

Table 6.5.2 Avifauna in Pak Ngan Heung

Common names	Latin names	PNH	PNH	PNH	PNH	Commonness
		1	2	3	4	& distribution
Chinese Bulbul	Pycnonotus sinensis				1	CW
Magpie Robin	Copsychus saularis				1	CW

CW = common and widespread

No dragonfly was recorded in the proposed work area of the Pak Ngan Heung River in August 2010.

#### Aquatic fauna and fish

The stream flow in PNH3 boundary which had been previously diverted to a bypass channel was reinstated to the new fish ladder. Therefore the PNH 3 was covered by the present monitoring again. 6 species of fish and 4 crustacean were recorded in the four survey section at PNH. All are common and widespread in Hong Kong. Though Predaceous Chub was observed, the another one fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata*, was not recorded in PNH during the present monthly monitoring survey.

Table 6.5.4 Aquatic Invertebrates and fish in Pak Ngan Heung

Common names	Scientific names	PNH 1	PNH 2	PNH3	PNH4
Invertebrates					
Atyid shrimp	Caridina elongata				++
	Macrobrachium				
Palaemond shrimp	hainanensis				+
Crab	Varuna litterata			+	
Mitten Crab	Eriocheir japonica				+
Fish					
Mosquito fish	Gamusia affinis				++
Goby	Rhinogobius duospilus				
Barcheek Goby	Rhinogobius giurinus				
Swordtail	Xiphophorus hellerii				+
	Puntius				
Six-banded Barb	semifasciolatus				
Unidentified Cichlid					
fish					
Tilapia		++	++		
Predaceous Chub	Parazacco spilurus				+
Jarbua Terapon	Terapon jarbua	+			
Common Silver-biddy	Gerres oyena				
Mullet	Mugil cephalus	++	+++		
Broken-band	Liniparhomaloptera				
Hillstream Loach	disparis				

<sup>+ =</sup> Occasional, less than 5 individuals were found; ++ = Common, 5 - 20 individuals were found; +++ = Abundant, more than 20 individuals were found.

# **Luk Tei Tong Stream Section**

#### Vegetation

Surveys were conducted on 19 August 2010. During the current survey, construction of concrete channel bank and rock gabions are complted. Some renmants of vegetation and mangroves remained at both LLT1 and LLT2 respectively.

The walk through survey recorded a total of 15 species, including 6 tree, 4 herb and and 4 grass species (Appendix D3). 8 species recorded are natives, while 7 were exotics. No quantitative survey was carried out due to vegetation clearance on stream banks as part of the site clearance works under the project.

#### Terrestrial Fauna

The proposed work area of Luk Tei Tong River was divided into 5 sections. All recorded avifauna and dragonfly species are common in Hong Kong

Surveys were conducted on 23 August 2010.

A total of five species of birds were recorded in these sections (Table 6.5.6). All are common in Hong Kong.

Table 6.5.6 Avifauna in Luk Tei Tong River

Common names	Latin names	LTT	LTT	LTT	LTT	LTT	Commonness
		1	2	3	4	5	& distribution
Little Egret	Egretta garzetta	1	1				CW
Rufous-backed	Lanius schach					1	CW
Shrike							
Japanese White-eye	Zosterops japonica					1	CW
Black-collared	Sturnus nigricollis					1	CW
Starling							
Crested Myna	Acridotheres			2	2		CW
	cristatellus						

CW = common and widespread,

Two species of dragonfly were recorded in the Luk Tei Tong River in June 2010 (Table 6.5.7). All are common in Hong Kong (Wilson 2004).

Table 6.5.7 Dragonfly in Luk Tei Tong River

Common names	n names Latin names		LTT	LTT	LTT	LTT	Commonness
		1	2	3	4	5	& distribution
Green Skimmer	Orthetrum sabina		1		1		С
Wandering Glider	Pantala flavescens	3		1		1	A

A = abundant, C = common

# Aquatic invertebrates and fish

4 species of fish, 1 species of crustacean and 4 species of mollusks were recorded in the 5 sections at LTT. All are common and widespread in Hong Kong. The two fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata* and Predaceous Chub *Parazacco spilurus* were not recorded in LTT during the present monitoring as well as the baseline monitoring survey.

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

Common names	Scientific names	LTT1	LTT2	LTT3	LTT4	LTT5
Invertebrates	,	•	•			
Mangrove clam	Geloina erosa					
Rock oyster	Saccostrea cuculata		++			
	Melanoides				+	+++
Snail	tuberculata					
Snail	Terebralia sp.					
Snail	Nerita sp.		++			
Snail	Littoraria articulata		+++			
Crab	Varuna litterata					
Fiddler crab	Uca lactea					
Fiddler crab	Uca arcuata			++		
Fiddler crab	Uca crassipes					
Crab	Perisesarma bidens					
Mangrove mud crab	Scylla paramamosain					
Mitten crab	Eriocheir japonica					
Fish						
	Periophthalmus			+		
Common mudskipper	cantonensis					
Tilapia		+	+	++		
Jarbua terapon	Terapon jarbua					
Mullet	Mugil cephalus		+	++		
Common Silver-biddy	Gerres oyena					
Barcheek Goby	Rhinogobius giurinus					+

<sup>+ =</sup> Occasional, less than 5 individuals were found; ++ = Common, 5 - 20 individuals were found; +++ = Abundant, more than 20 individuals were found.

#### **Disused Watchtowers**

Surveys were conducted on 23 August 2010.

There was no sign (e.g., adults carrying food or nesting materials) of use of the watchtower as nesting habitat by White-shouldered Starling.

White-shouldered Starling was not observed during the August 2010 monitoring. No bird of other species was observed entering the watchtower.

Since the monitoring surveys commenced in August 2008, no bird was observed entering the watchtower. It seems the birds do not prefer the watchtower as nesting habitat.

## **Ecological Water Quality Monitoring (EWQM)**

EWQM was conducted on 9 August 2010. Monitoring results are summarized in Table 6.9. Detailed on-site measurements and laboratory report are presented in Appendix D4 and D5.

Table 6.10 shows the baseline results of Ecological Water Quality Monitoring, from the information given in Baseline Monitoring Report.

To review the results in Table 6.9 in general, no abnormal findings arisen from construction activities are reflected from the results.

Table 6.9 Summarized Ecological water quality monitoring results (9 August 2010)

Parameters	Limit of detection	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1	2.35	5.30	8.80	8.15	7.40	3.25
Nitrogen (Ammonia) (mg/l)	0.01	0.04	0.06	0.14	0.11	0.05	0.05
Nitrogen (Nitrate) (mg/l)	0.01	0.17	0.17	0.24	0.36	0.34	0.32
Phosphorous (mg/l)	0.01	0.05	0.05	0.05	0.03	0.02	0.01
BOD₅ (mg/l)	1	1.00	2.00	2.00	1.00	1.00	1.00
DO (mg/l)	0.01	7.21	8.33	6.97	6.16	8.07	8.53
Turbidity (NTU)	0.1	0.00	2.30	6.65	6.00	4.70	0.20
Temperature (oC)	0.1	28.6	29.1	28.7	29.4	29.1	28.4
рН	0.01	7.50	6.94	7.42	7.22	6.59	7.22
Salinity (ppt)	0.1	0.0	0.3	5.3	12.9	1.7	0.1
Conductivity (ms/m)	0.1	9.9	72.8	929.0	2110.0	317.0	2.1
Water Flow (m/s)	N/A	0.2	0.3	0.3	0.3	0.3	0.2

Table 6.10 Baseline Results of Ecological water quality monitoring

Parameters	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1.0	2.0	3.0	3.0	<1	<1
Nitrogen (Ammonia) (mg/l)	0.07	0.12	0.11	0.23	0.03	0.02
Nitrogen (Nitrate) (mg/l)	0.12	0.13	0.13	0.31	0.04	0.05
Phosphorous (mg/l)	0.04	0.06	0.06	0.09	0.06	0.05
BOD₅ (mg/l)	<2	<2	<2	<2	<2	<2
DO (mg/l)	6.58	6.82	6.37	7.61	6.87	5.70
Turbidity (NTU)	4.44	5.12	5.93	6.96	4.65	2.73
РН	6.4	7.1	7.0	6.8	6.6	6.1
Salinity (ppt)	<0.1	0.1	0.3	7.6	0.1	<0.1

#### 6.6 Action and Limit level for Monitoring of White-shouldered Starlings

A simple Event and Action Plan is shown in Table 6.6.1. Should the Event occur, action in accordance with the Action Plan should be carried out.

There was no recorded event in the reporting month.

Table 6.6.1 Event / Action Plan for Monitoring of White-shouldered Starlings

EVENT	ACTION	
	ET Leader	Contractor
Identification of	1. Increase frequency of	1. Check all construction
disturbance to breeding	monitoring to twice	actions and working
White-shouldered	weekly	methods
Starlings	2. Notify Site Engineer	2. Submit proposals for
		remedial action to prevent
		abandonment of the
		breeding site.
	3. Review construction	3. Implement remedial
	activities of previous	action.
	week.	
	4. Identify any changes in	4. Liaise with ET
	construction activities in	regarding effectiveness of
	previous week	remedial actions.
	5. Discuss remedial	
	actions with Site Engineer	

#### **6.7** Ecological monitoring Schedule

The next ecological surveys are scheduled on 8 and 9 September 2010, while ecological water quality monitoring is scheduled on 6 September 2010.

#### 7. Action taken in Event of Exceedence

If the measurements (Noise, Water, Ecology) exceed the action / limit level, exceedance details will be reported and follow-up actions will be taken by relevant parties involved.

During the reporting period there was no exceedance for noise, ecological measurements recorded; therefore no actions were taken.

Total 49 non-compliance events of water quality limits (Turbidity and Suspended Solids) were recorded in this reporting month according to the established level. ET has arranged site investigations for the exceedance events. Except the reasons of natural fluctuation, 7 events were identified to be substantially attributable to improper site practices. As such, the contractor was strongly recommended to review their sites condition and working method. Necessary as well as effective mitigation measures have to be implemented to minimize water quality impact from project site activities.

The summary of non-compliance events for water quality exceedance is listed in Table 7.1 for reference.

Table 7.1 Summary of Non-compliance for Water Quality

Date	Location	Parameter	Level of	Main cause of exceedance
Dute	Location	1 drameter	exceedance	
2/8/10	M1	Turbidity, S.S.	Limit Level	M1 – Disturbance of sediments and soil runoff caused by channel clearance works
2/0/10	2/8/10 M4 S.S		Action Level	M4 - Disturbance of sediments and soil runoff caused by channel clearance works
E/0/40	M1	Turkidity C C	Limit Level	M1 & M4 - Disturbance of sediments and soil runoff caused by channel clearance
5/8/10	M4	Turbidity, S.S.	Limit Level	works

#### 8. Construction waste disposal

It is the contractor's responsibility to ensure that all wastes produced during the construction phase for the drainage improvement works are handled, stored and disposed of in accordance with good waste management practices and EPD's regulation and requirement. Waste materials generated during construction activities, such as construction and demolition (C&D) material, chemical wastes and general refuse, are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented.

Contractor has completed the registration of Waste Producer under the Waste Disposal (Chemical Waste)(General) Regulation. The Waste Producer Number, WPN 5213-950-Y2443-03 was assigned by EPD on 12 Aug 2008. The Contractor would be responsible for the implementation of any mitigation measure to minimize waste or redress problems arising from the waste materials.

Table 8.1 is a summary of figures of the construction wastes disposal provided by Contractor.

**Table 8.1 Summary of Construction Waste Disposal** 

· · · · · · · · · · · · · · · · · · ·												
	Amount of Construction Waste disposed											
Month	Inert Waste	Non-inert Waste	Chemical Waste									
	(to Public Fill)	(to Landfill)	(to treatment plant)									
1 <sup>st</sup> to 31 <sup>st</sup> Aug 10	2608.50 (ton)	0	Nil									
Total	30492.26 (ton)	212.93 (ton)	0									

#### 9. Status of Permits and Licenses obtained

Table 9.1 is the updated status of environmental related permits/ license obtained for the construction activities

Table 9.1 Status of Permits and Licenses Obtained

Description	License / Permit No.#	Date of Issue	Date of Expiry	Remarks
<b>Environmental Permit</b>	EP-237/2005/A	05 Mar 2007		Issued
Varied Environmental Permit	EP-237/2005/B	23 April 2009		Issued
Registration of C&D Waste Producer	7006521			Issued
Chemical Waste Producer	5213-950-Y2443-03	12 Aug 2008		Issued
Construction Noise Permit	N/A	N/A	N/A	N/A
Effluent Discharge License	EP890/W2/XG032 EP890/W2/XG033 EP890/W2/XG034 EP890/W2/XG035 EP890/W2/XG036 EP890/W2/XG037 EP890/W2/XG038 EP890/W2/XG039 EP890/W2/XG040 EP890/W2/XG041	23 Oct 2008	31 Oct 2013	Issued

The contractor implemented various environmental mitigation measures as recommended in the Environmental Permit and Final Mitigation Measures Report. The implemented schedule is presented in Appendix H.

#### 10. Complaint Log

There was no formal complaint received during the reporting month.

Table 10.1 Summary of Formal Complaints received											
	Noise Water Ecology Cultural Others										
August 2010	0	0	0	0	0						
Total	0	1	0	0	0						

#### 11. Site Environmental Audits

#### **Site Inspection**

With an intention to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented, regular environmental site inspections have been scheduled.

Within the reporting month, site inspections were conducted on 5, 10, 19, 26 and 31 August 2010.

A detailed checklist of each site inspection together with comments, relevant photos and maps have been filed and kept. A summary of observation and follow-up action is shown in Table 11.1

	Table	11.1 Summary of site inspec	etion	
Date	Observations	Advice from ET	Action taken	Closing Date
27 May 10	Open stockpiles of earth materials were observed at haul access of PNH retaining wall site	Contractor was advised to provide tarpaulin coverings to the earthy stockpiles to prevent erosion and runoff.	Still outstanding. To be followed in the next reporting period	Ongoing
3 Jun 10	Open stockpile of earth material was observed at LTT site area opposite to Yuen's Compound.	Contractor was recommended to provide tarpaulin coverings to the concerned stockpile to prevent erosion and runoff from causing environmental impact.	Still outstanding. To be followed in the next reporting period.	Ongoing
11 Jun 10	Accumulation of stagnant water was observed at the abandoned site water diversion drainage and soak-away pond	Contractor was advised to backfill the concerned site water treatment system and temporary drainage to prevent accumulation of stagnant water.	Still outstanding. To be followed in the next reporting period.	Ongoing
28 Jun 10	Muddy water was being overflowed into the river channel from the wheel washing bay of PNH fish ladder site	Contractor was recommended to provide proper bund wall at the concerned haul access and removed the muddy water accumulated in the wheel washing bay to minimize generation of runoff from site.	Still Outstanding. To be followed in the next reporting period	Ongoing
28 Jul 10	No high jet water sprayer or wheel washing facility was provided at site entrance of TTT site bottleneck A	Contractor was advised to rectify such discrepancies as soon as possible	To be followed in the next reporting period	Ongoing
28 Jul 10	Turbid water was observed at the downstream area of TTT River	Contractor was recommended to trace the source and implement necessary corrective if those condition was caused by site activities	To be followed in the next reporting period	Ongoing
5 Aug 10	Earth bunds at inlet A of LTT bypass channel was not properly protected	Contractor was advised to provide geo-textile covering to prevent erosion of the earth bund	Follow up action was taken as advised prior to the inspection on 19 Aug	19 Aug 10
5 Aug 10	There was no protective measure implemented to prevent generation of muddy arisen from excavation works	Contractor was recommended to implement necessary corrective actions to stop further deterioration of water quality	Improper activities were ceased due to completion prior to inspection on 10 Aug	10 Aug 10

	Table	11.1 Summary of site inspec	etion	
Date	Observations	Advice from ET	Action taken	Closing Date
10 & 19 Aug 10	Site materials and construction	Contractor was advised to improve	Follow up action was taken as	26 Aug 10
	wastes were found poorly	the site housekeeping condition and	advised prior to the inspection	
	stockpiled at several spots of	assign licensed waste collector to	on 26 Aug	
	PNHR and LTTR	collect and dispose observed wastes		
		as soon as possible		
19 Aug 10	The wheel washing bay at	Contractor was advised to clean up	Follow up action was taken as	31 Aug 10
	entrance of PNH fish ladder	the wheel washing bay immediately	advised prior to the inspection	
	was saturated with sediments		on 31 Aug	
26 Aug 10	Abandoned site materials	Contractor was recommended to	Follow up action was taken as	31 Aug 10
	were found along the river	remove the observed site materials	advised prior to the inspection	
	channel at section where	from the river channel as soon as	on 31 Aug	
	construction of mass concrete	possible		
	wall just completed			
31 Aug 10	Accumulation of stagnant	Contractor was advised to remove	To be followed during the next	Ongoing
	water was observed at the	grey water accumulated in the wheel	reporting period	
	wheel washing bay at PNH	washing bay regularly as to prevent		
	fish ladder site	mosquito breeding		
31 Aug 10	Improper river water diversion	Contractor was requested to rectify	To be followed during the next	Ongoing
	activity caused the main	such discrepancy immediately	reporting period	
	channel of LTTR dewatered			
	during inspection			

#### 11.2 Compliance with legal and Contractual requirement

ET leader has reviewed the progress and programme of the works to check any relevant environmental laws has not violated.

#### 11.3 Environmental Complaint and follow up actions

During this reporting period, there was no documented complaint received. Therefore, follow up actions for the environmental complaint is not required.

Findings of monthly survey was still pending therefore relevant was not provided in this reporting month.

#### 12. Future key issues

As construction activities include construction of bypass inlet, gabion wall and provision of granite facing of concrete structures will be continued in the upcoming month, it is expected that several impacts on environmental aspects will be generated on-site. With reference to the EM&A manual, mitigation measure report as well as the environmental permit, proper mitigation measures are proposed to be taken, if necessary.

Contractor was reminded again to provide proper measures to mitigate water quality impacts to the river channels due to construction works. River based construction sites should be well enclosed by bunds in dry condition, as to prevent surface run-off and site water seepage to the stream. Bare soil surface, which is directly exposed to the river channel in the site area, should be completely covered with geo-textile to prevent soil erosion. For river-based and any construction activities carried at riverside, contractor should implement proper protection measures such as barriers and/or silt curtains to prevent surface run-off from entering water bodies.

Underground water and site water may be accumulated on site. Contractor is recommended to treat the accumulated site water by proper silt removal facilities before discharging to the designated discharge point; reuse of site water should be considered also. Channel, trench and manholes connected with project sites should be sealed to prevent site water and any construction materials entering public drainage and causing water quality impact.

Construction activities such as backfilling, earth movement may generate dust impact to the vicinity of sensitive receivers. Contractor is advised to provide regular water spraying for the dusty static area. Stockpiling may be found on site and those should be covered by tarpaulin to prevent erosion and run-off.

Heavy plants and vehicles may be deployed for the construction and those would generate certain noise impacts to the sensitive receivers. Noisy activities should be well planned and scheduled to avoid parallel operation of multiple plants, so as to minimize noise impacts to the nearby sensitive receivers.

Construction activities and operation of site equipments may require use of chemicals and fuel on site. Secondary containment and spillage preventative measures should be implemented to such chemicals using on site.

#### 13. Conclusions

In this reporting month, major site activities included haul access formation, construction of retaining walls, gabion wall and box culvert at PNH River and LTT River respectively.

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Project Proponent, Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties and IEC were carried out on 31 August 2010.

For noise level monitoring, all results were within the established A/L limits.

For water quality monitoring, total 49 non-compliance events of water quality criteria were recorded in this reporting month. Except the natural fluctuation, 7 events were believed to be caused by improper site practices. Hence, the contractor was urged to review the site condition and implement necessary mitigation measures and corrective actions as soon as possible to minimize water quality impact due to site works.

During ecological monitoring survey, no White-shouldered Starling was recorded breeding in the watch tower. The absence of nesting of White-shouldered Starling in the watch tower did not seem to be related to construction works in Luk Tei Tong River. A bird species nests in village houses should be to certain extent disturbance tolerant.

No bird was observed entering the watchtower since the monitoring surveys commenced in August 2008. Also, no breeding was recorded in the baseline survey in September 2007. It appears that the birds do not prefer to roost or nest in the watch tower.

Also, there were not any notifications of summons recorded during the reporting period. Furthermore, there were not any formal prosecution and complaints recorded.

Site water control was the major concern in this reporting month. Therefore, ET recommended the contractor to implement sufficient and effective mitigation measures to minimize water quality impact from site works. Proper de-silting facilities should be provided for site water treatment. To prevent

surface run-off and soil erosion from site activities, earth bunds with complete coverage of geo-textile materials should be formed at river-based and/or riverside project sites. Contractor should be cautious on change of river water quality, immediate corrective action was required once muddy effluent discharge, or disturbance of sediment was found from site works.

ET has reminded the contractor to provide environmental pollution control measures wherever necessary; and to keep a good environmental management at site practice.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement.

## **Appendix A**

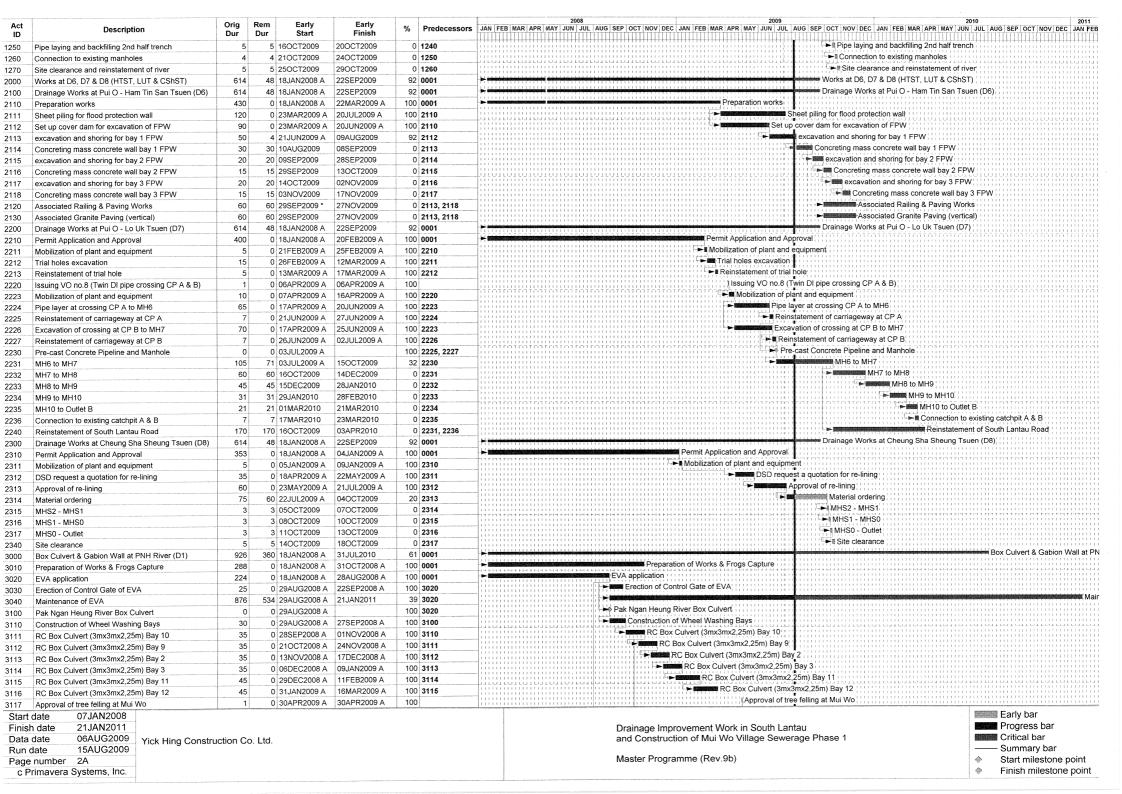
Construction
Programmer and
Location plan

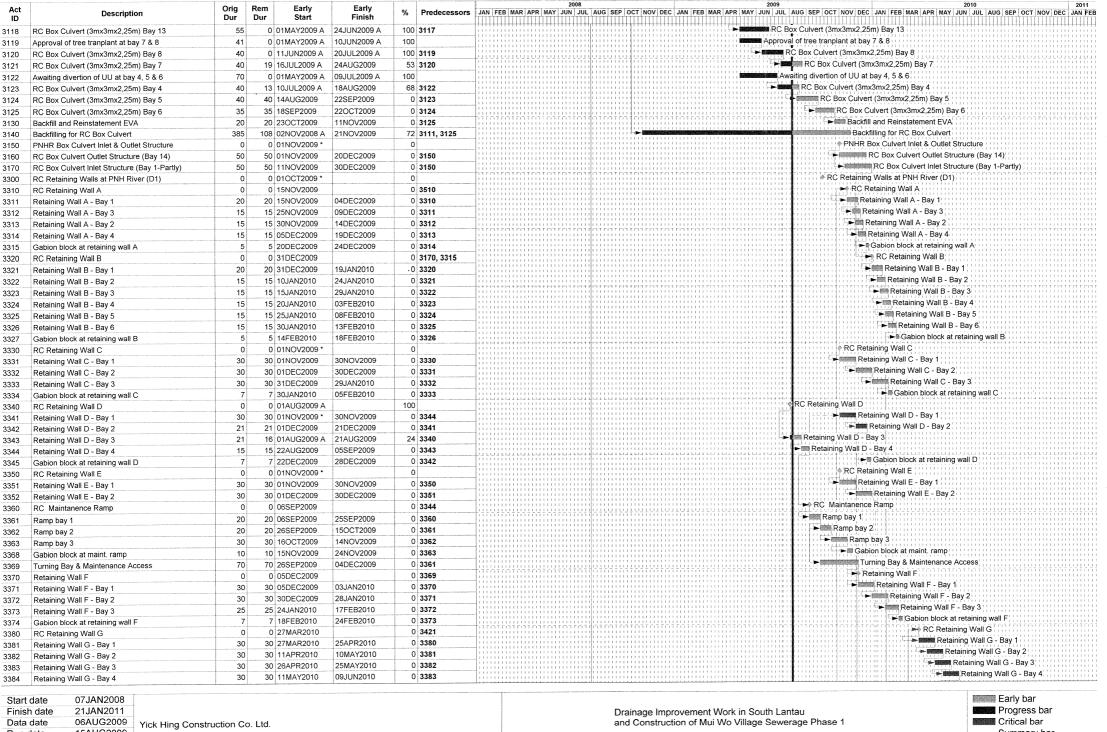
Act ID	Description	Orig Dur	Rem Dur	Early	Early Finish	% Predecessors	2008 2010 2011  JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB
0000	DRAINAGE IMPROVEMENT WORK IN S LANTAU	534 *		Start 06AUG2009	21JAN2011	0	The second of th
0000	Section Commencement	11		07JAN2008 A	17JAN2011	100	DRA
0010	Preliminaries	534 *		06AUG2009	21JAN2011	0	And the state of t
0020	Engineer's Accommodation	80		07JAN2008 A	26MAR2008 A	100	Preli President Engineer's Accommodation
0030	Contactor's Accommodation	55		07JAN2008 A	01MAR2008 A	100	#
0040	Engineer's Accommodation (Secondary)	40		07JAN2008 A	15FEB2008 A	100	Engineer's Accommodation (Secondary):
0050	Record Survey & Site Investigation	180		07JAN2008 A	04JUL2008 A	100	Record Survey & Site Investigation
0060	Recruitment of Environment Team	80	0	07JAN2008 A	26MAR2008 A	100	Recr. itment of Environment Team
0070	Establish Base line monitoring for EP	30	0	27MAR2008 A	25APR2008 A	100 0060	Fixed Establish Base line monitoring for EP
0800	Monitoring for Environmental Permit	1001	534	26APR2008 A	21JAN2011	47 <b>0070</b>	Mon
0100	Temporary Traffic Management Schemes	180	0	07JAN2008 A	04JUL2008 A	100	Temporary Traffic Management Schemes
0110	Construction Proposals and Submissions	80		07JAN2008 A	26MAR2008 A	100	Construction Proposals and Submissions
0120	Permits Application & Approval	180		07JAN2008 A	04JUL2008 A	100	Permits Application & Approval
0130	Liaison Works with Others (Initial)	220		07JAN2008 A	13AUG2008 A	100	Liaison Works with Others (Initial).
0140	Temporary Noise Barrier (Fabrication)	60		14AUG2008 A	12OCT2008 A	100 0130	Temporary Noise Barrier (Fabrication)
1000	Works at Ling Tsui Tau &TTT River (D2&D3, D4)	510		18JAN2008 A	10JUN2009 A	100 0001	Works at Ling Tsui Tau &TTT River (D2&D3, D4)
1010	Drainage Channel at Ling Tsui Tau (D2&D3)	510	OR SHEET TO STREET	18JAN2008 A	10JUN2009 A	100 0001	Drainage Channel at Ling Tsui Tau (D2&D3)
1020	Sub. & app. from AMO by Archaeologist	268		07JAN2008 A	30SEP2008 A	100	Sub. & app. from AMO by Archaeologist
1030	Covered U-Channel	0		01OCT2008 A		100 1020	l⇔iCovered U-Channel
1031	600 & Covered 750 U-Channel (D3)	120 30		01OCT2008 A	28JAN2009 A	100 1030	600 & Covered 750 U-Channel (D3)
1032	Covered 300 U-Channel (D2)	ļi		25FEB2009 A	26MAR2009 A	100 1030	Covered 300 U-Channel (D2)
1040	Concrete Pipe Drainage at Ling Tsui Tau (D3)	0		22APR2009 A	0511111000001	100	Concrete Pipe Drainage at Ling Tsui Tau (D3)
1041	CP1.3 to MH1.4 (2 x DN600)	14		22APR2009 A	05MAY2009 A	100 1040	F ■ CP1.3 to MH1 4 (2 × DN600)
1042 1043	MH1.4 to MH1 (2 x DN 600)	14		06MAY2009 A	19MAY2009 A	100 1041	F⇒ ■ MH1.4 to MH1 (2 × DN 600)
1043	MH1 to MH2 (2 x DN 600) MH2 to MH3 (2 x DN 600)	21 75		20MAY2009 A 10JUN2009 A	09JUN2009 A 23AUG2009	100 1042	# MH1 to MH2 (2 x DN 600)
1044	MH3 to MH4 (2 x DN 600)	21	THE RESERVE	21AUG2009 *	10SEP2009	76 1043	MH2 to MH3 (2 x DN 600)
1046	MH4 to MH5 (2 x DN 600)	14		11SEP2009	24SEP2009	0 <b>1044</b> 0 <b>1045</b>	
1047	MH5 to MH6 (2 x DN 600)	14		25SEP2009	08OCT2009	0 1045	MH4 to MH5 (2 x DN 600)
1048	MH6 to MH7 (2 x DN 600)	14		09OCT2009	22OCT2009	0 1047	→ MH5 to MH6 (2 x DN 600)
1049	MH7 to MH8 (2 x DN 750)	80		29JUN2009 A	16SEP2009	48	MH6 to MH7 (2 x DN 600)
1050	MH8 to Outlet Structure	21		23OCT2009	12NOV2009	0 1048, 1049	MH7 to MH8 (2 x DN 750))  MH8 to Outlet Structure
1100	Gabion Channel at Tai Tei Tong River (D4)	510		18JAN2008 A	10JUN2009 A	100 0001	Gabion Channel at Tai Tei Tong River (D4)
1110	Preparation Work for Gabion Channel	409		18JAN2008 A	01MAR2009 A	100 0001	Preparation Work for Gabion Channel
1120	Bottleneck A widening excavation (LHS)	10		02MAR2009 A	11MAR2009 A	100 1110	□>■ Bottleneck A widening excavation (LHS)
1121	Bottleneck A type 6 gabion (LHS)	20	0	12MAR2009 A	31MAR2009 A	100 1120	Hama Bottleneck A type 6 gabion (LHS)
1122	Bottleneck A widening excavation (RHS)	10	0	01APR2009 A	10APR2009 A	100 1121	□ Bottleneck A widening excavation (RHS)
1123	Bottleneck A type 6 gabion (RHS) & river bed	20	0	11APR2009 A	30APR2009 A	100 1122	► ■ Bottleneck A type 6 gabion (RHS) & river bed
1130	Approval of temp access from bottleneck A to B	60	0	31MAR2009 A	29MAY2009 A	100	Approval of temp access from bottleneck A to B
1131	Forming of access form bottleneck A to B	12	0	30MAY2009 A	10JUN2009 A	100 1130	File Forming of access form bottleneck A to B
1132	Bottleneck B widening excavation (North Side)	85	29	11JUN2009 A	03SEP2009	66 1131	Bottleneck B widening excavation (North Side)
1133	Bottleneck B type 6 gabion (South Side)	25	25	04SEP2009	28SEP2009	0 1132	Bottleneck B type 6 gabion (South Side)
1134	Bottleneck B widening excavation (RHS)	14	14	29SEP2009	12OCT2009	0 1133	i i i i i i i i i i i i i i i i i i i
1135	Bottleneck B type 6 gabion (RHS) & river bed	14	14	13OCT2009	26OCT2009	0 1134	ti⇒ ■ Bottleneck B type 6 gabion (RHS) & river bed
1140	Reinforced Concrete Retaining Wall [H]	0	0	01APR2009 A	The state of the s	100	Reinforced Concrete Retaining Wall [H]
1141	R C Retaining Wall H	180	53	01APR2009 A	27SEP2009	71 <b>1140</b>	R C Retaining Wall H
1150	Drainage Works for Channels & Retaining Wall	0	0	07JAN2008 A		100	Drainage Works for Channels & Retaining Wall
1151	U-Channel and Catchpit for Widened Bottle Neck A	15	15	27OCT2009	10NOV2009	0 1123, 1135	
1152	U-Channel and Catchpit for Widened Bottle Neck B	15	15	27OCT2009	10NOV2009	0 1135	⇒ ■ U-Channel and Catchpit for Widened Bottle Neck B
1153	U-Channel and Catchpit for Retaining Wall H	20	20	28SEP2009	17OCT2009	0 1141	U-Channel and Catchpit for Retaining Wall H
1160	Soft & Hard Landscaping Works	0	0	18OCT2009		0 1123, 1153	Soft & Hard Landscaping Works
1170	Hard Landscaping & Paving Works	50	******	THE RESERVE OF THE PARTY OF THE	06DEC2009	0 1153	Hard Landscaping & Paving Works
1180	Soft Landscaping (Planting) Works	50		18OCT2009	06DEC2009	0 1153	Soft Landscaping (Planting) Works
1200	Phase 2 sewerage works at TTT river	60		01SEP2009 *	30OCT2009	0	Phase 2 sewerage works at TTT river
	Submission and approval MS by DSD & EPD	90			29JUL2009 A	100	Submission and approval MS by DSD & EPD
1220	Excavation 1st half trench at TTT river	20		01SEP2009 *	20SEP2009	0 1210	Excavation 1st nair trench at 111 river
	Pipe laying and backfilling 1st half trench	5		21SEP2009	25SEP2009	0 1220	առառությունը արտարարացությունը արտարարացությունը արտարարացությունը հայանական հայանական արտարարարացության արտար
	Excavation 2nd half trench at TTT river	20	20	26SEP2009	15OCT2009	0 1230	Excavation 2nd half trench at TTT river
Start							Early bar
Finish	0041100000						Drainage Improvement Work in South Lantau Progress bar
Data d Run d	Tick tillig Collstia	ction Co.	Ltd.				and Construction of Mui Wo Village Sewerage Phase 1
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Master Programme (Rev.9b)

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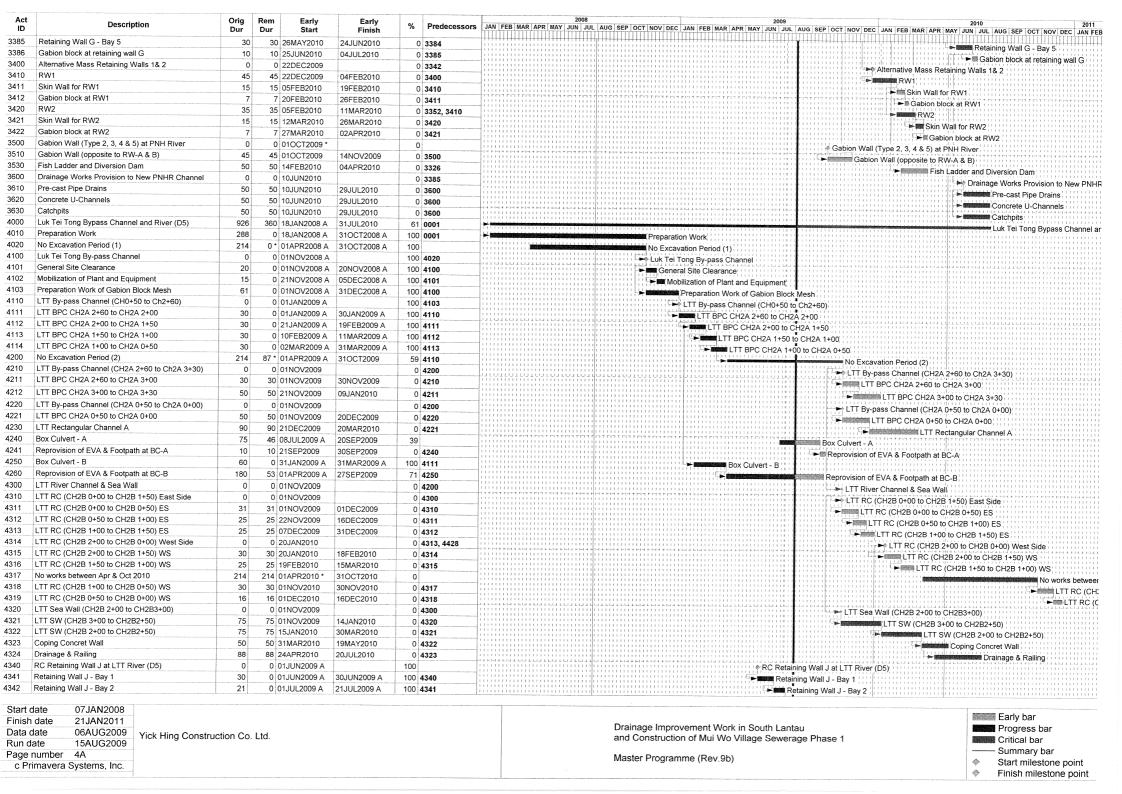


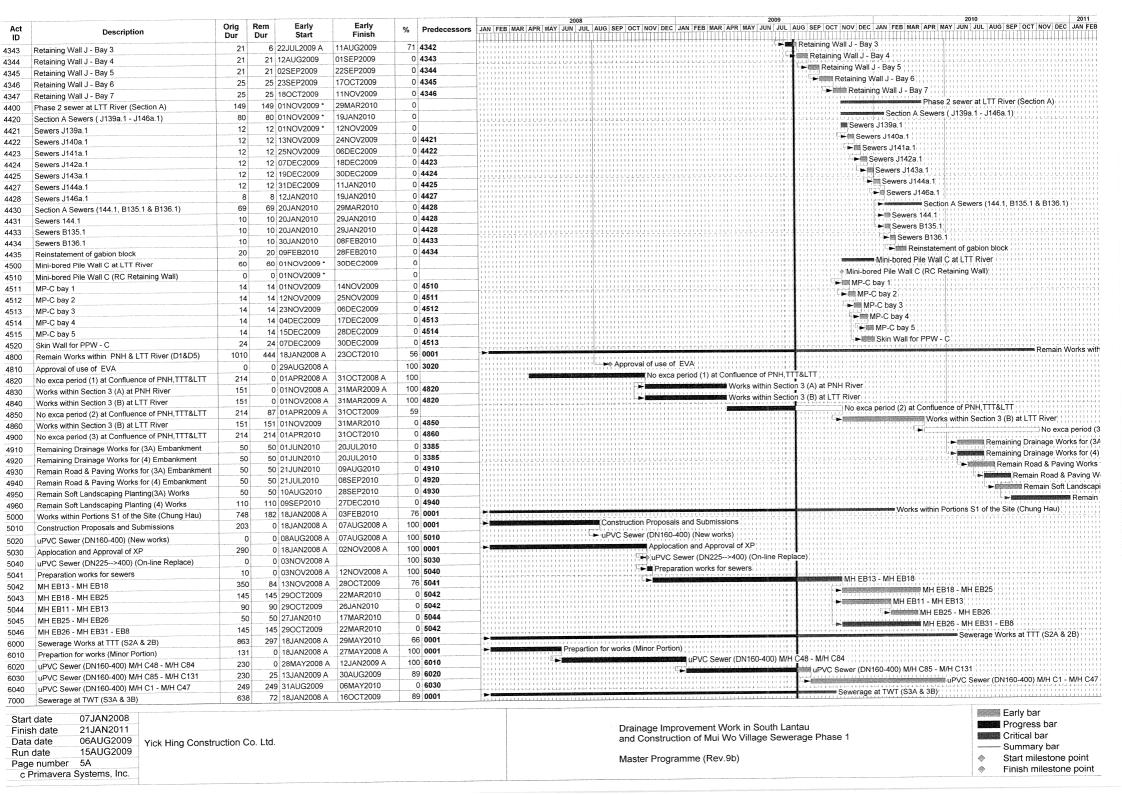


15AUG2009 Run date Page number c Primavera Systems, Inc.

Master Programme (Rev.9b)

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Act		Orig	Rem	Early	Early		2008	2009	2010	2011
ID	Description	Dur	Dur	Start	Finish	% Predecessors	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DE	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	JAN FEB
יוו		Dui	Dui	Juit	1 1111011					alli i i i i i i i i i i i i i i i i i i
7010	Preparation for works (Minor Portion)	131	0 1	8JAN2008 A	27MAY2008 A	100 0001	Preparation for works (Minor Portion	on) : : : : : : : : : : : : : : : : : : :		11111111
7020	Non-working Period at TWT Beach (1)	196	0 * 0	1APR2008 A	13OCT2008 A	100	Non-workin	g Period at TWT Beach (1)	. 1   1   1   1   1   1   1   1   1   1	
7030	uPVC Sewer (DN160-400) M/H A16 - M/H A34	465	30 2	28MAY2008 A	04SEP2009	94 7010		uPVC Sewer (DN	160-400) M/H A16 - M/H A34	
7040	uPVC Sewer (DN160-400) M/H A15 - M/H A13	50	0 1	40CT2008 A	02DEC2008 A	100 7020	uP\	/C Sewer (DN160-400) M/H A15 - M/H A13		
7050	uPVC Sewer (DN160-400) M/H A11 - M/H A7	50	0 0	3DEC2008 A	21JAN2009 A	100 7040		uPVC Sewer (DN160-400) M/H A11 - M/H A7	ATTATTATATATTATTATTATTATTATTATTATTATTAT	/ mitmit
7060	uPVC Sewer (DN160-400) M/H A1 - M/H A3	65	0 2	2JAN2009 A	27MAR2009 A	100 7050		uPVC Sewer (DN160-400) M/H A1 - M/H A		/
8000	Sewerage works at PNH (S4)	772	206 1	8JAN2008 A	27FEB2010	73 0001	>		Sewerage works at PNH (S4)	111111111
8010	Preparation of works	168	0 0	7JAN2008 A	22JUN2008 A	100	Preparation of works			111111111
8020	uPVC Sewer (DN160-400) M/H ED2 -D28 - D118	320	0 2	23JUN2008 A	08MAY2009 A	100 8010	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	uPVC Sewer (DN160-400) M/H ED2	-D28 - D118	11111111
8030	uPVC Sewer (DN160-400) M/H D1 - D27	280	191 0	9MAY2009 A	12FEB2010	32 8020		TENTOTOTOTOT PAROTED FOR COLOUTOR COLOUTO	uPVC Sewer (DN160-400) M/H D1 - D27	rentent Hiller
9000	Preservation & Protection of Exist Trees	534 *	534 * 0	6AUG2009	21JAN2011	0 0001				Pres
9010	Preparton for works	100	0 0	7JAN2008 A	15APR2008 A	100	Preparton for works			. 1 1 1 1 1 1 1 1 1 1
9020	Protection & Transplanting Works	1011	534 1	6APR2008 A	21JAN2011	47 9010				Proti

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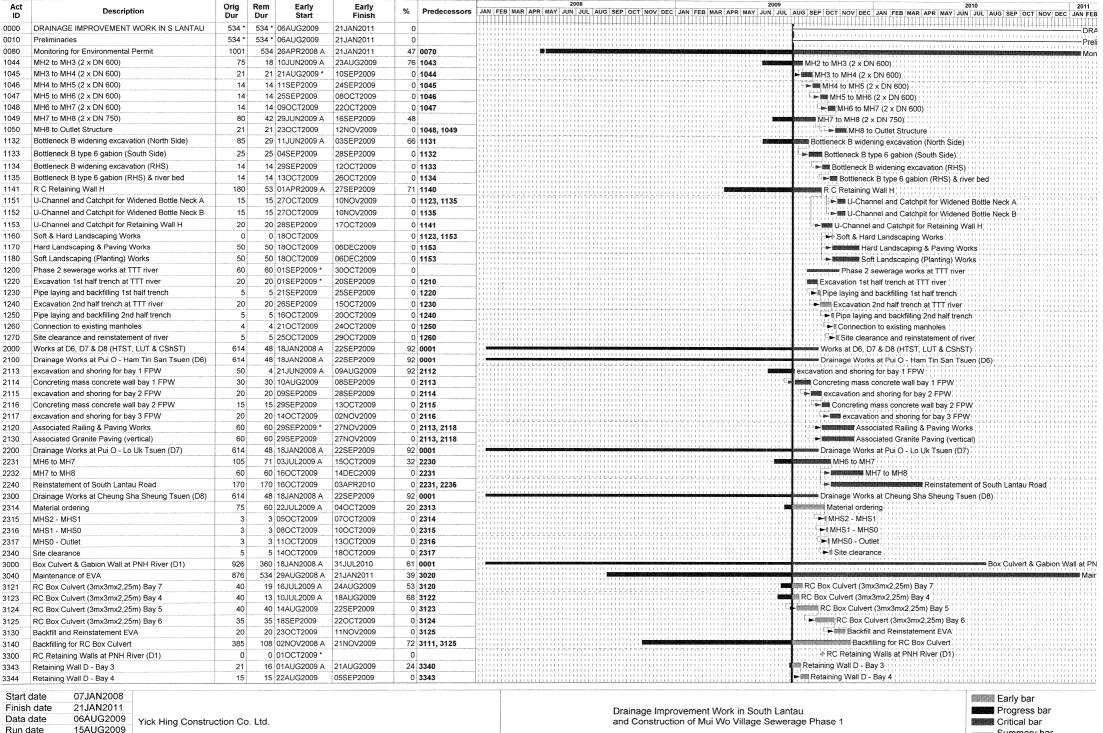
Yick Hing Construction Co. Ltd.

Drainage Improvement Work in South Lantau and Construction of Mui Wo Village Sewerage Phase 1

Master Programme (Rev.9b)



Start milestone point Finish milestone point



Run date Page number 1A c Primavera Systems, Inc.

3-Month Rolling Programme (Rev.9b)

Summary bar

Start milestone point Finish milestone point

		Orig	Dom	Early	Corty	T		T			2008							2009				I			2010	******			2011	
Act ID	Description	Dur	Rem Dur	Start	Early Finish	%	Predecessors	JAN FEB	MAR	APR MA	Y JUN JU	JL AUG S	EP OCT N	OV DEC	JAN FEB	MAR A	PR MAY	JUN JUL	AUG S	EP OCT N	IOV DEC	JAN FE	B MAR	APR MAY	JUN JU	IL AUG	SEP OCT	NOV DE	C JAN FEB	į
3360	RC Maintanence Ramp	0	0	06SEP2009		1	3344	+++++++	+++	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	++++++	<del>                                     </del>	1111111		++++++		RC Main	tanence	Ramp	111111		11111111				++++++++	
3361	Ramp bay 1	20	20	06SEP2009	25SEP2009		3360		1111				1111111111	1111111		1111111	1111111	1111111		Ramp	bay 1	1111111		11111111		1111111	11111111	11111111	1111111111	,
3362	Ramp bay 2	20		26SEP2009	15OCT2009		3361	THUIL!	1111			110110		LULLUL	FOILDI	HILL	FREE .	HHH	指しい 上岸	<b>≻</b> ∭∭ Raı	コピいきしし	11111					111111	112111		í
3363	Ramp bay 3	30		16OCT2009	14NOV2009		3362	111111111	1111				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1111111	11111111	1111111	1111111	1111111		1 1 1 1	Ramp			11311111			11111111	11111111		
3369	Turning Bay & Maintenance Access	70		26SEP2009	04DEC2009		3361	111111111	1111	11111111	11111111	11111111	111111111	1111111	11/11/11	1111111	1111111						v & Ma	intenance	Access		1111111	1111111	1111111111	
3500	Gabion Wall (Type 2, 3, 4 & 5) at PNH River	0		01OCT2009 *		1	+	111111111	$\begin{smallmatrix} 1&1&1&1&1\\1&1&1&1&1\end{smallmatrix}$	11111111			1 1 1 1 1 1 1 1 1 1 1	1111111	11111111	1111111	1111111	1111111	1111	1311111	3 1 1 1 1 1 1 1	TIĞLILI	Trans.	5) at PNI			11111111	11131111	1111111111	
3510	Gabion Wall (opposite to RW-A & B)	45		01OCT2009	14NOV2009	-	3500	11111111	1111					1111111		1111111	111111	1111111	1000					e to RW-A			11111111	11111111	1111111111	,
4000	Luk Tei Tong Bypass Channel and River (D5)	926		18JAN2008 A	31JUL2010		0001													11777	- Cubici	hiddel	ppoon			ookol Lijk	Tei Tong	Rypage (	Channel ar	
4200	No Excavation Period (2)	214		01APR2009 A	31OCT2009		4110	111111111	1111			1111111		1111111	1111111			1111111		Name of the Park	lo Exca	ration Pr	eriod (	2)	1111111	HLLIII	i i i i i i i i	11111111	Juliani Ci ai	
4240	Box Culvert - A	75		08JUL2009 A	20SEP2009	39		111111111	1111			11111111	111111111	1111111	11111111	1111111	1111111	1111111		Box Cu		1111111					11111111	1111111	1111111111	
4241	Reprovision of EVA & Footpath at BC-A	10		21SEP2009	30SEP2009		4240	11111111	$\begin{smallmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{smallmatrix}$		11111111		111111111	1111111	1111111	1111111	1111111	1111111	11114	Jana	1111111	1111111	Footn	ath at BC-	Δ		11111111	111111111	1111111111	
4260	Reprovision of EVA & Footpath at BC-B	180		01APR2009 A	27SEP2009		4250	1111111111	1111					1111111		11111	111111	111111						th at BC-			11111111	11111111	1111111111	,
4343	Retaining Wall J - Bay 3	21		22JUL2009 A	11AUG2009		4342	#14#X##X	1111	(17/11/7	118118	118118	++++++	84484	181181	18183	THITT	73175	Reta	ining Wal			Till Till	Tottot	FR44R4	HHH	448448	#####	111111111	i
4344	Retaining Wall J - Bay 4	21		12AUG2009	01SEP2009		4343	111111111	1111			11111111	1 1 1 1 1 1 1 1 1 1	1111111	11117111	111111	1111111		Albert 1	etainina '					:		11111111	13151511	1111111111	
4345	Retaining Wall J - Bay 5	21		02SEP2009	22SEP2009		4344	111111111	$\begin{smallmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{smallmatrix}$			11111111	1 1 1 1 1 1 1 1 1 1	1111111	11111111	1111111	1111111	1111111	ء لسسم وا	■ Retaini	1111111	1111111	5	11111111			11111111	11111111	1111111111	
4346	Retaining Wall J - Bay 6	25	25	23SEP2009	17OCT2009	0	4345	111111111	1111					1111111	11111111	1111111	111111		OF LITE	► IIII Re	1711111	1111111		11111111	(		11111111	11111111	11111111111	,
4347	Retaining Wall J - Bay 7	25	25	18OCT2009	11NOV2009	1	4346		1111				1 1 1 1 1 1 1 1 1 1	1111111	11111111	1111111	1111111	1111111		1111	Retainii			7			11111111	111111111		
4800	Remain Works within PNH & LTT River (D1&D5)	1010		18JAN2008 A	23OCT2010		0001		1111	10110	i tri i tri	irnim	mini	<del>iiiiii</del>	<u> FITTFIT</u>	mini	toato	intin						rattat	rotrot		1111111	Remain \	Works with	1
4850	No exca period (2) at Confluence of PNH,TTT&LTT	214	87	01APR2009 A	31OCT2009	59	)		1111					1111111		11111	1:11:11	111111	10 13 11			period (2	2) at C	onfluence	of PNH,	TTT&L	it all all a	11111111	1111111111	
5000	Works within Portions S1 of the Site (Chung Hau)	748	182	18JAN2008 A	03FEB2010	76	0001	-				1 * 1 ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !										www.	Vorks v	vithin Port	ons S1 c	of the S	ite (Chun	g Hau)		
5042	MH EB13 - MH EB18	350	84	13NOV2008 A	28OCT2009	76	5041	1::::::::	1111					-						Marian N	IH EB13	- MH EI	B18	11111111				11111111		
5043	MH EB18 - MH EB25	145	145	29OCT2009	22MAR2010	C	5042		1111		11111111			1111111	11111111	1111111	1111111	1111111		F				MH EB18	- MH EB	25	11111111	11111111	/	
5044	MH EB11 - MH EB13	90	90	29OCT2009	26JAN2010	C	5042	11111111	1111		11111111	T F F F F F F F F F F F F F F F F F F F		1111111		THE TEN	TELLIFIE	1111111		11 d 1	775775	MH	HEB11	- MH EB	13		1111111	11111111		,
5046	MH EB26 - MH EB31 - EB8	145	145	29OCT2009	22MAR2010	0	5042		1111			11111111	1	1111111	11111111	1 3 1 3 1 3 1	1111111	1111111	10 1 1 1 2	-	1171711			MH EB26	MH EB	31 - EE	88	11111111		
6000	Sewerage Works at TTT (S2A & 2B)	863	297	18JAN2008 A	29MAY2010	66	0001		+++				1111111	111111	++++++	111111			-		_			-	Sewera	ge Wor	ks at TT1	Γ (S2A &	2B)	
6030	uPVC Sewer (DN160-400) M/H C85 - M/H C131	230	25	13JAN2009 A	30AUG2009	89	6020		$\begin{smallmatrix}1&1&1&1\\1&1&1&1\end{smallmatrix}$					1111111	1		فخطفا		u u	PVC Sew	er (DN16	30-400)	M/H C	85 - M/H	2131		11111111	11111111		
6040	uPVC Sewer (DN160-400) M/H C1 - M/H C47	249	249	31AUG2009	06MAY2010	C	6030		1111					1111111		1111111	1111111	1111111	. C <b>-</b>					uP	VC Sewe	er (DN1	60-400)	M/H C1 -	M/H C47	
7000	Sewerage at TWT (S3A & 3B)	638	72	18JAN2008 A	16OCT2009	89	0001	1 1 1 1 1 1 1 1 1 1 1	-1 + 1-1-		1 + 1-1 + 1-1	+ - 1-1 + - 1-1	+ 1-1-1 + 1-1-1	- 1-1-1 + 1-1-1+	+1-1+1-1-1+	+1-1 + 1-1-1	+1-1-1+1-1-	FIRST FIRST	7 1 - 1 - 1 - 1 - P-	Sev	verage a	t TWT (	(S3A &	3B)		111111	11111111	11111111	++1+++1++	
7030	uPVC Sewer (DN160-400) M/H A16 - M/H A34	465	30	28MAY2008 A	04SEP2009	94	7010	1	1111					1111111	11111111	1111111			ı,	PVC Sev	ver (DN1	60-400)	) M/H A	16 - M/H	A34			11111111		
8000	Sewerage works at PNH (S4)	772	206	18JAN2008 A	27FEB2010	73	0001	]:: <del> - - -</del>	+++	+++++		++++++	+++++	++++++	+++++	+++++	+++++	+++++		++++++	-	++++++	Sew	erage wo	ks at PN	IH (S4)		11111111		
8030	uPVC Sewer (DN160-400) M/H D1 - D27	280	191	09MAY2009 A	12FEB2010	32	8020							$\begin{smallmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 &$		1111111		فالمنطقة فالمناطقة					uPVC	Sewer (D	V160-400	0) M/H	D1 - D27	11111111		
9000	Preservation & Protection of Exist Trees	534 *	534 *	06AUG2009	21JAN2011	C	0001		1111			11111111		1111111	11111111	1111111	11111111	1111111			111111			11111111		TEEFILE			Pres	;
9020	Protection & Transplanting Works	1011	534	16APR2008 A	21JAN2011	47	9010	Timini	1111				- 1-1-1 + 1-1-1 +				* [ ] [ ] [ ] [ ] [ ]			- + 3-1 - 1 - 1 - 1			-1-1 + 1-1-1	F [-] 4 F [-] 4	1-1-1 + 1-1-1 d	related	1 0 1-1 4 4 1-4	4 1-1-1 4 1-1-1	Prot	,

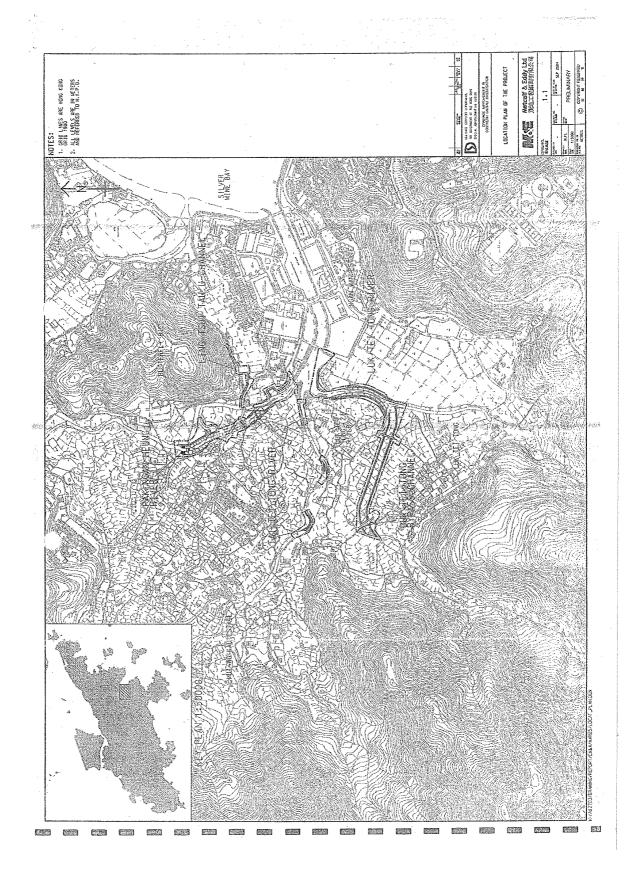
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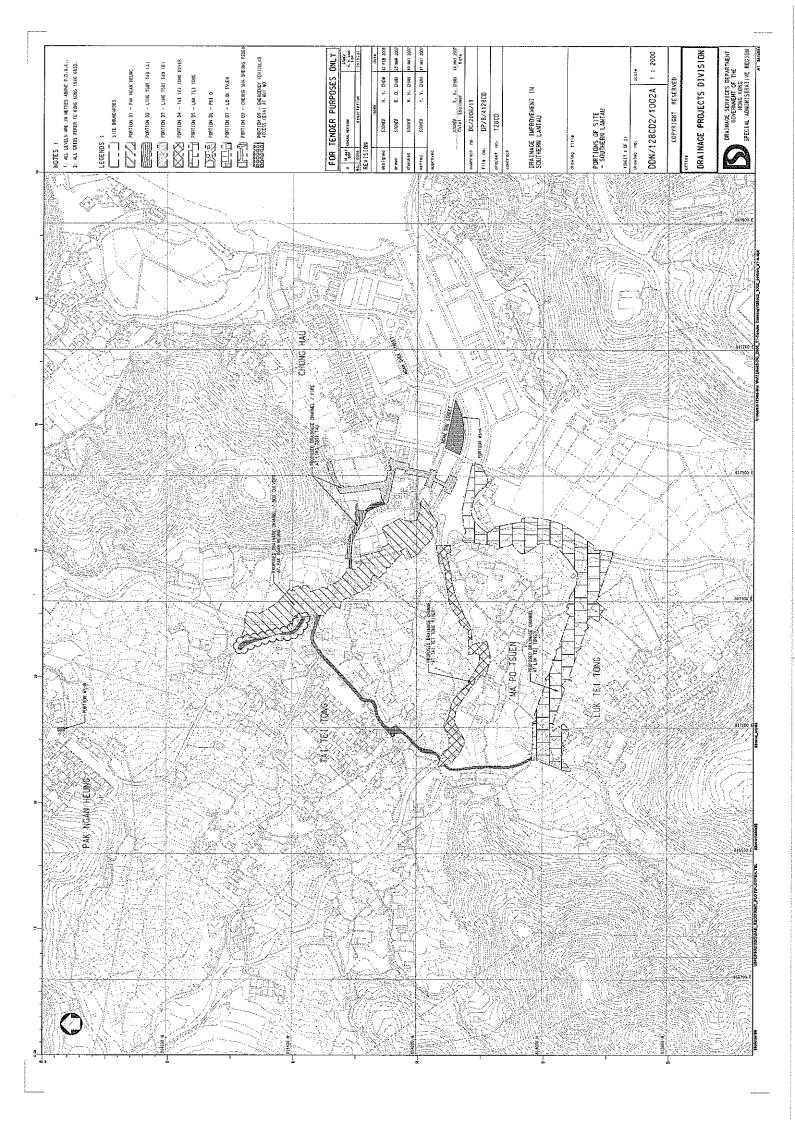
Yick Hing Construction Co. Ltd.

Drainage Improvement Work in South Lantau and Construction of Mui Wo Village Sewerage Phase 1

3-Month Rolling Programme (Rev.9b)

Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point





## **Appendix B Key Personal Contact information chart**

Organization	Role	Title	Name	Telephone	Fax		
Name					Number		
Drainage	Project	Engineering	Mr. Chan	2594 7464	2827 8700		
Service	Proponent	Representative	Wai Hong				
Department							
Ellied	Independent	Principal	Ms. Grace	2815 7028	2815 5399		
Environmental	Environmental	Consultant	Kwok				
Consultants	Checker (IEC)						
Limited							
Yick-Hing	Main	Senior Project	Mr. Liu Kai	2394 4988	2787 4890		
Construction	Contractor	Manager	Choi				
Company							
Limited							
Environmental	Environmental	Environmental	Ms.	2965 0888	2856 2010		
Pioneers &	Team (ET)	Team Leader	Patricia				
Solutions			Chung				
Limited							

# Appendix C

**Calibration Certificates for Measuring Equipments** 

## 積分形精密騒音計 Integrating Precision Sound Level Meter TYPE 6224

## 検査成績書 INSPECTION CERTIFICATE

本体製造番号

Serial No. of body: \_\_\_\_

マイクロホン製造番号<sup>\*</sup> Serial No. of Microphone: 100104

39967

Ver:1.6E-09-11

年月日:

平成22年1月7日

Date:

January 7, 2010

承認	点検	担当
Approved	Passed	Inspected
T. Gasukage	T. Matumolo	S. Imoue

株式会社 アコー ACO CO., LTD.

#### 1. 検査年月日 Inspection Date

平成22年1月7日

January 7, 2010

2. 検査条件 Inspection Condition

1) 温度

Temperature

20 °C

2) 湿度

Humidity

44 %

3) 気圧

Barometric pressure :

987 hPa

## 3. 検査項目及び結果 Inspection Results

1) RANGE 切換誤差検査 The RANGE Shifting Error

RANGE: 20-100dB 70dB 入力基準 ±0.5dB以下

Within ±0.5dB of the value at 70dB input, Range 20-100dB.

			1 /		
RANGE	入力レベル	Frequen	ency (Hz)		
(dB)	Input level (dB)	31.5	1000	8000	
20-80	50	-0.1	-0.1	-0.1	
20-90	60	0.0	-0.1	-0.1	
20-100	70	0.0	0.0	0.0	
20-110	80	0.0	0.0	0.0	
30-120	90	-0.1	0.0	0.0	
40-130	100	-0.1	0.0	0.0	
判定	Passed		Pass		

#### 2) 安定性特性検査

Stability Caracteristic

RANGE: 20-100dB 1分後基準 ±0.5dB以下

Within ±0.5dB of the value one minute later, Range 20-100dB.

		10分後
		ten minutes later
誤差	Error (dB)	0.0
判定	Passed	Pass

#### 3) 目盛誤差特性検査 The Scale Error

RANGE: 20-110dB 65dB入力基準

Error of the value at 65dB input, Range 20-110dB.

入力	規格	周波勢		quency	
Input	Standard		(Hz)		
(dB)	(dB)	31.5	1000	8000	
110	±0.7	0.0	0.1	0.1	
105	±0.7	-0.1	0.0	-0.1	
100	±0.7	-0.1	0.0	-0.1	
95	±0.7	0.0	0.0	0.0	
90	±0.7	0.0	0.2	0.1	
85	±0.7	0.2	0.2	0.2	
80	±0.7	0.2	0.1	0.1	
75	±0.7	0.0	0.1	0.0	
70	±0.7	0.0	0.0	0.0	
65	0.0	0.0	0.0	0.0	
60	±0.7	0.1	0.0	0.0	
55	±0.7	0.0	-0.1	-0.1	
50	±0.7	0.0	0.0	0.0	
45	±0.7	0.0	0.0	0.0	
40	±0.7	0.0	0.0	0.0	
35	±0.7	0.1	0.0	0.0	
30	±0.7	0.0	-0.1	-0.1	
25	±0.7	0.1	0.0	0.0	
判定	Passed		Pass		

#### 4) 動特性検査 Dynamic Characteristic

RANGE: 20-100dB 100dB、1kHz 入力基準

When 100dB input, Range 20-100dB at 1kHz.

	規格	測定値
	Standard	Measured Value
FAST	-1.0+0.5 -1.0 (dB)	-1.5
SLOW	-4.0±1.0 (dB)	-4.5
判定	Passed	Pass

#### 5) 周波数特性検査 Frequency Response

RANGE: 20-100dB 95dB入力基準(マイクを含む)

When 95dB input, including Microphone value, Range 20-100dB.

国。古米		A特性		C特性			FLAT(Z)特性	
周波数	規格	レスポンス	偏差	規格	レスポンス	偏差	レスポンス	許容差
Frequency	Standard	Response	Deviation	Standard	Response	Deviation	Response	Tolerance
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
20	-50.5	-49.1	1.4	-6.2	-5.3	0.9	-0.9	±3.0
40	-34.6	-34.0	0.6	-2.0	-1.8	0.2	-0.2	±1.5
100	-19.1	-18.6	0.5	-0.3	-0.2	0.1	0.1	±1.0
250	-8.6	-8.4	0.2	0.0	0.0	0.0	0.1	±1.0
500	-3.2	-3.1	0.1	0.0	0.0	0.0	0.1	±1.0
1000	0.0	0.0	0.0	0.0	0.0	0.0	0.1	±1.0
2k	1.2	1.2	0.0	-0.2	-0.2	0.0	0.1	±1.0
4k	1.0	0.9	-0.1	-0.8	-0.8	0.0	0.2	±1.0
5k	0.5	0.7	0.2	-1.3	-1.1	0.2	0.4	±1.5
6.3k	-0.1	0.1	0.2	-2.0	-1.7	0.3	0.5	+1.5 -2
8k	-1.1	-0.9	0.2	-3.0	-2.8	0.2	0.3	+1.5 -3
10k	-2.5	-2.4	0.1	-4.4	-4.2	0.2	-0.1	+2 -4
12.5k	-4.3	-3.6	0.7	-6.2	-5.4	0.8	-0.1	
16k							0.0	+3 -6
20k							-1.6	
判定	Passed				Pass			

#### 6) 実効値指示誤差検査 Effective Value Error

RANGE: 20-100dB 波高率3のバースト信号に対して1.0dB以内

Within 1.0dB on the Burst signal of the peak factor 3, Ragne 20-100dB.

周波数 Frequency 2kHz、繰り返し周波数 Repeat fequency 40Hz

実効値指示誤差	判定
Effective value Error (dB)	Passed
0.3	Pass

#### 7) 自己雑音特性検査 Self-noise

RANGE: 20-80dB (マイクを含む)

RANGE: 20-80dB (Including Microphone value)

(dE 判定	Passed	Pass			
自己雑音	Self-noise	16.4	23.6	26.0	
(dE	3)	Below 18	Below 29	Below 32	
規格 Sta	andard	18以下	29以下	32以下	
(Including Micr	ophone value)	A特性		FLAT(Z)特性	
RANGE:	20-80dB	۸ مل∓ ۱۵⊄۲	<b>⊘#+</b> ₹#		



华南国家引量测试程经 まらけるようからである。 SOUTH-CHINA WARRONAL CENTER OF METROLOG GUANGDONG INSTITUTE OF METROLOGY





#### VERIFICATION CERTIFICATE

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计量器具名称 Description	Sound Leve	Calibrator		
型号规格	4231			
Môđel/Type				
。 制造广泛	BAK			
Manufacture	and the second of the second of the second			
出万编号 Senial No. 3	1820929/E−0	028-4		
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Date of Rece	ipt	Y	W	
<b>结论</b>	<b>三级合格</b> (6)			
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批准次。	e de la la		6-7-3-02	
Approved Signator	Same of the second seco			
1%	相绝形。		证书	<b>抽</b>
检、定				
Verified by	例早期			

本中心地址。中国广州市广园中路松柏东街30号 电话: (8620)86594172 / 传真: (8620)86590743

一邮政编码: 510405 E-mail: scm9scm.com.co.

Add: No.30, Songbaidong Street, Guangyuanzhong Road, Guangzhou, P. R. China Post Code: 510405 Tel: (8620)86594172 Fax: (8620)86590743



#### 华南国家计量测试中心 东省计量科学研究院 OUTH CHINA NATIONAL CENTER OF METROLOGY



GUANGDONG INSTITUTE OF METROLOGY

证书编号。\$\$020093126 Certificate No.1

DIRECTIONS

Page of

本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构、计量授权证书号是 国》法计(2007)01043号、《国》法计《2007》01032号

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) under authorization certificates No:(2007)01043 & (2007)01032

本中心所出異的数据均可溯源至保存在中国计量科学研究院的国家计量基准和国际单位制(50)运中国计量科学 研究院子(999年代表中国签署了《国家计量基标准及国家计量研究院出具的权准和测量证书相互承认协议》。 All data issued by this laboratory are traceable to mutional primary standards maintained in National Institute of Metrology (NIM) and International System of Units (SI) NIM is the signatory to the Mutinal Recognition Artangement (MRA) to re-national measurement standards and for calibration and measurement certificates assued by national metrology distinctes.

本次检定的技术依据:

Reference documents for the verification:

打G176-2005 声技准器检定规程。 V.R. of Sound Calibrators

本次检定所使用的主要计量标准器具

Major standards of measurement used in the verification

设备名称/型号 证书号/有效期 Name of Equipment , Certificate No.: Metrological Serial No Due Date Model. Characteristic : 声压级》(0:4--1:0) dB(k=2) 在参考频率上:0:08 dB(k=2) 电声标准装置 [1992]国量标等证字 声01 Sound Level Meters 第085号: 压力场) Verification Device /2010-01-08 Sound Level Meters: 0:3 dB(k=2) / Sound Calibrator 0. 15 dB(k=2)

检定地点。环境条件

Place and environmental conditions of the verification 地点、声学/振动实验室

相对湿度

Place Acoustics/Vibration Lab i

Temperature :

6、披检定仪器限制使用条件。

Limiting condition of the instrument verified:

当: 1. 本证书检定结果只与受检定仪器有关:

2. 未经本中心书面批准。不得部分复制此证书。

Note: 1. The results relate only to the items verified.

2. This certificate shall not be reproduced except in full, without the written approval of our laboratory.



#### 华南国家诗景测试中心 计量科学研究院 OUTH CHINA NATIONAL CENTER-OF METROLOGY GUANGDONG INSTITUTE OF METROLOGY



CNAS LO730

# 检定结果。 RESULTS OF VERIFICATION

证书编号: SSD20092126

原始记录编号: 220093126

第3页,共3页

Certification No.

Record No.

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外观检查: 合格

Check on appearance: pass

卢压级(dB)。见表1

Sound Pressure Level: The value showed in table 1/2

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Frequency: The value showed in table 2

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4 总头其7。见表3。

Total harmonic distortion. The value showed in table 3

表3 Table 3

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#### 说明(Note):

心,声症级测量结果扩展不确定度

Expanded uncertainty of measurement in Sound Pressure Level Calibration:

U=0.15 dB, k=2

(依据JJF1059-1999测量不确定度评定与表示)。

(According to JJF1059-1999 Evaluation and Expression of Uncertainty in Measurement)



#### Report for Calibration of Hand-held Water Quality Meter WQC-24

Calibration Refe	rence No. : GCI	E/CAL/2009/N	AW/WQM/C4
Client :	ENVIRONMENTAL PIO	NEER AND S	OLUTION LIMITED
Equipment No.	:WQC-24	Location:	Mui Wo Site
Manufacturer:	DKK-TOA	Serial No.:	640274
Calibration Date	: 15 to 17-6-2010	_ Due Date : _	14-09-2010

#### Criterion: (Repeatabilty, Linearity)

рH

: Both within  $\pm 0.05$ pH

Dissolved oxygen

: Both within ±0.1mg/L Electric conductivity : Both within  $\pm 1\%FS$ 

Turbidity

: Repeatability: within ±3%FS

Temperature

: Repeatability ±0.25°C; Linearity ±0.5°C; (Ambient 5~45°C)

#### Electric Conductivity (Salinity converted from EC):

(Reference: APHA 20ed 2510 B, ISO 7888 - 1985 (E) and DKK-TOA Hand-held Water Quality Meter WQC-24 Instruction Manual)

Concentration of KCl Standard Solution (M)	Reference conductivity value at 25.0 °C	Indicated value by meter	Linearity (R <sup>2</sup> )	
0	0.0 mS/m*	0.0 mS/m	1.0000	
0.001	14.7 mS/m	15.2 mS/m		
0.005	71.8 mS/m 72.3 mS/m		Acceptance Criterion	
0.01	0.141 S/m	0.146 S/m	$R^2 > 0.995$	
0.05	0.667 S/m	0.670 S/m	Within ± 1% F.S. against	
0.1	1.29 S/m	1.30 S/m	calibration standard value 71.8 mS/m, 0.667	
0.5	5.87 S/m	5.88 S/m	S/m and 5.87 S/m.	
	1 <sup>st</sup> time	0.00 , 5.88 S/m		
Repeatability	2 <sup>nd</sup> time	0.00 , 5.88 S/m	Within ± 1% F.S.	
	3 <sup>rd</sup> time	0.00 , 5.88 S/m	against average value	
	0.00 , 5.87 S/m	Ave.: 0.00, 5.88	,	

<sup>\* 1</sup> S/m =  $10^4 \mu mhos/cm = 10^3 mS/m$ 

Remark: For repeatability, the maximum difference from the average value of 3 measurements was taken.



#### Dissolved Oxygen:

(Reference: APHA 20ed 4500-O B&C, ISO 5814:1990(E) and DKK-TOA Hand-held Water Quality Meter WQC-24 Instruction Manual)

DO value evaluated by Iodometric Method (mg/L)		Indicated value by meter (mg/L)	Linearity (R <sup>2</sup> )
0.00		0.00	0.0000
	3.08	3.15	0.9999
	5.57	5.62	Acceptance Criterion
8.33		8.40	$R^2 > 0.995$
10.38		10.32	Within ± 0.1 mg/L
13.10		13.05	against standard value
D . 1 . 1 . 1 . 1	1 <sup>st</sup> time	0.00,8.40	
Repeatability	2 <sup>nd</sup> time	0.00, 8.42	Within ± 0.1 mg/L
3 <sup>rd</sup> time		0.00,8.37	against average value
0.00,8.33		Ave.: 0.00, 8.40	

Remark: For repeatability, the maximum difference from the average value of 3 measurements was taken.

#### pH Value:

(Reference: APHA 20ed 4500-H<sup>+</sup> B, ISO 10523:1994(E) and DKK-TOA Hand-held Water Quality Meter WQC-24 Instruction Manual)

pH buffer for Meter Calibration	Input value (pH buffer)	Indicated pH value by meter	Linearity
(20°C)	(20°C)	(20°C)	$(R^2)$
pH = 4.00	1.67	1.63	1.0000
pH = 6.88	4.00	3.98	Acceptance Criterion
pH = 7.00	6.88	6.84	
pH = 9.22	7.00	6.97	
pH = 10.00	7.43	7.40	$R^2 > 0.995$
	9.22	9.18	Within $\pm$ 0.05 pH against standard value
	10.00	9.95	agamsi standaru value
	12.64	12.60	
	1 <sup>st</sup> time	3.98, 9.95	
Repeatability	2 <sup>nd</sup> time	3.99, 9.96	Within ± 0.05 pH
	3 <sup>rd</sup> time	3.98 , 9.95	against average value
	pH 4.00, 10.00	Ave.: 3.98, 9.95	

Remark: For repeatability, the maximum difference from the average value of 3 measurements was taken.



#### Temperature:

(Reference: APHA 20ed 2550 B, In-house method and DKK-TOA Hand-held Water Quality Meter WQC-24 Instruction Manual)

Setting Temperature	Indicated va	Linearity	
(°C)	(°	(C)	$(\mathbb{R}^2)$
5.0	4	0.9998	
15.0	14	4.6	0.9990
25.0	24	Acceptance Criterion	
35.0	34	$R^2 > 0.995$	
45.0	4:	Within ± 0.5°C against	
55.0	55.5		standard value
	1 <sup>st</sup> time	14.7, 45.3	
Repeatability	2 <sup>nd</sup> time 14.5, 45.4		Within $\pm$ 0.25°C
	3 <sup>rd</sup> time	14.6, 45.2	against average value
	15.0, 45.0 Ave.: 14.6, 45.3		

Remark: For repeatability, the maximum difference from the average value of 3 measurements was taken.

#### Turbidity:

(Reference : APHA 20ed 2130 B and DKK-TOA Hand-held Water Quality Meter WQC-24 Instruction Manual)

Formazin Standards	Indicated va	Linearity	
(NTU)	(N	TU)	$(\mathbb{R}^2)$
0.0	C	0.0	1.0000
20.0	19	9.4	Acceptance Criterion
100.0	9	$R^2 > 0.995$	
400.0	39	Within ± 3% F.S. against	
800.0	795.4		span calibration value
	1 <sup>st</sup> time 0.0, 796.0		100.0 and 400.0 NTU
Repeatability	2 <sup>nd</sup> time	0.0, 795.4	Widtin 1 20/ E.G. anning
	3 <sup>rd</sup> time	0.0, 794.9	Within ± 3% F.S. against average value
	0.0,800.0	average value	

Remark: For repeatability, the maximum difference from the average value of 3 measurements was taken.

Comments: _	Pass, (comply with the	criteria)		
Tested by:	Ho Tin Kau	Certified by	:	
				Gu Chin Chemist
Checked by:	Gu Chin	Date	:	17-6-2010
•	1.00			t o serio

Appendix D1 Plant species recorded at Pak Ngan Heung River (N)

			Relative	Occurrence	
Species	Habit	Native	Abundance	PNH3	PNH4
Acacia confusa	tree	no	occasional		+
Achyranthes aspera	herb	yes	scarce		+
Alangium chinensis	tree	yes	scarce		+
Alocasia macrorrhiza	herb	yes	occasional		+
Annoa squamosa	tree	no	scarce		+
Bidens pilosa	herb	no	occasional		+
Bridelia tomentosa	tree	yes	scarce		+
Celtis sinensis	tree	yes	scarce		+
Dimocarpus longan	tree	no	occasional		+
Ficus microcarpa	tree	yes	scarce		+
Ficus superba	tree	yes	occasional		+
Hedychium coronarium	herb	no	occasional		+
Ipomoea cairica	climber	yes	scarce		+
Litsea glutinosa	tree	yes	scarce		+
Macaranga tanarius	tree	yes	occasional		+
Mallotus paniculatus	tree	yes	scarce		+
Microcos paniculata	tree	yes	scarce		+
Microstegium ciliatum	grass	yes	common		+
Mikania micrantha	climber	no	occasional		+
Panicum maximum	grass	no	scarce		+
Phyllanthus urinaria	shrub	yes	scarce		+
Pteris vittata	fern	yes	scarce		+
Sterculia lanceolata	tree	yes	scarce		+

Appendix D2 Plant species recorded at Pak Ngan Heung River (S)

			Relative	Occurrence	
Species	Habit	Native	Abundance	PNH1	PNH2
Ficus superba	tree	yes	occasional		+
Ipomoea cairica	climber	yes	occasional		+
Kandelia obovata	tree	yes	scarce	+	
Lantana camara	shrub	no	scarce		+
Panicum maximum	grass	no	common		+

Appendix D3 Plant species recorded at Luk Tei Tong River

			Relative	Occurrence				
Species	Habit	Native	Abundance	LLT1	LLT2	LLT3	LLT4	LLT5
Achyranthes aspera	herb	yes	scarce		+			
Bidens pilosa	herb	no	scarce	+				
Celtis sinensis	tree	yes	scarce	+				
Conyza canadensis	herb	no	scarce	+				
Ficus microcarpa	tree	yes	scarce	+				
Ficus superba	tree	yes	scarce	+				
Hibiscus tiliaceus	tree	yes	scarce	+	+			
Kandelia obovata	tree	yes	scarce		+			
Leucaena								
leucocephala	tree	no	scarce	+				
Mikania micrantha	climber	no	scarce	+				
Miniosa pudica	herb	no	scarce		+			
Panicum maximum	grass	no	scarce	+	+			
Panicum repens	grass	yes	scarce		+			
Rhynchelytrum								
repens	grass	no	scarce	+				
Saccharum								
arundinaceum	grass	yes	scarce	+				

# **Appendix D4**

**Ecological Water Monitoring Results** (on-site measurements)

#### **Ecological Water Quality Monitoring - Summary of On-site measurement results**

Date of Sampling: 9/8/2010 Weather Condition: Sunny

Date of bamping.		•			trici oo		,											
Monitoring Location		WE1			WE2			WE3			WE4			WE5			WE6	
Time (hhmm)		1130			1230		1050 1110		1300		1245							
Tide Mode		ebb			ebb			ebb			ebb			ebb			ebb	
River Condition		Normal			Normal			Normal			Normal			Normal			Normal	
Water Depth (m)		< 1.0			< 1.0			< 1.0			< 1.0			< 1.0			< 1.0	
pH value		7.50			6.94	94 7.42			7.22 6.59			7.22						
Temperature (oC)		28.6			29.1			28.7			29.4		29.1			28.4		
Salinity (ppt)		0.0			0.3		5.3			12.9 1.7		1.7		1.7 0.1				
Conductivity (ms/m)		9.9			72.8			929.0			2110.0 317.0		317.0		2.1			
Water flow (m/s)		0.200			0.300			0.300			0.300			0.300			0.200	
Turbidity (NTU)	0.0	0.0	Average 0.00	2.3	2.3	Average 2.30	6.6	6.7	Average 6.65	6.0	6.0	Average 6.0	4.7	4.7	Average 4.70	0.2	0.2	Average 0.2
DO (mg/l)	7.20	7.22	Average 7.21	8.35	8.31	Average 8.33	6.97	6.97	Average 6.97	6.16	6.16	Average 6.16	8.07	8.07	Average 8.07	8.52	8.54	Average 8.53
DO Saturation (%)	94	94	Average 94	109	109	Average	90	90	Average 90	81	81	Average 81	104	104	Average	110	110	Average 110

Name	Signature	Date			
Prepared By: Jimmy Cheng	4	9/8/2010	remark or observation:		
	<del></del>				

# **Appendix D5**

**Ecological Water Monitoring Results** (lab report)



## **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1 : GCC100800079 Report No. Date of Issue : 24-08-2010 Client\* : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 09-08-2010 W.O. No.\* Sample Type\* : River Water Date Completed: 10-08-2010 GCE Serial No. : WQM082010 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Analysis Description **Test Method Quality Control Results** Units Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank APHA 20ed 2540 D Suspended Solids (SS) mg/L < 1.0 496 494 0.4 27.5 Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514  $21 \le R \le 29$ ≤ ±5% WE1 WE1 Sample ID WE2 WE3 Duplicate Duplicate Duplicate **TEST RESULTS** Sampling 09 Aug 2010 / 11:30 09 Aug 2010 / 12:30 09 Aug 2010 / 10:50 Date/Time LOD Units Suspended 1 mg/L 2.3 2.4 5.3 5.3 9.1 8.5 Solids (SS) WE4 WE5 WE6 WE4 Sample ID WE5 WE6 Duplicate **Duplicate** Duplicate **TEST RESULTS** Sampling 09 Aug 2010 / 11:10 09 Aug 2010 / 13:00 09 Aug 2010 / 12:45 Date/Time LOD Units Suspended mg/L 8.5 7.8 7.2 7.6 3.4 3.1 Solids (SS) \*: Information provided by client Note: This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Remarks: Location M1 & WE3 and Location M3 & WE4 are the same location. ----- End -----Tested By Approved Signatory K.L FONG GU CHÍN Name Checked By : \_\_\_ **GU CHIN** Post Chemist

Form No. : WQM/R1 (01-09-2008)



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : GCC100800299	·	Page 1 of 1  Date of Issue : 03-09-2010		
Client* : Environmental Pioneers	& Solutions Limited	Order Received : <u>08-09-2008</u>		
Client Address* : 8/F, Chaiwan Industrial (	t Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiw			
DSD Contract No. DC/20 Project* : Mui Wo Village Sewerag	a Phone 1	Southern Lantau & Construction of		
Test Location : G/F, 20 Pak Kung Stre		Date Started : 09-08-2010		
W.O. No.* :	Contract No.* :	Date Completed : 30-08-2010		
GCE Serial No. : WQM082010	Sampling Date* : 09-08-2010			
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE1		
Descripption : River Water		· · · · · · · · · · · · · · · · · · ·		
DECORIDATION	TEST REFERENCE	TEGT DEGULT		
DESCRIPTION	(In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110	-		
Odour	APHA 20ed 2150 B	Odour Characteristics :		
		Threshold Odour Number (TON) :		
pH Value at temperature [ ] °C	APHA 20ed 4500-H+ B			
Colour TCU	APHA 20ed 2120 B			
Turbidity NTU	APHA 20ed 2130 B			
Conductivity at 25°C μS/cm	APHA 20ed 2510 B			
Salinity g/L	APHA 20ed 2520 B			
	APHA 20ed 4500-NH <sub>3</sub> D	0.04		
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E			
	APHA 18ed 4500-NH <sub>3</sub> C			
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO <sub>3</sub> E	0.16		
Phosphorus mg/L	APHA 20ed 4500-P D	0.05		
Biochemical Oxygen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B	1		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	APHA 20ed 2540 D			
* : Information provided by client				
Note: This laboratory has no responsible	lity on sampling and all the test res	sults relate only to the sample tested as received.		
Sample received on 09 Aug 2 REMARKS: Sample Location WE1.	2010.			
	End	-		
Tested By :T.W. Lam, K.L. F	Fong Certified	Ву :		
	Manaa	C. Chi		

Post

Chemist

Form No. : EWA-D2/R (19-1-2009)

Checked By : \_\_



#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No.	: GCC100800304			Date of Issue	Page 1 of 1 : 03-09-2010	
	: Environmental Pioneers 8 : 8/F, Chaiwan Industrial 0	& Solutions Limited Centre Building, 20 Lee Chung Stre	eet, Chaiwa	Order Received	: 08-09-2008	
		006/11 - Drainage Improvement in			ion of	
Test Location	: G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.		Date Started	: 09-08-2010	
W.O. No.*	:	Contract No.* :		Date Completed	: 30-08-2010	
GCE Serial No.	: WQM082010	Sampling Date * : 09-08-2010	 D/11:30	Sample Type*	: River Water	
GCE Reg. No.	: GCE 081096	Test Unit No. : CH 08258		Sample I.D.*	: WE1 Duplicate	
	: River Water		Policia de la compania del compania de la compania del compania de la compania del la compania de la compania d	•		
		TEST REFERENÇE				
DESCRIPTION		(In-House Method based on)		TEST R	ESULT	
Appearance		APHA 20ed 2110				
Odour		ABILA 00 10450 B	Odour Characteristics :			
		APHA 20ed 2150 B	Threshold	Threshold Odour Number (TON):		
pH Value at temp	perature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B				
Colour	TCU	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B				
Conductivity at 2	.5°C μS/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH <sub>3</sub> D		0.0	)4	
Nitrogen (Ammor	nia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E				
		APHA 18ed 4500-NH <sub>3</sub> C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> <sup>-</sup> E		0.1	7	
Phosphorus	mg/L	APHA 20ed 4500-P D		0.0	05	
Biochemical Oxyg	gen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		1		
Chemical Oxyger	Demand (COD) mg/L	APHA 20ed 5220 D				
		APHA 20ed 2540 D				
* : Information p	rovided by client	·				
Note: This la	aboratory has no responsibi	lity on sampling and all the test re	sults relate	only to the sample	tested as received.	
	imple received on 09 Aug 2 imple Location WE1.					
		End		,	• 1	
Tested By :	T.W. Lam, K.L. F	Fong Certified	Ву	·	4	

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Chemist

Form No. : EWA-D2/R (19-1-2009)

Checked By : \_\_\_\_

Gu Chin



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

	GCC100800312			Date of Issue	Page 1 of : 03-09-2010
Client* :	Environmental Pioneers 8	& Solutions Limited		Order Received	: 08-09-2008
Client Address* :	8/F, Chaiwan Industrial (	Centre Building, 20 Lee Chung Stre	et, Chaiwa	an, HK.	
	DSD Contract No. DC/20	006/11 - Drainage Improvement in	Southern L	antau & Construction	on of
Project* :	: Mui Wo Village Sewerage Phase 1				
Test Location :	: G/F, 20 Pak Kung Street, Hung Hom, Kowloon.		Date Started	: 09-08-2010	
W.O. No.* :		Contract No.* :		Date Completed	: 30-08-2010
GCE Serial No. :	WQM082010	Sampling Date* : 09-08-2010	) / 12:30	Sample Type*	: River Water
GCE Reg. No. :	GCE 081096	Test Unit No. : CH 08258		Sample I.D.*	: WE2
Descripption :	River Water				
DESCRIPTION		TEST REFERENCE (In-House Method based on)		TEST RE	SULT
Appearance		APHA 20ed 2110			
Odour		APHA 20ed 2150 B	Odour Characteristics : Threshold Odour Number (TON) :		)N):
pH Value at tempe	erature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B			
Colour	TCU	APHA 20ed 2120 B			<del></del> -
Turbidity	NTU	APHA 20ed 2130 B	<del> </del>		
Conductivity at 25	5°C μS/cm	APHA 20ed 2510 B			
Salinity	g/L	APHA 20ed 2520 B			
		APHA 20ed 4500-NH <sub>3</sub> D		0.0	)6
Nitrogen (Ammoni	ia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E	-		
		APHA 18ed 4500-NH <sub>3</sub> C	<del>                                     </del>		
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> * E		0.1	7
Phosphorus	mg/L	APHA 20ed 4500-P D		0.0	5
Biochemical Oxyg	en Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		2	
Chemical Oxygen	Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended S	Solid mg/L	APHA 20ed 2540 D			
Sar		lity on sampling and all the test re	sults relate	only to the sample	tested as received.
		End			
Tested By : _	T.W. Lam, K.L.	Fong Certified	Ву	: Gu Chi	

Post

Chemist

Form No. : EWA-D2/R (19-1-2009)

Gu Chin

Checked By : \_\_\_\_



#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : GCC100800320		Page 1 of Date of issue : 03-09-2010		
Client* : Environmental Pioneers &	The second secon	Order Received : 08-09-2008 set, Chaiwan, HK.		
	<del>-</del> -	Southern Lantau & Construction of		
Project* : Mui Wo Village Sewerage				
	et, Hung Hom, Kowloon.	Date Started : 09-08-2010		
W.O. No.* :	Contract No.* :	Date Completed : 30-08-2010		
GCE Serial No. : WQM082010	Sampling Date* : 09-08-2010	0 / 12:30 Sample Type* : River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE2 Duplicate		
Descripption : River Water				
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110			
Odour	APHA 20ed 2150 B	Odour Characteristics : Threshold Odour Number (TON) :		
pH Value at temperature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B			
Colour TCU	APHA 20ed 2120 B			
Turbidity NTU	APHA 20ed 2130 B	-		
Conductivity at 25°C μS/cm	APHA 20ed 2510 B			
Salinity g/L	APHA 20ed 2520 B			
	APHA 20ed 4500-NH <sub>3</sub> D	0.06		
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E	-		
	APHA 18ed 4500-NH <sub>3</sub> C	-		
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO <sub>3</sub> -E	0.17		
Phosphorus mg/L	APHA 20ed 4500-P D	0.05		
Biochemical Oxygen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B	2		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	APHA 20ed 2540 D			
		sults relate only to the sample tested as received.		
Sample received on 09 Aug 2  REMARKS: Sample Location WE2.	2010. 			
Tested By : T.W. Lam, K.L. I		By :		

Post

Chemist

Form No. : EWA-D2/R (19-1-2009)

Checked By : \_\_\_

Gu Chin



#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No.	: GCC100800338			Date of Issue	Page 1 of 1 : 03-09-2010	
Client*	: Environmental Pioneers 8	& Solutions Limited		Order Received	: 08-09-2008	
Client Address* :	: 8/F, Chaiwan Industrial (	Centre Building, 20 Lee Chung Stre	et, Chaiwa	n, HK.		
	DSD Contract No. DC/20	006/11 - Drainage Improvement in	Southern L	antau & Constructi	on of	
Project*	: Mui Wo Village Sewerag	e Phase 1				
Test Location :	: G/F, 20 Pak Kung Stre	t, Hung Hom, Kowloon.		Date Started	: 09-08-2010	
W.O. No.*	:	Contract No.* :		Date Completed	: 30-08-2010	
GCE Serial No.	: WQM082010	Sampling Date* : 09-08-2010	0 / 10:50	Sample Type*	: River Water	
GCE Reg. No. :	: GCE 081096	Test Unit No. : CH 08258		Sample I.D.*	: WE3	
Descripption :	: River Water					
		TEST DEECDENOS	T			
DESCRIPTION		TEST REFERENCE (In-House Method based on)		TEST RE	SULT	
Appearance		APHA 20ed 2110				
			Odour Ch	Odour Characteristics :		
Odour		APHA 20ed 2150 B		Threshold Odour Number (TON) :		
pH Value at temp	erature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B				
Colour	TCU	APHA 20ed 2120 B	-			
Turbidity	NTU	APHA 20ed 2130 B				
Conductivity at 2	5°C μS/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH <sub>3</sub> D		0.1	4	
Nitrogen (Ammon	iia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E	Ded 4500-NH <sub>3</sub> E			
		APHA 18ed 4500-NH <sub>3</sub> C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> * E		0.2	4	
Phosphorus	mg/L	APHA 20ed 4500-P D		0.0	5	
Biochemical Oxyg	jen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		2		
Chemical Oxygen	Demand (COD) mg/L	APHA 20ed 5220 D				
Total Suspended	ended Solid mg/L APHA 20ed 2540 D					
* : Information pr	ovided by client					
Note: This la	boratory has no responsibi	lity on sampling and all the test res	sults relate	only to the sample	tested as received.	
Sai	mple received on 09 Aug 2			·		
	inplu coudini medi	End		<u></u>		
T	<b></b>	en i	D.			
Tested By :	T.W. Lam, K.L. F	Fong Certified	ву	Gu Chii		

Post

: Chemist

Form No. : EWA-D2/R (19-1-2009)

Checked By : Gu Chin



#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

ILSI NEFO	RI ON LIVINOIVI	VIEW I AL ANALISIS OF	WAIL			
Report No.	: GCC100800346			Page Date of Issue : 03-09-2010	e 1 of 1	
Client* :	Environmental Pioneers	& Solutions Limited		Order Received : 08-09-2008		
Client Address* :	8/F, Chaiwan Industrial (	Centre Building, 20 Lee Chung Stre	et, Chaiwa	n, HK.		
		006/11 - Drainage Improvement in	Southern L	antau & Construction of		
Project* :	: Mui Wo Village Sewerage Phase 1					
Test Location :	G/F, 20 Pak Kung Stre	t, Hung Hom, Kowloon.		Date Started : 09-08-2010		
W.O. No.*		Contract No.* :		Date Completed : 30-08-2010		
GCE Serial No. :	: WQM082010	Sampling Date* : 09-08-2010	7 / 10:50	Sample Type* : River Water		
GCE Reg. No. :	GCE 081096	Test Unit No. : CH 08258		Sample I.D.* : WE3 Duplicate		
Descripption :	River Water	•				
		TEST REFERENCE				
DESCRIPTION		(In-House Method based on)		TEST RESULT		
Appearance		APHA 20ed 2110		<b></b>		
Odour		APHA 20ed 2150 B	Odour Characteristics :			
				d Odour Number (TON) :		
pH Value at temp	erature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B				
Colour	тси	APHA 20ed 2120 B				
Turbidity	NTU.	APHA 20ed 2130 B				
Conductivity at 2	5°C μS/cm	APHA 20ed 2510 B		••		
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH <sub>3</sub> D		0.13		
Nitrogen (Ammon	ia) <b>m</b> g/L	APHA 20ed 4500-NH <sub>3</sub> E				
		APHA 18ed 4500-NH <sub>3</sub> C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> E		0.24		
Phosphorus	mg/L	APHA 20ed 4500-P D		0.05		
Biochemical Oxyg	en Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		2		
Chemical Oxygen	Demand (COD) mg/L	APHA 20ed 5220 D		A-1-		
Total Suspended	Solid mg/L	APHA 20ed 2540 D				
Sar	boratory has no responsibi		sults relate	only to the sample tested as received	•	
REMARKS : Sar	mple Location WE3.	End				
Tested By : _	T.W. Lam, K.L. F		Ву	:		
		Name		: Gu Chin		

Post

Chemist

Form No. : EWA-D2/R (19-1-2009)

Checked By : \_\_\_

Gu Chin



#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No.	: GCC100800354			Date of Issue	Page 1 of 1 : 03-09-2010	
Client*	: Environmental Pioneers 8	& Solutions Limited		Order Received	: 08-09-2008	
Client Address*		8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiw				
B 1 .4		006/11 - Drainage Improvement in	Southern L	antau & Constructio	n of	
	: Mui Wo Village Sewerage Phase 1		Data Ctartad	. 00 00 2010		
Test Location	: G/F, 20 Pak Kung Street, Hung Hom, Kowloon.				: 09-08-2010	
W.O. No.*		Contract No.* :		·	: <u>30-08-2010</u>	
	: WQM082010	Sampling Date* : 09-08-2010	7 11:10		: River Water	
	: GCE 081096	Test Unit No. : CH 08258		Sample I.D.*	: WE4	
Descripption	: River Water					
DESCRIPTION		TEST REFERENCE (In-House Method based on)		TEST RES	BULT	
Appearance		APHA 20ed 2110				
Odour		APHA 20ed 2150 B	Odour Characteristics :			
		· · · · · · · · · · · · · · · · · · ·		d Odour Number (TO	N):	
pH Value at temp	perature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B				
Colour	тси	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B				
Conductivity at 2	.5°C μ\$/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH <sub>3</sub> D		0.1	<u> </u>	
Nitrogen (Ammor	nia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E	-			
		APHA 18ed 4500-NH <sub>3</sub> C	<del>                                     </del>			
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> E		0.36	3	
Phosphorus	mg/L	APHA 20ed 4500-P D	+	0.03		
,	gen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		<1		
Chemical Oxyger		APHA 20ed 5220 D				
		APHA 20ed 2540 D				
Total Suspended	-	AFFIA 2080 2040 D				
* : Information p  Note : This la	•	lity on sampling and all the test rea	sults relate	only to the sample t	ested as received.	
	ample received on 09 Aug 2 ample Location WE4.					
		End			ſ	
Tested By :	T.W. Lam, K.L. F	Fong Certified	Ву	: Gu Chin	<u> </u>	

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Chemist

Form No. : EWA-D2/R (19-1-2009)

Gu Chin

Checked By : \_\_\_\_



## **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : GCC100800362		Pag Date of Issue : 03-09-2010	ge 1 of 1	
Client* : Environmental Pioneers &	& Solutions Limited	Order Received : 08-09-2008		
Client Address* : 8/F, Chaiwan Industrial C	Centre Building, 20 Lee Chung Stree	t, Chaiwan, HK.		
DSD Contract No. DC/20 Project* : Mui Wo Village Sewerag	006/11 - Drainage Improvement in S e Phase 1	outhern Lantau & Construction of		
Test Location : G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 09-08-2010		
W.O. No.* :	Contract No.* :	Date Completed : 30-08-2010		
GCE Serial No. : WQM082010	Sampling Date* : 09-08-2010	/ 11:10 Sample Type* : River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE4 Duplicat	e	
Descripption : River Water				
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110			
Odour	APHA 20ed 2150 B	Odour Characteristics :		
Cubui	APHA 2000 2150 B	Threshold Odour Number (TON):		
pH Value at temperature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B			
Colour TCU	APHA 20ed 2120 B			
Turbidity NTU	APHA 20ed 2130 B			
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	••		
Salinity g/L	APHA 20ed 2520 B			
	APHA 20ed 4500-NH <sub>3</sub> D	0.1		
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E			
	APHA 18ed 4500-NH <sub>3</sub> C			
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO <sub>3</sub> - E	0.36		
Phosphorus mg/L	APHA 20ed 4500-P D	0.03		
Biochemical Oxygen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B	<1		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	APHA 20ed 2540 D	**		
* : Information provided by client				
Sample received on 09 Aug 2		ilts relate only to the sample tested as receive	:d.	
REMARKS : Sample Location WE4.	End			
Tested By : T.W. Lam, K.L. F	Fong Certified B	y : Gu Chin		

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# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : GCC100800370		Date of Issue	Page 1 of 1 : 03-09-2010	
	ent* : Environmental Pioneers & Solutions Limited ent Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwa			
DSD Contract No. DC/2 Project* : Mui Wo Village Sewera	2006/11 - Drainage Improvement in ge Phase 1	Southern Lantau & Construct	tion of	
Test Location : G/F, 20 Pak Kung Str	eet, Hung Hom, Kowloon.	Date Started	: 09-08-2010	
W.O. No.* :	Contract No.* :	Date Completed	: 30-08-2010	
GCE Serial No. : WQM082010	Sampling Date* : 09-08-2010	/ 13:00 Sample Type*	: River Water	
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.*	: <u>WE5</u>	
Descripption : River Water				
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST R	ESULT	
Appearance	APHA 20ed 2110			
Odour	APHA 20ed 2150 B	Odour Characteristics :		
1111	4 DUA 00 1 4 DO UT 0	Threshold Odour Number (1	ON):	
pH Value at temperature [ ] °C		-		
Colour TCU		-		
Turbidity NTU				
Conductivity at 25°C μS/cm				
Salinity g/L				
	APHA 20ed 4500-NH <sub>3</sub> D	0.05		
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E			
	APHA 18ed 4500-NH <sub>3</sub> C			
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO <sub>3</sub> <sup>-</sup> E	0.	34	
Phosphorus mg/L	APHA 20ed 4500-P D	0.	02	
Biochemical Oxygen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B	1		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	. APHA 20ed 2540 D	-		
*: Information provided by client  Note: This laboratory has no responsib  Sample received on 09 Aug  REMARKS: Sample Location WE5.		ults relate only to the sample	tested as received.	
	End		_	
Tested By : T.W. Lam, K.L.	Fong Certified E	βy :	in	

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Gu Chin

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#### **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Page 1 of 1 : GCC100800388 Report No. Date of Issue : 03-09-2010 Client\* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008 Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 : 09-08-2010 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** W.O. No.\* Contract No.\* Date Completed: 30-08-2010 GCE Serial No. : WQM082010 Sampling Date\* : 09-08-2010 / 13:00 Sample Type\* : River Water GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.\* : WE5 Duplicate Descripption : River Water **TEST REFERENCE** DESCRIPTION TEST RESULT (In-House Method based on) APHA 20ed 2110 Appearance Odour Characteristics: --Odour APHA 20ed 2150 B Threshold Odour Number (TON): ) °C APHA 20ed 4500-H+ B pH Value at temperature [ Colour TCU APHA 20ed 2120 B NTU **Turbidity** APHA 20ed 2130 B Conductivity at 25°C µS/cm APHA 20ed 2510 B g/L APHA 20ed 2520 B Salinity APHA 20ed 4500-NH<sub>3</sub> D 0.05 Nitrogen (Ammonia) APHA 20ed 4500-NH<sub>3</sub> E ma/L APHA 18ed 4500-NH<sub>3</sub> C Nitrogen (Nitrate) APHA 20ed 4500-NO<sub>3</sub> E 0.34 mg/L 0.02 **Phosphorus** mg/L APHA 20ed 4500-P D Biochemical Oxygen Demand (BOD<sub>5</sub>) mg/L APHA 20ed 5210 B Chemical Oxygen Demand (COD) APHA 20ed 5220 D -mg/L Total Suspended Solid mg/L APHA 20ed 2540 D \* : Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Sample received on 09 Aug 2010. Sample Location WE5. REMARKS: ---- End -----Certified By T.W. Lam, K.L. Fong Tested By Gu Chin Name

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Form No. : EWA-D2/R (19-1-2009)

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Gu Chin



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : GCC100800396	·····	Page 1 o	of 1	
Client* : Environmental Pioneers  Client Address* : 8/F, Chaiwan Industrial	Order Received : 08-09-2008			
	006/11 - Drainage Improvement in S			
Test Location : G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 09-08-2010		
W.O. No.* :	Contract No.* :	Date Completed : 30-08-2010		
GCE Serial No. : WQM082010	Sampling Date* : 09-08-2010	/ 12:45 Sample Type* : River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE6		
Descripption : River Water	· · · · · · · · · · · · · · · · · · ·			
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110			
Odour	APHA 20ed 2150 B	Odour Characteristics :		
	AFFIA 2060 2150 B	Threshold Odour Number (TON) :		
pH Value at temperature [ ] °C	APHA 20ed 4500-H <sup>+</sup> B	-		
Colour TCU	APHA 20ed 2120 B			
Turbidity NTU	APHA 20ed 2130 B			
Conductivity at 25°C μS/cm	APHA 20ed 2510 B			
Salinity g/L	APHA 20ed 2520 B			
	APHA 20ed 4500-NH <sub>3</sub> D	0.05		
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH <sub>3</sub> E			
	APHA 18ed 4500-NH <sub>3</sub> C			
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO <sub>3</sub> E	0.32		
Phosphorus mg/L	APHA 20ed 4500-P D	0.01		
Biochemical Oxygen Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B	1		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	ended Solid mg/L APHA 20ed 2540 D			
* : Information provided by client			_	
Note: This laboratory has no responsible	ility on sampling and all the test reso	ults relate only to the sample tested as received.		
Sample received on 09 Aug 3  REMARKS: Sample Location WE6.	2010.			
namento : Sample cocation web.	End			
Tested By : T.W. Lam, K.L. I	Fong Certified B	v / / / k		
, , , , , , , , , , , , , , , , , , ,	Name	; Gu Chin		

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Form No. : EWA-D2/R (19-1-2009)

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Checked By :



: Chemist

# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER**

Report No. : 0	SCC100800401		<b></b>	Page Date of Issue : 03-09-2010	1 of	
Client* : E	nvironmental Pioneers	& Solutions Limited		Order Received : 08-09-2008		
Client Address* : 8	B/F, Chaiwan Industrial (	Centre Building, 20 Lee Chung Stre	et, Chaiwa	ın, HK.		
E	SD Contract No. DC/20	006/11 - Drainage Improvement in	Southern L	antau & Construction of		
Project* : <u>N</u>	/lui Wo Village Sewerag	e Phase 1				
Test Location : _	G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.		Date Started : 09-08-2010		
W.O. No.* :	-	Contract No.* :		Date Completed : 30-08-2010		
GCE Serial No. : <u>V</u>	VQM082010	Sampling Date* : 09-08-2010	) / 12:45	Sample Type* : River Water		
GCE Reg. No. : G	CE 081096	Test Unit No. : CH 08258		Sample I.D.* : WE6 Duplicate		
Descripption : R	liver Water					
		TEST REFERENCE	T			
DESCRIPTION		(In-House Method based on)		TEST RESULT		
Appearance		APHA 20ed 2110				
0.1			Odour Cl	naracteristics :		
Odour		APHA 20ed 2150 B		Threshold Odour Number (TON) :		
pH Value at tempera	ture [ ] °C	APHA 20ed 4500-H <sup>+</sup> B				
Colour	TCU	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B				
Conductivity at 25°C	μS/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH <sub>3</sub> D		0.04		
Nitrogen (Ammonia)	mg/L	APHA 20ed 4500-NH <sub>3</sub> E		<del></del>		
		APHA 18ed 4500-NH <sub>3</sub> C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO <sub>3</sub> E		0.32		
Phosphorus	mg/L	APHA 20ed 4500-P D		0.01		
Biochemical Oxygen	Demand (BOD <sub>5</sub> ) mg/L	APHA 20ed 5210 B		1		
Chemical Oxygen De	mand (COD) mg/L	APHA 20ed 5220 D				
Total Suspended Sol	id mg/L	APHA 20ed 2540 D		<u></u>		
* : Information provi	ded by client					
Note: This labor	atory has no responsibl	lity on sampling and all the test re-	sults relate	only to the sample tested as received.		
			and rolate	only to the dumple tested as received.		
	le received on 09 Aug 2 le Location WE6.	2010.				
пынапко	e Location WEG.	End				
<b>.</b>			_	1.1		
Tested By :	T.W. Lam, K.L. f	Fong Certified Name	ву	: Gu Chin		

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Form No. : EWA-D2/R (19-1-2009)

Gu Chin

Checked By : \_\_\_

# **Appendix E**



Monitoring Location			N1	N2	
Description of Location		Façade	Façade		
Date of Monitoring			2/8//	2010	
Measurement Start Time	е	(hhmm)	13:05	12:23	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	ication		Castle Gro	up, GA607	
Wind Speed	(r	n/s)	0.1	0.1	
	L90	(dB(A))	46.6	38.9	
Measurement Results	L10	(dB(A))	63.0	49.1	
	Leq	(dB(A))	60.8	47.9	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring		1. Excavator noise	No construction works are being carried out during measurement.		
Other Noise Source(s) During Monitoring			Public noise     Traffic noise	Public noise     Traffic noise	
Remarks			_		

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	2/8/2010



Monitoring Location			N3	N4	
Description of Location		Freefield Facede			
Date of Monitoring			2/8/2	2010	
Measurement Start Time	е	(hhmm)	12:00	11:28	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	ication		Castle Gro	up, GA607	
Wind Speed	1)	n/s)	0.2	0.1	
	L90	(dB(A))	34.4	52.9	
Measurement Results	L10	(dB(A))	47.3	54.2	
	Leq	(dB(A))	44.9	53.9	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) During Monitoring		Public noise     Traffic noise	1. Public noise		
Remarks			_		

	Name & Designation	<u>Signature</u>	<u>Date:</u>
Prepared by:	Jimmy Cheng	4	2/8/2010



Monitoring Location			N1	N2	
Description of Location		Façade	Façade		
Date of Monitoring			9/8/2	2010	
Measurement Start Time	е	(hhmm)	12:35	12:00	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	fication		Castle Gro	up, GA607	
Wind Speed	(r	n/s)	0.3	0.3	
	L90	(dB(A))	44.8	42.8	
Measurement Results	L10	(dB(A))	58.7	52.6	
	Leq	(dB(A))	59.8	50.3	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring		1. Excavator noise	No construction works are being carried out during measurement.		
Other Noise Source(s) During Monitoring			Public noise     Traffic noise	Public noise     Traffic noise	
Remarks					

	Name & Designation	<u>Signature</u>	Date:
		1	
Prepared by:	Jimmy Cheng	<u> </u>	9/8/2010



Monitoring Location			N3	N4	
Description of Location		Freefield	Facede		
Date of Monitoring			9/8/2	2010	
Measurement Start Time	е	(hhmm)	11:20	10:30	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	fication		Castle Gro	up, GA607	
Wind Speed	1)	n/s)	0.2	0.3	
	L90	(dB(A))	38.4	52.1	
Measurement Results	L10	(dB(A))	49.6	60.7	
	Leq	(dB(A))	48.5	53.2	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) During Monitoring		Public noise     Traffic noise	1. Public noise		
Remarks			_		

	Name & Designation	<u>Signature</u>	Date:
		1	
Prepared by:	Jimmy Cheng	<del></del>	9/8/2010



Monitoring Location			N1	N2	
Description of Location		Façade	Façade		
Date of Monitoring			19/8/	/2010	
Measurement Start Time	е	(hhmm)	13:00	12:20	
Measurement Time Len	gth	(mins.)	30 ı	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	fication		Castle Gro	up, GA607	
Wind Speed	1)	m/s)	0.2	0.2	
	L90	(dB(A))	46.7	37.2	
Measurement Results	L10	(dB(A))	59.5	45.9	
	Leq	(dB(A))	62.8	47.4	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) During Monitoring		Public noise     Traffic noise (bicycle)	Public noise     Traffic noise (bicycle)		
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	19/8/2010



Monitoring Location			N3	N4		
Description of Location			Freefield	Facede		
Date of Monitoring			19/8/2010			
Measurement Start Time	е	(hhmm)	13:00	12:20		
Measurement Time Len	gth	(mins.)	30 ı	mins		
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224		
Calibrator Model/ Identif	ication		Castle Gro	up, GA607		
Wind Speed	1)	m/s)	0.3	0.2		
	L90	(dB(A))	43.7	37.2		
Measurement Results	L10	(dB(A))	56.5	45.9		
	Leq	(dB(A))	59.8	47.4		
Weather condition:			Sunny			
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) [	Ouring I	Monitoring	Public noise     Traffic noise (bicycle)	1. Public noise		
Remarks						

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	19/8/2010



Monitoring Location			N1	N2		
Description of Location			Façade	Façade		
Date of Monitoring			23/8/2010			
Measurement Start Time	е	(hhmm)	12:45	12:05		
Measurement Time Len	gth	(mins.)	30 ı	mins		
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224		
Calibrator Model/ Identif	ication		Castle Gro	up, GA607		
Wind Speed	(1	m/s)	0.6	0.6		
	L90	(dB(A))	44.8	42.1		
Measurement Results	L10	(dB(A))	55.4	52.9		
	Leq	(dB(A))	53.5	50.2		
Weather condition:			Sunny			
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) [	Ouring I	Monitoring	Public noise     Traffic noise (bicycle)	1. Public noise		
Remarks						

	Name & Designation	<u>Signature</u>	Date:
		1	
Prepared by:	Jimmy Cheng	4	23/8/2010



Monitoring Location			N3	N4		
Description of Location			Freefield	Facede		
Date of Monitoring			23/8/2010			
Measurement Start Time	е	(hhmm)	11:25	10:50		
Measurement Time Len	gth	(mins.)	30 r	mins		
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224		
Calibrator Model/ Identif	fication		Castle Gro	up, GA607		
Wind Speed	(1	m/s)	0.5	0.5		
	L90	(dB(A))	36.8	46.4		
Measurement Results	L10	(dB(A))	52.4	58.5		
	Leq	(dB(A))	49.6	55.1		
Weather condition:			Sunny			
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) [	Ouring I	Monitoring	Public noise     Traffic noise (bicycle)	Public noise     Traffic noise (bicycle)		
Remarks						

	Name & Designation	<u>Signature</u>	<u> Date:</u>
		1	
Prepared by:	Jimmy Cheng		23/8/2010
' '		- <del> </del>	<b>-</b> ) (



Monitoring Location			N1	N2		
Description of Location			Façade	Façade		
Date of Monitoring			30/8/2010			
Measurement Start Time	е	(hhmm)	13:40	11:50		
Measurement Time Len	gth	(mins.)	30 r	mins		
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224		
Calibrator Model/ Identif	ication		Castle Gro	up, GA607		
Wind Speed	(r	n/s)	0.3	0.2		
	L90	(dB(A))	44.3	36.4		
Measurement Results	L10 (dB(A))		62.6	46.7		
	Leq	(dB(A))	61.1	45.3		
Weather condition:			Sunny			
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.		
Other Noise Source(s) [	Ouring <b>N</b>	Monitoring	Public noise     Traffic noise (bicycle)	Public noise     Traffic noise (bicycle)		
Remarks						

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng		30/8/2010



Monitoring Location			N3	N4		
Description of Location			Freefield	Facede		
Date of Monitoring			30/8/2010			
Measurement Start Time	е	(hhmm)	11:10	10:40		
Measurement Time Len	gth	(mins.)	30 ı	mins		
Noise Meter Model/ Ider	ntificati	on	ACO Japan,	model 6224		
Calibrator Model/ Identif	ication		Castle Gro	up, GA607		
Wind Speed	(	m/s)	0.3	0.6		
	L90	(dB(A))	36.3	47.3		
Measurement Results	L10	(dB(A))	45.9	49.4		
	Leq	(dB(A))	45.6	48.6		
Weather condition:			Sunny			
Major Construction Noise Sourse(s) During Monitoring			Construction truck noise	No construction works are being carried out during measurement.		
Other Noise Source(s) [	Ouring	Monitoring	Public noise     Traffic noise (bicycle)	1. Public noise		
Remarks						

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	4	30/8/2010

# Appendix F1

Water Quality
Monitoring Data Sheet

#### Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	2/8/201	0		Sunny	y																
Monitoring Location		M1			M2			М3			M4			C1			C2			C3	
Time (hhmm)		1615			1600			1610			1620		1350			1400			1410		
Tide Mode		mid-ebb	)		mid-ebb	)		mid-ebb	1		mid-ebb	1		mid-ebb	)		mid-ebb	)	mid-ebb		)
River Condition		Muddy			normal		normal			normal normal		normal				normal					
Water Depth (m)		<1			< 1			< 1			1.3			< 1			< 1			< 1	
pH value		9.10			8.15			7.43			8.14		7.13			6.67		6.67 6.45			
Temperature (oC)		29.5		29.2		30.4		31.7		28.1		27.4		27.5							
Salinity (ppt)		0.0			0.0			0.3			3.4			0.0			0.0			0.1	
Turbidity (NTU)	18.6	18.4	Average	0.0	0.0	Average	16.1	16.1	Average	15.6	15.7	Average	4.9	4.9	Average 4.9	0.0	0.0	Average 0.0	6.5	6.6	Average 6.6
DO (mg/l)	7.26	7.23	Average 7.25	7.41	7.43	Average 7.42	7.73	7.74	Average 7.74	8.79	8.76	Average 8.78	7.46	7.46	Average 7.46	7.48	7.50	Average 7.49	6.55	6.56	Average 6.56
DO Saturation (%)	96	96	Average 96	97	97	Average 97	103	103	Average	121	121	Average	96	96	Average 96	95	95	Average 95	84	84	Average 84

Name Prepared By: Jimmy Cheng



Date 2/8/2010

remark or

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observation:

#### Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	3/8/201	0		Sunny																
Monitoring Location		M1		М	2		М3			M4			C1		C2			С3		
Time (hhmm)		1545										1600								
Tide Mode		mid-ebb	)	mid-	ebb	mid-ebb				mid-ebb			mid-ebb	)	mid-ebb			mid-ebb		
River Condition		normal		nori	mal	normal			normal				normal		I	normal		normal		
Water Depth (m)		<1		< 1			< 1			1.2		< 1				< 1			< 1	
pH value		8.68											7.76							
Temperature (oC)		23.0											24.2							
Salinity (ppt)		0.0											0.0							
Turbidity (NTU)	12.7	12.9	Average		Average			verage			Average	0.0	0.0	Average			Average			Average
DO (mg/l)	7.99	7.99	12.8 Average		#DIV/0!			DIV/0!			#DIV/0!	7.77	7.77	0.0 Average			#DIV/0! Average			#DIV/0!
DO (mg/l)	7.99	7.99	7.99		#DIV/0!		#[	DIV/0!			#DIV/0!	7.77	7.77	7.77			#DIV/0!			#DIV/0!
DO Saturation (%)	94	94	Average		Average		A	verage			Average	93	93	Average			Average			Average
			94		#DIV/0!		#0	DIV/0!			#DIV/0!			93			#DIV/0!			#DIV/0!

Name	Signature	Date		
Prepared By: Jimmy Cheng	<u></u>	3/8/2010	remark or observation:	

#### Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	5/8/201	0		Sunny	1																	
Monitoring Location		M1			M2			М3			M4			<b>C</b> 1			C2	1140 ebb mid-ebb mal normal 1 <1 6.80 3 29.9 0 0.1 0 Average 5.2 5.2 6.4 7.91 Average 6.47 6.49				
Time (hhmm)		1045			1050			1100			1040			1120			1130					
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb	)		mid-ebb	)		mid-ebb	)		mid-ebb	)		)		
River Condition		normal			normal		normal				normal			normal			normal					
Water Depth (m)		<1			< 1			< 1			1.3			< 1			< 1					
pH value		8.10		7.53				7.14			7.58			8.12			7.61					
Temperature (oC)		28.0		28.5			30.3				29.5			27.9			28.3			29.9		
Salinity (ppt)		0.0			0.0		1.6				2.8			0.1	0.0					0.1		
Turbidity (NTU)	101.9	102.0	Average	0.0	0.0	Average	3.2	3.2	Average 3.2	38.7	38.9	Average	0.0	0.0	Average 0.0	0.0	0.0		5.2	5.2	Average 5.2	
DO (mg/l)	7.87	7.89	Average	8.11	8.11	Average	9.12	9.10	Average	8.69	8.69	Average	7.74	7.74	Average	7.92	7.89	Average	6.47	6.49	Average	
DO Saturation (%)	101	101	7.88 Average	105	105	8.11 Average	121	121	9.11 Average	114	114	8.69 Average	99	99	7.74 Average	102	102		88	88	6.48 Average	

Name
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**Date** 5/8/2010

M1 & M4 - clearance of riverbed

remark or observation:\_

# Environmental Pioneers & Solutions Limited Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 6/8/2010 Sunny Monitoring М2 C2 Location M1 М3 М4 C1 C3 1045 1050 1100 1040 1120 1130 1140 Time (hhmm) mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb Tide Mode normal normal normal normal normal normal normal River Condition 1.2 <1 < 1 < 1 < 1 < 1 < 1 Water Depth (m) 7.60 6.64 6.58 7.07 7.43 7.21 6.60 pH value 27.7 26.4 27.3 26.2 26.2 27.0 26.2 Temperature (oC) 0.0 0.0 1.3 1.7 0.1 0.0 0.1 Salinity (ppt) Average Average Average Average Average 8.0 Turbidity (NTU) 3.1 7.5 5.9 5.9 0.0 0.0 5.2 5.2 3.1 5.9 0.8 0.0 5.2 Average Average Average DO (mg/l) 8.10 8.02 8.55 8.53 8.37 8.39 7.72 7.22 8.02 8.00 5.79 8.10 8.01 5.76 8.10 8.02 8.54 8.38 7.47 8.01 5.78 Average Average Average Average Average Average Average DO Saturation (%) 101 99 99 110 110 107 107 96 96 100 100 73 73 101 99 110 107 96 100 73

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**Date** 6/8/2010

remark or observation:

#### Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	9/8/201	0		Sunny	y																
Monitoring Location		M1			M2			М3			М4			C1			C2		C3		
Time (hhmm)		1050		1100				1110		1120			1130			1235			1255		
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb	)	mid-ebb				mid-ebb	)	mid-ebb		
River Condition		normal			normal			normal			normal			normal			normal		,		
Water Depth (m)		<1			< 1			< 1			1.4		<1				< 1			< 1	
pH value		7.42		7.42				7.22			7.55			7.56			7.04				
Temperature (oC)		28.7			28.2		29.4				29.6			28.6			28.5		30.7		
Salinity (ppt)		5.3			3.8			12.9			5.5			0.0			0.0			1.3	
Turbidity (NTU)	6.6	6.7	Average 6.7	0.0	0.0	Average	6.0	6.0	Average 6.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	11.9	11.9	Average
DO (mg/l)	6.97	6.99	Average 6.98	7.58	7.59	Average 7.59	6.16	6.16	Average 6.16	7.17	7.17	Average 7.17	7.20	7.22	Average 7.21	8.23	8.25	Average 8.24	7.61	7.63	Average 7.62
DO Saturation (%)	90	90	Average 90	97	97	Average 97	81	81	Average 81	94	94	Average 94	94	94	Average 94	107	107	Average	102	102	Average 102

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Date 9/8/2010

remark or observation:

## **Environmental Pioneers & Solutions Limited** Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	11/8/20	10		Sunny	/																
Monitoring Location		M1		M2				М3			М4			C1			C2		C3		
Time (hhmm)		1305			1310			1320			1300			1350			1340				
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb	)	mid-ebb				mid-ebb	)		0	
River Condition		normal			normal			normal			normal			normal			normal				
Water Depth (m)		<1		< 1				< 1			1.4			< 1			< 1				
pH value		7.98		7.70				7.25			7.61			8.02			7.96				
Temperature (oC)		27.1		26.0			26.8				27.1			27.2		26.6			26.7		
Salinity (ppt)		2.6			2.2		14.7				7.7			0.8		0.0			5.8		
Turbidity (NTU)	6.7	6.7	Average 6.7	1.6	1.8	Average	5.9	5.9	Average 5.9	2.7	2.7	Average 2.7	3.2	3.2	Average 3.2	0.9	0.9	Average 0.9	9.0	9.0	Average 9.0
DO (mg/l)	7.87	7.89	Average 7.88	8.02	8.02	Average 8.02	7.84	7.82	Average 7.83	7.67	7.66	Average 7.67	7.90	7.92	Average 7.91	8.20	8.24	Average 8.22	7.11	7.11	Average 7.11
DO Saturation (%)	100	100	Average	99	99	Average 99	98	98	Average 98	97	97	Average 97	100	100	Average	103	103	Average	89	89	Average 89

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Date 11/8/2010

remark or observation:\_

## **Environmental Pioneers & Solutions Limited** Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	13/8/20	10		Sunny	y																		
Monitoring Location		M1			M2			М3			M4			<b>C</b> 1			C2		<b>C</b> 3				
Time (hhmm)		1340			1345		1350				1330			1415		1405							
Tide Mode		mid-ebb	)		mid-ebb	1		mid-ebb			mid-ebb			mid-ebb	)		mid-ebb	)		)			
River Condition		normal			normal		normal				normal			normal			normal						
Water Depth (m)		<1			< 1			< 1			1.3			< 1			< 1						
pH value		7.88		7.74			7.89				8.06			7.68			8.14						
Temperature (oC)		27.7			29.4			29.7			28.5			29.2			28.9		29.1				
Salinity (ppt)		1.7			2.9		10.6				7.6			0.0			0.2			4.2			
Turbidity (NTU)	3.3	3.4	Average 3.4	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	9.1	9.1	Average 9.1		
DO (mg/l)	8.25	8.25	Average 8.25	8.43	8.44	Average	8.99	8.97	Average 8.98	8.50	8.52	Average 8.51	7.75	7.77	Average 7.76	7.98	7.94	Average 7.96	8.31	8.31	Average 8.31		
DO Saturation (%)	105	105	Average	111	111	Average	119	119	Average	110	110	Average	102	102	Average	104	104	Average	108	108	Average		

Name Prepared By: Jimmy Cheng



Date 13/8/2010

remark or observation:

## **Environmental Pioneers & Solutions Limited**

## Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	16/8/20	10		Cloud	ly																
Monitoring Location		M1			M2		М3			M4			<b>C</b> 1			C2			С3		
Time (hhmm)		1610			1620			1630			1600			1515		1525					
Tide Mode		mid-ebb	)		mid-ebb	)		mid-ebb	1		mid-ebb	1		mid-ebb	)		mid-ebb	)		)	
River Condition		normal			normal			normal			normal		normal			normal				normal	
Water Depth (m)		<1			< 1			< 1			1.4			< 1			< 1			< 1	
pH value		7.84			7.20			6.92			7.45		6.90				6.72			6.76	
Temperature (oC)		26.8			26.8			27.2			27.1			23.4			23.6			25.1	
Salinity (ppt)		0.2			0.0		0.6				2.7			0.0			0.0			0.1	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	9.8	9.7	Average	2.4	2.4	Average	0.0	0.0	Average	0.0	0.0	Average	1.4	1.4	Average
			0.0			0.0			9.8			2.4			0.0			0.0			1.4
DO (mg/l)	8.02 8.01 Average 7.98 7.96 Average 7.15 7.15		7.15	Average	7.42	7.43	Average	8.08	8.08	Average	8.25	8.25	Average	5.77	5.79	Average					
			8.02			7.97			7.15			7.43			8.08			8.25			5.78
DO Saturation (%)	101	101	Average	100	100	Average	90	90	Average	94	94	Average	95	95	Average	97	97	Average	70	70	Average
	101 100				90			94			95			97			70				

	Name
Prepared By:	Jimmy Cheng

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**Date** 16/8/2010

## **Environmental Pioneers & Solutions Limited**

## Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	19/8/20	10		Cloud	ly	-													1		
Monitoring Location		M1		M2			М3			M4			C1			C2			С3		
Time (hhmm)		1140			1145			1155			1205		1240			1250					
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb	1		mid-ebb	1		mid-ebb	)		mid-ebb	)		)	
River Condition		normal			normal			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			1.2			< 1			< 1			< 1	
pH value		7.67			7.26			6.89			7.31			7.45			7.25			6.80	
Temperature (oC)		24.3			24.7			25.6			25.7			26.3			25.7				
Salinity (ppt)		0.0			0.0		1.9				2.7			0.0			0.0			0.1	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	4.7	4.7	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	2.6	2.6	Average
			0.0			0.0			4.7			0.0			0.0			0.0			2.6
DO (mg/l)	8.42	8.43	Average	8.36	8.37	Average	8.54	8.54	Average	8.25	8.24	Average	7.70	7.70	Average	8.47	8.47	Average	7.25	7.25	Average
			8.43			8.37			8.54			8.25			7.70			8.47			7.25
DO Saturation (%)	101	101	Average	101	101	Average	105	105	Average	102	102	Average	96	96	Average	104	104	Average	91	91	Average
	101 101				105			102			96			104			91				

	Name
Prepared By:	Jimmy Cheng

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19/8/2010 observa

Date of Sampling: 20/8/2010 Sunny Monitoring М2 C2 Location M1 М3 М4 C1 C3 1050 1100 1115 1045 1210 1215 1225 Time (hhmm) mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb mid-ebb Tide Mode normal normal normal normal normal normal normal River Condition 1.3 <1 < 1 < 1 < 1 < 1 < 1 Water Depth (m) 8.95 7.80 7.33 7.34 7.50 7.28 6.82 pH value 27.2 28.2 29.1 29.0 30.8 29.4 27.5 Temperature (oC) 0.0 0.1 3.9 3.1 0.1 0.0 0.1 Salinity (ppt) Average Average Average Average Average 0.0 4.7 Turbidity (NTU) 8.3 0.0 3.6 0.0 0.0 0.0 0.0 0.0 8.4 0.0 3.6 0.0 0.0 0.0 4.8 Average Average Average DO (mg/l) 8.27 9.46 8.48 7.86 7.86 8.13 6.42 8.28 8.29 8.28 9.45 8.48 8.14 6.41 8.28 8.29 9.46 8.48 7.86 8.14 6.42 Average Average Average Average Average Average Average DO Saturation (%) 108 108 107 107 125 125 112 112 99 99 103 103 82 82 108 107 125 112 99 103 82

Name
Prepared By: Jimmy Cheng



**Date** 20/8/2010

Date of Sampling:	23/8/20	10		Sunny																		
Monitoring Location		<b>M</b> 1			M2			М3			M4			C1			C2			C3		
Time (hhmm)		1045			1055		1105				1115			1140			1205			1150		
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb			mid-ebb	1		mid-ebb	1		ı		
River Condition		normal			normal			normal			normal		normal				normal			normal		
Water Depth (m)		<1			< 1			< 1			1.4			< 1			< 1			< 1		
pH value		7.54			7.18			7.74		7.99			8.04				7.63					
Temperature (oC)		28.8			29.0			29.7			30.0			27.9			28.7			29.8		
Salinity (ppt)		1.1			3.6			10.1			15.2			0.2			0.0			1.3		
Turbidity (NTU)	0.0	0.0	Average	0.9	0.9	Average	0.6	0.6	Average	0.0	0.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average	0.0	0.0	Average 0.0	
DO (mg/l)	7.66	7.66	Average 7.66	7.63	7.64	Average 7.64	7.72	7.70	Average 7.71	7.51	7.49	Average 7.50	7.53	7.54	Average 7.54	8.25	8.19	Average	7.69	7.67	Average 7.68	
DO Saturation (%)	100	100	Average	99	99	Average 99	102	102	Average	100	100	Average	96	96	Average 96	105	105	Average	102	102	Average	

Name Prepared By: Jimmy Cheng



Date 23/8/2010

remark or	
observation:	

Date of Sampling:	25/8/20	10		Sunny	1																	
Monitoring Location		M1			М2		М3			M4			C1			C2			С3			
Time (hhmm)		1200			1205			1210			1150		1040			1050						
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb			mid-ebb	)		mid-ebb	)		)		
River Condition		normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)		<1			< 1			< 1			1.2			< 1			< 1			< 1		
pH value		8.06			7.77			7.78			7.66		6.78				6.62					
Temperature (oC)		28.3		28.1			28.8				29.3			26.5			26.9			27.7		
Salinity (ppt)		2.6			1.7		12.0				10.0			0.0			0.0		4.7			
Turbidity (NTU)	0.3	0.3	Average 0.3	0.0	0.0	Average	2.0	2.0	Average 2.0	0.6	0.6	Average 0.6	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	9.1	9.1	Average 9.1	
DO (mg/l)	8.56	8.54	Average 8.55	8.24	8.28	Average 8.26	8.86	8.86	Average 8.86	8.06	8.05	Average 8.06	7.04	7.04	Average 7.04	8.48	8.48	Average	4.83	4.83	Average 4.83	
DO Saturation (%)	109	109	Average	106	106	Average	116	116	Average	106	106	Average	88	88	Average 88	107	107	Average	61	61	Average 61	

	Name
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**Date** 25/8/2010

Date of Sampling:	27/8/20	10		Sunny	1																
Monitoring Location		M1		M2			М3			M4			C1			C2			C3		
Time (hhmm)		1345			1350			1400			1340		1430			1440			1450		
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb			mid-ebb	1	mid-ebb					
River Condition		normal		normal				normal			normal		normal				normal				
Water Depth (m)		<1			< 1			< 1			1.3			< 1			< 1			< 1	
pH value		7.91			7.67			7.36			7.86		7.54				6.92				
Temperature (oC)		30.0		30.7			31.1				30.7			28.8			29.6			30.0	
Salinity (ppt)		1.0			1.2		6.2				8.1			0.1			0.0			0.2	
Turbidity (NTU)	0.9	0.9	Average 0.9	0.0	0.0	Average 0.0	8.0	8.0	Average 8.0	0.0	0.0	Average 0.0	1.7	1.7	Average	1.4	1.4	Average	10.9	10.9	Average
DO (mg/l)	8.42	8.40	Average	8.12	8.12	Average 8.12	8.88	8.89	Average	8.79	8.81	Average 8.80	7.93	7.93	Average 7.93	8.05	8.01	Average 8.03	6.06	6.09	Average 6.08
DO Saturation (%)	112	112	Average	109	109	Average	120	120	Average	118	118	Average	103	103	Average	106	106	Average	81	81	Average 81

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**Date** 27/8/2010

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Date of Sampling:																					
Monitoring Location		M1			M2			М3			M4			C1			C2			СЗ	
Time (hhmm)		1510			1500			1450			1520			1420			1430			1440	
Tide Mode		mid-ebb	)		mid-ebb			mid-ebb			mid-ebb	)									
River Condition		normal			normal < 1			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1 7.35			< 1			1.3			< 1			< 1			< 1	
pH value		7.43						7.24			7.77			7.47			7.40			6.97	
Temperature (oC)		29.6		30.2				31.6			31.7			28.4			29.0			30.1	
Salinity (ppt)		0.0			0.0			2.1			6.5			0.0			0.0			0.1	
Turbidity (NTU)	0.9	0.9	Average	0.0	0.0	Average	4.3	4.3	Average	0.8	0.9	Average	0.0	0.0	Average	0.4	0.4	Average	8.2	8.2	Average
			0.9			0.0			4.3			0.9			0.0			0.4			8.2
DO (mg/l)	8.39	8.35	Average	8.38	8.39	Average	10.57	10.56	Average	9.84	9.86	Average	8.29	8.31	Average	8.21	8.21	Average	7.06	7.08	Average
			8.37			8.39			10.57			9.85			8.30			8.21			7.07
DO Saturation (%)	111	111	Average	112	112	Average	144	144	Average	135	135	Average	107	107	Average	108	108	Average	94	94	Average
			111			112			144			135			107			108			94

Name
Prepared By: Jimmy Cheng



**Date** 30/8/2010

# **Appendix F2**

Water Quality
Monitoring Lab report



## **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1 Report No. : GCC100800011 Date of Issue : 10-08-2010 Client\* : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 02-08-2010 W.O. No.\* Sample Type\* : River Water Date Completed: 03-08-2010 GCE Serial No. : WQM082010 GCE Reg. No. : GCE 081096 : CH 08258 Test Unit No. **Test Method Analysis Description** Units **Quality Control Results** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank Suspended Solids (SS) APHA 20ed 2540 D < 1.0 496 494 27.5 mg/L 0.4 475 ≤ Control Limit ≤ 514 Acceptance Criteria < 2.5 mg/L  $21 \le R \le 29$ ≤ ±5% Sample ID C1 C1 Duplicate C2 Duplicate C3 Duplicate **TEST RESULTS** Sampling 02 Aug 2010 / 13:50 02 Aug 2010 / 14:00 02 Aug 2010 / 14:10 Date/Time LOD Units Suspended 9.6 1 mg/L 8.8 < 1.0 < 1.010.2 11.2 Solids (SS) Sample 1D M1 M1 Duplicate M2 M2 Duplicate M3 M3 Duplicate M4 M4 Duplicate **TEST RESULTS** Sampling 02 Aug 2010 / 16:15 02 Aug 2010 / 16:00 02 Aug 2010 / 16:10 02 Aug 2010 / 16:20 Date/Time LOD Units Suspended 1 13.7 12.2 14.0 12.5 1.7 24 12.8 148 mg/L Solids (SS) \* : Information provided by client Note: This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Remarks: ---- End ----Tested By K.L. FONG Approved Signatory

Name

Post

**GU CHIN** 

Chemist

Form No. : WQM/R1 (19-01-2009)

**GU CHIN** 

Checked By :



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1

Report No.	: GCC	1008000	29(A) 							Date of Issue	:	10-0	98-2010 
Client*	: Envir	onmental	Pioneers	& Solu	tions Lim	ited				Date Receive	d :	08-0	9-2008
Client Address*	: 8/F, 0	Chaiwan I	ndustrial	Centre	Building	20 Lee (	Chur	ng Street, Cl	naiwan,	нк.			
<b>5</b>						ige Impro	vem	ent in South	ern Lan	ntau & Constr	uction	n of	
Project*			Seweraç		V W. W. V.								
Test Location	: <u>G/F</u>	, 20 Pak	Kung Stre							Date Started			8-2010
W.O. No.*	:			-	mple Typ			Water		Date Complet			08-2010
GCE Serial No.	: WQM	1082010		_ GC	E Reg. N	lo. : <u>G</u>	CE (	081096		Test Unit No.	:	CH (	08258
Analysis Descrip	tion	Т	est Metho	od	Units				Quality	Control Resu	ilts		
						Metho Blank		QC 500 m	g/L Q	C Duplicate	RPI	D%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	4 20ed 25	540 D	mg/L	< 1.0	)	497		499	-0.	.4	26.7
	-		Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ Co	ontrol L	imit ≤ 514	≲ ±	5%	21 ≤ R ≤ 29
	Sarr	nple ID	C1	C1 D	uplicate	C2	C2	2 Duplicate	C3	C3 Duplica	ate		
TEST RESULTS		npling e/Time	03 Aug	2010	/ 16:00			-					
	LOD	Units											
Suspended Solids (SS)	1	mg/L	<1.0	<	1.0								
	San	nple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	М3	M3 Duplic	ate	M4	M4 Duplicate
TEST RESULTS	i	npling e/Time	03 Aug	2010	/ 15:45			-					***
	LOD	Units				į							
Suspended Solids (SS)	1	mg/L	8.6	8	3.8								
* : Information p	rovided	by client											
Note: This I	- b		:	:::::::::::::::::::::::::::::::::::::::		11 4			مغماء	alu ta tha asa	nla ta	antod .	na ranaiwad
Note: This la	aporator	y nas no	responsio	ility on	sampiin	g and all t	ne t	est results r	elate or	nly to the sam	ipie te	ssieu	as received.
										_			
Remarks : Ti	nis repor	tis an an	nendment	of and	supplen	nent to re		no. GCC10	080002	29.			
						2110							
Tested By :		K.L. F	ONG				Аp	proved Sign	atory	: /	/ //:	(	
ŕ							Na	me	-	: GU C			
Checked By :		GU CH	lin				Pos	st		: Chen	nist		

Form No. : WQM/R1 (19-01-2009)



# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC1	0080003	37 							Date of Issue		: 10-0	8-2010
	/	onmental					>L	Strant Ch		Date Received	I	: 08-0	9-2008
Client Address*										rtau & Constru	ıctio	on of	
Project*		Vo Village				igo impro		one in ooden	ioni <b>c</b> ai			01	
Test Location		, 20 Pak I				Kowloon.				Date Started		: 05-0	8-2010
W.O. No.*					nple Typ			Water		Date Complete	ed	: 05-0	8-2010
		082010		-	E Reg. N			081096		Test Unit No.		: <u>CH 0</u>	
Analysis Descript	tion	т	est Metho	od	Units				Quality	Control Resul	lts		
						Metho Blank		QC 500 m	Spike 25 mg/L				
Suspended Solid	s (SS)	АРНА	20ed 25	540 D	mg/L	< 1.0	)	499		498	0	28.4	
			Acce	eptance	Criteria	<2.5 m	g/L	475 ≤ Co	ontrol L	imit ≤ 514	٤ :	±5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	С3	C3 Duplica	ite		
TEST RESULTS	l	npling e/Time	05 Aug	2010	/ 11:20	05 Aug	20	10 / 11:30	05 Au	ig 2010 / 11:4	40		- <sub> -</sub>
;	LOD	Units	_										
Suspended Solids (SS)	1	mg/L	4.3	4	1.0	1.4		1.5	3.2	3.0			
	Sam	iple ID	M1	M1 D	uplicate	M2	М.	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	05 Aug	2010	/ 10:45	05 Aug	20	10 / 10:50	05 Au	ug 2010 / 11:0	00	05 Au	g 2010 / 10:40
	LOD	Units											
Suspended Solids (SS)	1	mg/L	80.8	8	1.2	2.0		2.2	8.4	8.4		28.2	27.6
* : Information p	provided	by client				·							
Note: This I	aborator	y has no	responsit	oility on	samplin	g and all t	the 1	test results r	relate o	nly to the sam	ple 1	tested a	as received.
Remarks :													
						End							
Tested By :		K.L. F	ONG					proved Sign	atory	:; : GU C	, o‱ HIÑ	<u>/</u>	
Checked By :		GU CH	IIN				Po			: Chem			

Form No. : WQM/R1 (19-01-2009)



# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC1	0080004						***************************************		Date of Issue		: 10-0	08-2010 
Client*	* *	onmental				· · · · · · · · · · · · · · · · · · ·				Date Received	d	: 08-0	9-2008
Client Address*													
D!**						ige Impro	vem	ent in South	nern Lan	tau & Constr	uctio	on of	
Project*		Vo Village											
Test Location	: <u>G/F</u>	, 20 Pak	Kung Stre	et, Hui	ng Hom,	Kowloon				Date Started		: 06-0	8-2010
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	iver	Water	'	Date Complet	ed	: 06-0	8-2010
GCE Serial No.	: <u>WQM</u>	082010		_ GC	E Reg. N	o. : <u>G</u>	CE	081096		Test Unit No.		: <u>CH (</u>	08258
Analysis Descrip	tion	T	est Methe	od	Units				Quality	Control Resu	lts		
						Metho Blank		QC 500 m	g/L Q	C Duplicate	R	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	4 20ed 25	540 D	mg/L	< 1.0	)	498		498	(	0.0	26.1
			Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol Li	mit ≤ 514	±5%	21 ≤ R ≤ 29	
	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	С3	C3 Duplica	ate		
TEST RESULTS	l	npling e/Time	06 Aug	2010	/ 11:20	06 Aug	201	10 / 11:30	06 Au	g 2010 / 11:	40		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	4.4	4	.8	<1.0		<1.0	6.6	7.2			
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS	1	npling e/Time	06 Aug	2010	/ 10:45	06 Aug	20	10 / 10:50	06 Au	g 2010 / 11:	00	06 Au	g 2010 / 10:40
_	LOD	Units											
Suspended Solids (SS)	1	mg/L	6.7	5	.9	6.3		6.2	7.7	8.0		7.7	7.7
* : Information p	rovided	by client											
Note: This is	aborator	y has no	responsib	ility on	sampling	g and all t	he t	est results r	elate or	lly to the sam	ple	tested	as received.
Remarks :													
_						End							
Tested By :		K.L. FO	DNG					proved Sign	atory		<u></u>		
Checked By :		GU CH	IIN				Na Po:	me st		: GU C : Chem			

Form No.; WQM/R1 (19-01-2009)



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1

									_				rage I UI I
Report No.	: GCC1	0080006	i 1 							Date of Issue	:	24-0	8-2010 
Client*	: Enviro	nmental	Pioneers	& Solut	ions Lim	ited			F	.O. Received	l :	08-0	9-2008
Client Address*	: <u>8/F, C</u>	haiwan l	ndustrial	Centre	Building,	20 Lee 0	hun	g Street, Cl	naiwan,	нк.			·
	DSD (	Contract I	No. DC/2	006/11	- Draina	ige Impro	vem	ent in South	ern Lan	tau & Constri	uctior	n of	
Project*	: Mui W	/o Village	Sewera	ge Phas	e 1								
Test Location	:G/F,	20 Pak I	Kung Str	eet, Hui	ng Hom,	Kowloon			0	Date Started	:	09-0	8-2010
W.O. No.*	:			Sar	nple Typ	e* : Ri	iver	Water	[	ate Complet	ed :	10-0	8-2010
GCE Serial No.	: WQM	082010		_ GC	E Reg. N	o. : <u>G</u>	CE (	081096	1	est Unit No.	:	СНС	8258
Analysis Descrip	tion	T	est Meth	od	Units				Quality	Control Resu	its		
		-				Metho		QC 500 m	g/L Q	C Duplicate	RPI	D%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	20ed 2	540 D	mg/L	8lank < 1.0		496		494	0.	.4	27.5
		<u> </u>	Acc	eptance	Criteria	< 2.5 m	g/L	475 ≤ C	ontrol Li	mit ≤ 514	≾ ±	:5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C2	2 Duplicate	С3	C3 Duplica	ate		
TEST RESULTS	I	npling r/Time	09 Aug	2010	/ 11:30	09 Aug	201	10 / 12:35	09 Au	g 2010 / 12:	55		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	2.4	2	2.6	2.2		2.3	9.3	9.7			
	Sam	ple ID	M1	M1 D	uplicate	M2	м	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS	!	npling e/Time	09 Aug	2010	/ 10:50	09 Aug	201	10 / 11:00	09 Au	g 2010 / 11:	10	09 Au	g 2010 / 11:20
	LOD	Units						· · · · · · · · · · · · · · · · · · ·					
Suspended Solids (SS)	1	mg/L	9.1	8	3.5	2.8		2.9	8.5	7.8		3.6	3.1
* : Information p	provided	by client											
Note: This!	aborator	y has no	responsit	oility on	sampling	g and all t	the t	test results i	elate on	lγ to the sam	nple te	ested	as received.
Remarks : Lo	neation M	/1 & WF	3 and Lo	cation N	//3 & WE	4 are the	san	ne location.					
		🐝				End				···			
Tested By :		K.L. F	ONG				Аp	proved Sign	atory		) []	Ę	
					LLAGET		-	me		GU C	HIN		
Checked By :		GU CH	IIN				Po	st		: Chen	nist		

Form No. : WQM/R1 (01-09-2008)



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1

Report No.	: GCC1	0080008	37						C	ate of Issue		24-0	8-2010
Client*	: Enviro	nmental	Pioneers	& Solut	tions Lim	ited				)ate Received	<b>:</b>	: 08-0	9-2008
Client Address*	: 8/F, C	Chaiwan I	ndustrial	Centre	Building,	20 Lee C	hun	g Street, Ch	naiwan,	нк.			····
	DSD	Contract I	No. DC/2	006/11	- Draina	ge Improv	vem	ent in South	ern Lant	au & Constri	uctio	n of	
Project*	: Mui V	Vo Village	Seweraç	je Phas	e 1								
Test Location	: <u>G/F</u>	, 20 Pak	Kung Stre	et, Hur	ng Hom,	Kowloon.	<u> </u>		[	Date Started	:	11-0	8-2010
W.O. No.*	:			Sar	nple Typ	e* : <u>Ri</u>	iver	Water	[	ate Complet	ed :	12-0	8-2010
GCE Serial No.	: WQM	082010		GC	E Reg. N	o. : <u>G</u>	CE (	81096	T	est Unit No.	;	CH (	08258
Analysis Descrip	tion	т	est Metho	od	Units				Quality	Control Resu	lts		
						Metho Blank	- 1	QC 500 mg	g/L Q(	C Duplicate	RP	D%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	20ed 25	540 D	mg/L	< 1.0	)	499		497	0	.4	25.9
			Acce	eptance	Criteria	<2.5 m	g/L	475 ≤ Co	ontrol Li	mit ≤ 514	≤ ±	<b>±5%</b>	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C2	2 Duplicate	СЗ	C3 Duplica	ite		
TEST RESULTS		npling e/Time	11 Aug	2010	/ 13:50	11 Aug	201	0 / 13:40	11 Au	g 2010 / 13:	30	,	
	LOD	Units											
Suspended Solids (SS)	1	mg/L	2.3	2	2.3	<1.0		<1.0	8.2	8.0			
	Sam	iple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	М3	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	11 Aug	2010	/ 13:05	11 Aug	201	10 / 13:10	11 Au	g 2010 / 13:	20	11 Au	ig 2010 / 13:00
	LOD	Units											
Suspended Solids (SS)	1	mg/L	7.4	7	7.2	2.8		2.3	7.2	6.4		5.9	5.2
* : Information p	provided	by client											
Note: This I	aborator	y has no	responsib	oility on	samplin	g and all t	the t	est results r	relate on	ly to the sam	ple 1	tested	as received.
Remarks :						End					•		
						EIIG							
Tested By :		K.L. F	ONG					proved Sign			LINI	_	
Checked By		GU CE	IIN				Na Po:	me st		: GU C : Chen			

Form No. : WQM/R1 (19-01-2009)



## **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1 Report No. : GCC100800095 : 24-08-2010 Date of Issue : Environmental Pioneers & Solutions Limited : 08-09-2008 Date Received Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Test Location Date Started** : 13-08-2010 W.O. No.\* Sample Type\* : River Water Date Completed : 14-08-2010 GCE Serial No. : WQM082010 : GCE 081096 : CH 08258 GCE Reg. No. Test Unit No. **Test Method Quality Control Results** Units Analysis Description Method RPD% QC 500 mg/L QC Duplicate Spike 25 mg/L Blank APHA 20ed 2540 D < 1.0 497 495 0.4 26.2 Suspended Solids (SS) mg/L < 2.5 mg/L 475 ≤ Control Limit ≤ 514 21 ≤ R ≤ 29 Acceptance Criteria  $< \pm 5\%$ Sample ID C1 C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 13 Aug 2010 / 14:15 13 Aug 2010 / 14:05 13 Aug 2010 / 13:55 Date/Time LOD Units Suspended < 1.0 < 1.0 < 1.0 10.4 11.0 1 ma/L < 1.0 Solids (SS) M2 Duplicate M3 Duplicate M4 Duplicate Sample ID M1 M1 Duplicate M2 М3 М4 **TEST RESULTS** Sampling 13 Aug 2010 / 13:40 13 Aug 2010 / 13:45 13 Aug 2010 / 13:50 13 Aug 2010 / 13:30 Date/Time LOD Units Suspended 4.3 8.0 2.8 2.5 7.9 8.7 1 < 1.0 < 1.0mg/L Solids (SS) \*: Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Remarks: ---- End ----Tested By K.L. FONG Approved Signatory GU CHÍN Name

Post

Chemist

Form No. : WQM/R1 (19-01-2009)

**GU CHIN** 

Checked By :



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC100800134 Date of Issue : 28-08-2010 Client\* : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Test Location Date Started** : 16-08-2010 W.O. No.\* Sample Type\* : River Water Date Completed: 17-08-2010 GCE Serial No. : WQM082010 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 **Analysis Description Test Method** Units **Quality Control Results** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L **Blank** Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 495 497 -0.4 25.7 Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514  $21 \le R \le 29$ ≤ ±5% Sample ID C1C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 16 Aug 2010 / 15:15 16 Aug 2010 / 15:25 16 Aug 2010 / 15:35 Date/Time LOD Units Suspended 1 mg/L 3.2 3.4 < 1.0 <1.0 3.6 3.6 Solids (SS) Sample ID M1 Duplicate M2 M2 Duplicate M3 Duplicate M4 Duplicate **TEST RESULTS** Sampling 16 Aug 2010 / 16:10 16 Aug 2010 / 16:20 16 Aug 2010 / 16:30 16 Aug 2010 / 16:00 Date/Time LOD Units Suspended 4.0 10.5 1 mg/L 4.3 1.3 1.5 10.5 6.4 6.1 Solids (SS) \*: Information provided by client Note: This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Remarks: ---- End -----Tested By K.L. FONG Approved Signatory Name **GU CHIN** 

Post

Chemist

Form No. : WQM/R1 (19-01-2009)

GU CHIN

Checked By :



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC100800142 Date of Issue : 28-08-2010 : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 19-08-2010 Test Location W.O. No.\* Sample Type\* : River Water Date Completed: 20-08-2010 : GCE 081096 : CH 08258 GCE Serial No. : WQM082010 GCE Reg. No. Test Unit No. **Quality Control Results Test Method** Units Analysis Description Method RPD% Spike 25 mg/L QC 500 mg/L QC Duplicate Blank APHA 20ed 2540 D < 1.0 495 496 -0.2 25.5 Suspended Solids (SS) mg/L 475 ≤ Control Limit ≤ 514 ≤ ±5%  $21 \le R \le 29$ < 2.5 mg/L Acceptance Criteria Sample ID C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 19 Aug 2010 / 12:40 19 Aug 2010 / 12:50 19 Aug 2010 / 13:00 Date/Time LOD Units Suspended 4.7 5.2 2.5 2.8 1.6 1.2 mg/L 1 Solids (SS) M2 Duplicate М3 M3 Duplicate M4 Duplicate Sample ID М1 M1 Duplicate M2 **TEST RESULTS** Sampling 19 Aug 2010 / 12:05 19 Aug 2010 / 11:45 19 Aug 2010 / 11:55 19 Aug 2010 / 11:40 Date/Time LOD Units Suspended 2.9 9.6 9.6 5.9 6,1 3.0 3.6 2.6 1 mg/L Solids (SS) \* : Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Remarks: ----- End -----Approved Signatory : Tested By K.L. FONG **GU CHIN** Name

Post

Chemist

Form No. : WQM/R1 (19-01-2009)

Checked By :

GU CHIN



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : GCC100800150 : 28-08-2010 Report No. Date of Issue Date Received Client\* : Environmental Pioneers & Solutions Limited Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 : 20-08-2010 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started Test Location** Date Completed: 21-08-2010 W.O. No.\* Sample Type\* : River Water : CH 08258 GCE Reg. No. : GCE 081096 GCE Serial No. : WQM082010 Test Unit No.

Analysis Descript	ion	Te	est Metho	d	Units				Quality	Control Resu	ilts		
						Method Blank	i	QC 500 m	g/L QC	Duplicate	RI	PD%	Spike 25 mg/L
Suspended Solids	s (SS)	АРНА	20ed 25	40 D	mg/L	< 1.0		495		495	(	0.0	26.2
			Acce	ptance	Criteria	< 2.5 mg	j/L	475 ≤ C	ontrol Li	mit ≤ 514	<	±5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C2	Duplicate	С3	C3 Duplica	ate		
TEST RESULTS		npling e/Time	20 Aug	2010	/ 12:10	20 Aug	201	0 / 12:15	20 Aug	2010 / 12:	25	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	LOD	Units			·								
Suspended Solids (SS)	1	mg/L	1.8	1	.6	<1.0		<1.0	5.6	6.5		•	
	Sam	iple ID	М1	M1 D	uplicate	M2	М2	2 Duplicate	М3	M3 Duplic	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	20 Aug	2010	/ 10:50	20 Aug	201	0 / 11:00	20 Au	g 2010 / 11:	:15	20 Au	g 2010 / 10:45
	LOD	Units									•		
Suspended Solids (SS)	1	mg/L	9.2	8	3.1	1.7		2.0	6.8	6.7		4.7	4.8

<sup>\*:</sup> Information provided by client

Note :	This	laboratory	has no r	esponsibility	on sampling	and all t	he test results relate	only to	the sample tested as rece	eived.
Remarks :	<u>-</u> -	_								
Remains .			•			End				
Tested By	:		K.L. FO	NG			Approved Signatory	:	/d/k	
							Name	:	GU CHIN	<del></del>
Checked B	у:		GU CH	ı <b>n</b>			Post	:	Chemist	

Form No.: WQM/R1 (19-01-2009)



# **TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER**

Page 1 of 1

Report No.	: GCC1	0080016	58 							Date of Issue		## 1 : 08-0  ### 23-0  ### 23-0  ### 24-0  ### 24-0  ### 25	)8-2010 
Client*	: Enviro	nmental	Pioneers	& Solut	tions Lim	ited				Date Received	b	: 08-0	9-2008
Client Address*	: 8/F, C	haiwan l	ndustrial	Centre	Building,	20 Lee (	Chur	ng Street, Cl	haiwan,	HK.			
	DSD (	Contract	No. DC/2	:006/11	- Draina	ige Impro	vem	ent in South	nern Lar	ntau & Constr	uctic	on of	
Project*	: Mui V	vo Village	Sewera	ge Phas	e 1					and a shaddoon share a little from the Color Col			Maria V. W
Test Location	: <u>G/F</u>	. 20 Pak	Kung Stre	eet, Hu	ng Hom,	Kowloon				Date Started		: 23-0	8-2010
W.O. No.*	:			Sar	mple Typ	e* : <u>R</u>	iver	Water		Date Complet	ed	: 24-0	8-2010
GCE Serial No.	: WQM	082010		GC	E Reg. N	o. : <u>G</u>	CE	081096		Test Unit No.		: <u>CH</u> (	08258
Analysis Descrip	tion	Т	est Meth	od	Units				Quality	Control Resu	tesults  te RPD% S  -0.2  1 ≤ ±5%  11:50		
						Metho Blank		QC 500 m	g/L C	C Duplicate	RF	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	\ 20ed 2!	540 D	mg/L	< 1.0	)	494		495	struction of struc	0.2	25.5
			Acce	eptance	Criteria	<2.5 m	g/L	475 ≤ C	o <b>nt</b> rol L	imit ≤ 514	≤ :	±5%	21 ≤ R ≤ 29
•	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	С3	C3 Duplica	ate		
TEST RESULTS		npling /Time	23 Aug	2010	/ 11:40	23 Aug	20	10 / 12:05	23 Aı	ug 2010 / 11:	50		•
	LOD	Units											
Suspended Solids (SS)	1	mg/L	1.0	1	.0	1.0		1.1	3.9	3.6			
	Sam	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS	l	npling :/Time	23 Aug	2010	/ 10:45	23 Aug	20	10 / 10:55	23 Aı	ug 2010 / 11:	05	23 Au	ig 2010 / 11:15
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.9	3	3.6	3.1		2.9	4.1	4.4		4.4	4.7
* : Information p	rovided	by client											
Note: This k	aborator	y has no	responsib	oility on	sampling	g and all	the 1	test results r	relate o	nly to the sam	ple 1	tested	as received.
Remarks :						End							
Tested By :		K.L. FO	ONG					proved Sign	atory	:	, <u>L</u>	{	
Checked By		GUICH	IIN				Na Po:	me et					-

Form No. : WQM/R1 (19-01-2009)



# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

													Page 1 of 1
Report No.	: GCC1	0080017								ate of Issue		: 28-0	8-2010
Client*	: Enviro	nmental	Pioneers :	& Solut	ions Lim	ited			D	ate Received	i	: 08-0	9-2008
Client Address*	: 8/F, C	haiwan la	ndustrial (	Centre	Building,	20 Lee 0	hur	ıg Street, Ch	naiwan, I	⊣к.			
	DSD (	Contract I	No. DC/2	006/11	- Draina	ige Impro	/em	ent in South	ern Lant	au & Constru	uctio	n of	
Project*	: Mui V	/o Village	Sewerag	je Phas	e 1			MI ** *F					
Test Location	:G/F,	20 Pak I	Kung Stre	et, Hui	ng Hom,	Kowloon.			D	ate Started		: 25-0	8-2010
W.O. No.*	:			Sar	mple Typ	e* : <u>R</u> i	ver	Water	ם	ate Complet	ed	: 25-0	8-2010
GCE Serial No.	: WQM	082010		GC	E Reg. N	o. : <u>G</u>	CE (	081096	Т	est Unit No.		: <u>CH (</u>	08258
Analysis Descrip	tion	Te	est Metho	od	Units				Quality (	Control Resu	lts	<u>.</u>	
						Metho Blank		QC 500 m	g/L QC	Duplicate	RF	אסי	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	20ed 25	40 D	mg/L	< 1.0	)	497		494	C	0.6	26.5
			Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol Lir	mit ≤ 514	≤ :	±5%	21 ≤ R ≤ 29
	Sam	ple iD	C1	C1 D	uplicate	C2	C2	2 Duplicate	СЗ	C3 Duplica	ite		
TEST RESULTS	Sample ID         C1         C1 Duplicate         C2         C2 Duplicate         C3         C3 Duplic           Sampling Date/Time         25 Aug 2010 / 10:40         25 Aug 2010 / 10:50         25 Aug 2010 / 11												
	LOD	Units											
Suspended Solids (SS)	1	mg/L	1.3	1	.9	<1.0		<1.0	82	8.6			
	Sam	ple ID	M1	M1 D	uplicate	М2	М:	2 Duplicate	М3	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling n/Time	25 Aug	2010	/ 12:00	25 Aug	20	10 / 12:05	25 Auç	2010 / 12:	10	25 AL	ig 2010 / 11:50
	LOD	Units							i				
Suspended Solids (SS)	1	mg/L	4.8	2	1.9	2.2		2.2	6.0	5.5		4.8	5.1
* : Information p	rovided	by client			-								
Note: This I	aborator	y has no	responsib	ility on	sampling	g and all 1	he 1	test results r	relate on	ly to the sam	ple	tested	as received.
Remarks : Ti	nis repor	t is an an	nendment	of and	l supplen	nent to re	port	no. GCC10	080017	6.			
_						End							
Tooted By		K.L. FO	)NG				۸۰	proved Sign	atory ·	/	/	ı£	
Tested By :		1X16.17	) NO					me	:	GU C	HIN		
Checked By :		GU CH	IIN				Po	st	:	Chem	nist		

Form No.: WQM/R1 (19-01-2009)



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC100800184 Date of Issue : 28-08-2010 Client\* : Environmental Pioneers & Solutions Limited Date Received Client Address\*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project\* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 27-08-2010 W.O. No.\* Sample Type\* : River Water Date Completed: 28-08-2010 GCE Serial No. : WQM082010 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 **Test Method Quality Control Results Analysis Description** Units Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank APHA 20ed 2540 D 496 499 25.5 Suspended Solids (SS) mg/L < 1.0 -0.6Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514 ≤ ±5%  $21 \le R \le 29$ C3 Sample ID C1 C1 Duplicate C2 C2 Duplicate C3 Duplicate **TEST RESULTS** Sampling 27 Aug 2010 / 14:30 27 Aug 2010 / 14:40 27 Aug 2010 / 14:50 Date/Time LOD Units Suspended mg/L 2.3 2.5 1.6 2.2 10.4 10.4 Solids (SS) Sample ID M1 M1 Duplicate M2 M2 Duplicate М3 M3 Duplicate **M4** M4 Duplicate Sampling **TEST RESULTS** 27 Aug 2010 / 13:45 27 Aug 2010 / 13:50 27 Aug 2010 / 14:00 27 Aug 2010 / 13:40 Date/Time LOD Units Suspended 1 mg/L 2.9 3.2 1.7 1.9 10.8 10.7 3.3 3.3 Solids (SS) \* : Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Remarks: ---- End -----K.L. FONG Approved Signatory Tested By GU CHÍN Name

Post

Chemist

Form No. : WQM/R1 (19-01-2009)

Checked By :

**GU CHIN** 

: GCC100800257

Report No.



Page 1 of 1

# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Date of Issue : 31-08-2010

Client*	: Enviro	nmental I	Pioneers	& Solut	ions Lim	ited				Date Received	: i	: 08-09	-2008
Client Address*	: 8/F, C	haiwan Ir	ndustrial	Centre	Building,	20 Lee C	hung	Street, Ch	aiwan,	нк.			
	DSD (	Contract N	No. DC/2	006/11	- Draina	ge Improv	ve <b>m</b> e	nt in South	ern Lan	tau & Constri	uctio	n of	
Project*	: <u>Mui V</u>	Vo Village	Seweraç	je Phas	e 1								
Test Location	: <u>G</u> /F	, 20 Pak k	Cung Stre	et, Hu	ng Hom,	Kowloon.				Date Started	:	: 30-08	3-2010
W.O. No.*	:	,		Sar	nple Typ	e* : <u>Ri</u>	iver V	Vater		Date Complet	ed :	: 31-08	-2010
GCE Serial No.	: <u>WQM</u>	082010		GC	E Reg. N	o. : <u>G</u>	CE 0	81096		Test Unit No.	:	: <u>CH 08</u>	3258
		<u> </u>								-		<u></u>	
Analysis Descript	tion	Te	est Metho	od	Units				Quality	Control Resu	lts		
						Method Blank	- 1	QC 500 mg	g/L Q	C Duplicate	RP	PD% 5	Spike 25 mg/L
Suspended Solids	s (SS)	АРНА	20ed 25	540 D	mg/L	< 1.0	)	495		497	-C	).4	25.4
			Acce	ptance	Criteria	< 2.5 mg	g/L	475 ≤ Co	ontrol L	imit ≤ 514	≤ ±	±5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C2	Duplicate	C3	C3 Duplica	ate		
TEST RESULTS	San	npling e/Time			/ 14:20			0 / 14:30		ug 2010 / 14:			
	LOD	Units											****
Suspended Solids (SS)	1	mg/L	2.0	2	2.0	1.0		1.3	10.2	9.8			
	Sam	ple ID	M1	M1 D	uplicate	M2	М2	Duplicate	М3	M3 Duplic	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	30 Aug	2010	/ 15:10	30 Aug	201	0 / 15:00	30 Au	ug 2010 / 14:	50	30 Aug	2010 / 15:20
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.1	3	3.4	2.4		2.2	7.9	7.7	į	3.9	3.9
* : Information p	rovided	by client											· · · · · · · · · · · · · · · · · · ·
Note: This is	aborator	y has no	responsit	oility on	samplin	g and all t	the te	est results r	elate o	nly to the sam	iple 1	tested a	s received.
Remarks :													
						End							
Tested By :		K.L. FO	ONG				Арр	proved Sign	atory	:	/ L	<u> </u>	
							Nan			; GU C			
Checked By :		GU CH	IIN				Pos	t		: Chen	nist		

Form No. : WQM/R1 (19-01-2009)

Appendix G

Monitoring Schedule

for August 2010

## **Environmental Pioneers and Solutions Limited**

## DC/2006/11 - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

Master Schedule of EM&A works in August 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8/1	8/2	8/3	8/4	8/5	8/6	8/7
	WQM at: 16:00	WQM at: 16:15		WQM at: 10:00	WQM at: 10:30	
	Noise monitoring					
8/8	8/9	8/10	8/11	8/12	8/13	8/14
	WQM, EWQM at: 11:41		WQM at: 13:13		WQM at: 14:39	
	Noise monitoring					
8/15	8/16	8/17	8/18	8/19	8/20	8/21
	WQM at: 16:15			WQM at: 10:00	WQM at: 10:45	
				Noise monitoring		
8/22	8/23	8/24	8/25	8/26	8/27	8/28
	WQM at: 11:48		WQM at: 12:47		WQM at: 13:45	
	Noise monitoring					
8/29	8/30	8/31				
	WQM at: 15:10					
	Noise monitoring					

Noise Monitoring Locations: Total 4 Locations as N1, N2, N3 and N4

Water Quality Monitoring (WQM) Locations: Total 7 Locations as M1, M2, M3, M4, C1, C2 and C3

Ecological Water Quality Monitoring (EWQM) Locations: Total 6 Locations as WE1, WE2, WE3, WE4, WE5 and WE6

# Appendix H Implementation Status of environmental protection / mitigation measures

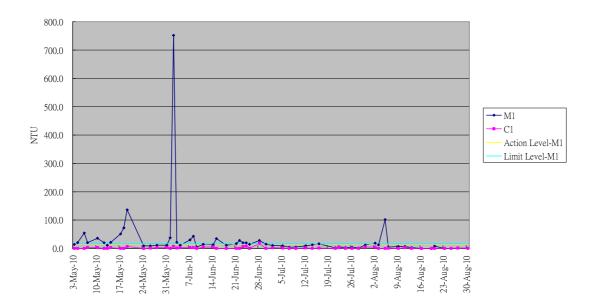
Environmental	Protection / Mitigation Measures	Implementation	Follow-up
Aspect		status	action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Implemented	-
	Use of frequent watering for particular dusty static construction areas and areas close to ASRs.	Implemented	-
	Tarpaulin covering of all dusty vehicle loads transported to and from and between site location;	Deficiencies found	Outstanding. Improvements were required
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	Implemented	-
	Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	Implemented	-
Noise	Use of quiet powered mechanical equipment (PME)	Implemented	-
TAUISC	Adoption of movable noise barriers and temporary noise barriers	_	
	Application of good site practices mentioned in EM&A manual Clause 3.8.1	Implemented	-
Water Quality	Before commencing any site formation works, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains.	Deficiencies found	Outstanding. Improvements were required
	Temporary ditches should be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond. No site run-off should enter the freshwater marshes at Luk Tei Tong.	Implemented	-
	Sand/ silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove sand/ silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance.		Outstanding. Improvements were required
	Water pumped out from foundation excavations should be discharged into silt removal facilities.	Implemented	-
	During rainstorms, exposed slope surface should be covered by a tarpaulin or the means.	Implemented	-
	Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.	Deficiencies found	Outstanding. Improvements were required
	Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce potential of soil erosion.	Implemented	-
	Open stockpiles of construction materials or construction wastes on-site of more than 50m <sup>3</sup> should be covered with tarpaulin or similar fabric during rainstorms.	Implemented	-
	Oils and fuels should only be used and stored on designated areas which have pollution prevention facilities.	Implemented	-
	Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site.	Not available	-
	The excavation and widening works for the drainage improvements to the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei Tong River and Luk Tei Tong By-pass Channel should be carried out in sections (approximately 300 –400	Implemented	-
	m in length) and in dry condition.		

Environmental	Protection / Mitigation Measures	Implementation	Follow-up
Aspect		status	action
	Maintenance desilting of the re-profiled river channels of the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei tong River and Luk Tei Tong By-pass Channel, temporary barrier walls should be used to provide a dry zone for desilting work.	Not applicable at this stage	-
Ecology	Existing natural habitats should be retained as far as practicable	Implemented	-
	Boundary of working areas should be identified to prevent loss of vegetation	Implemented	-
	All existing trees / plant should be well protected within the site or transplanted properly	Implemented	-
	Turf removal from the Luk Tei Tong marsh due to the construction of Luk Tei Tong Bypass Channel shall be minimized	Implemented	-
	Turf from the Luk Tei Tong marsh shall be properly removed, stored, maintained and reused for lining the riverbed of the Luk Tei Tong Bypass Channel	Implemented	-
Chemical and	Chemical wastes should be properly stored in a proper store as per statutory requirements (i.e. on a hard standing, within an enclosed and locked area)	Implemented	-
Solid Waste	Chemical waste stores should be provided with fire precaution facilities (i.e. fire extinguisher, no smoking warning etc).	Implemented	-
	Chemical wastes should be properly stored in corrosion resistant containers placed inside the store and labelled with warning signs in English and Chinese.	Implemented	-
	Chemical wastes should be disposed of by licensed chemical waste collector with supporting delivery records.	Implemented	-
	All containers for fuel, diesel and fluid chemical (in use) and oil filled stationery plants located with proper drip pans.		-
	Construction wastes should be managed and disposed to the designated public fill and landfill areas in acceptable manner.	Deficiencies found	Improvements were required
	All waste disposals managed in a proper manner i.e. trip ticket system implementation.	Implemented	-

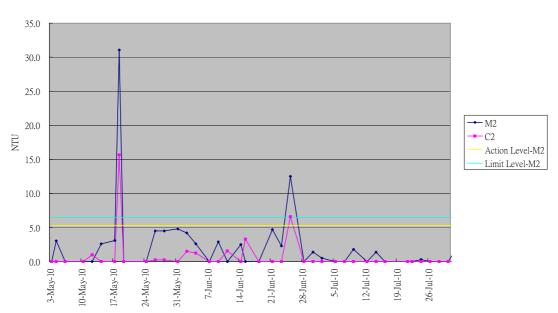
# Appendix I

Graphical plot of water quality monitoring results (SS, DO, turbidity)

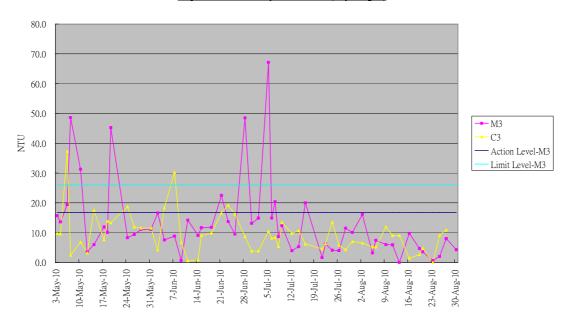
### Graphical Plot of Turbidity Trend M1&C1(May - Aug 10)



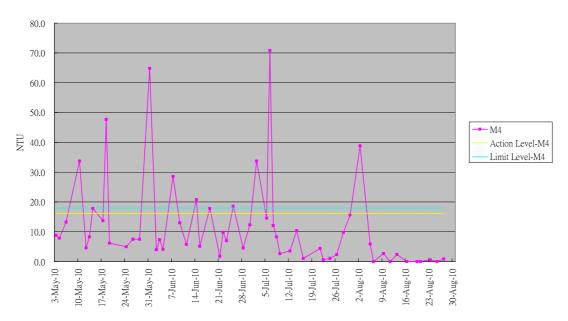
#### Graphical Plot of Turbidity Trend M2&C2 (May - Aug 10)



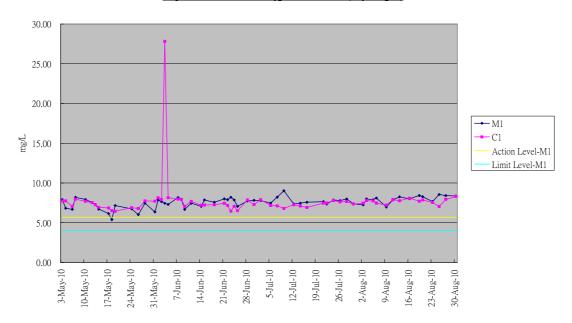
### Graphical Plot of Turbidity Trend M3&C3 (May - Aug 10)



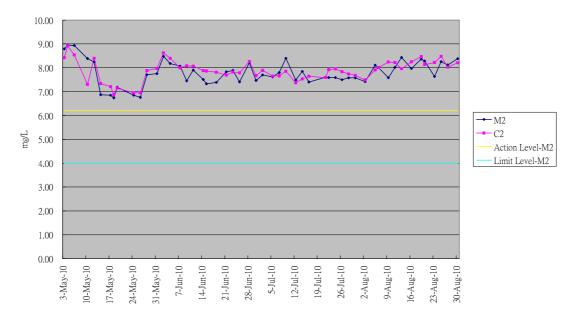
#### Graphical Plot of Turbidity Trend M4 (May - Aug 10)



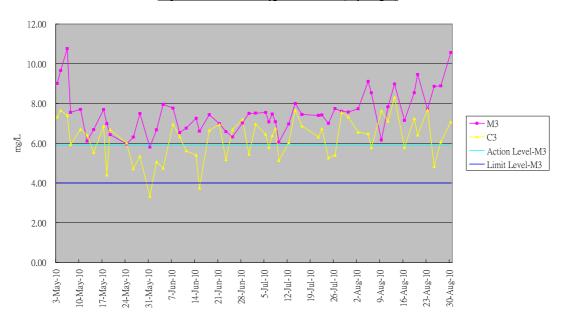
### Graphical Plot of Dissolved Oxygen Trend M1&C1 (May - Aug 10)



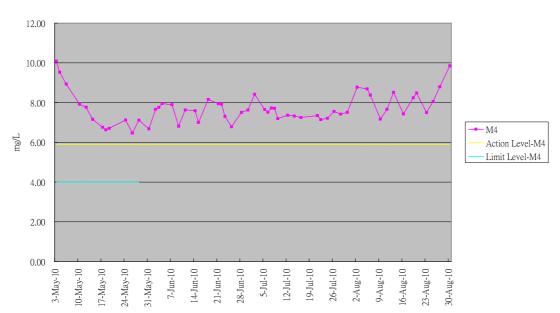
#### Graphical Plot of Dissolved Oxygen Trend M2&C2 (May - Aug 10)



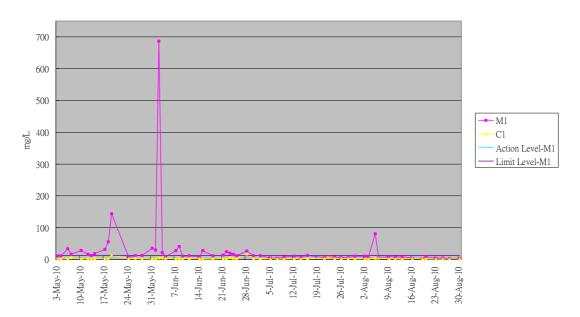
### Graphical Plot of Dissolved Oxygen Trend M3&C3 (May - Aug 10)



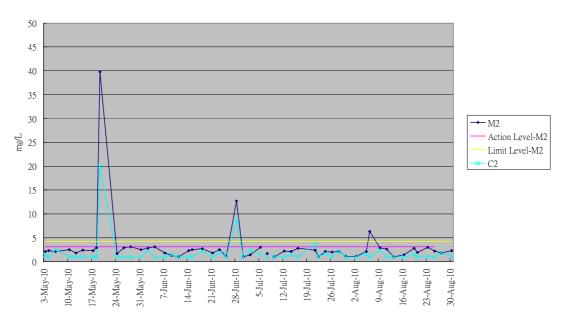
#### Graphical Plot of Dissolved Oxygen Trend M4 (May - Aug 10)



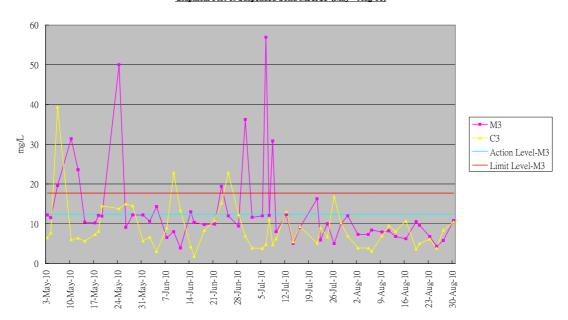
### Graphical Plot of Suspended Soild M1&C1 (May - Aug 10)



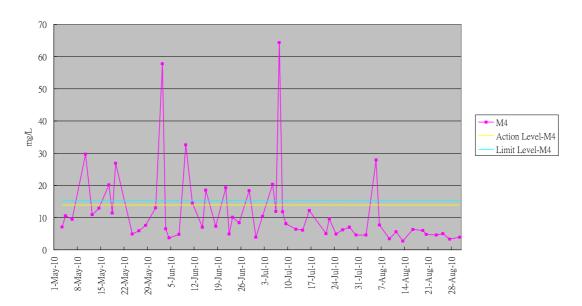
#### Graphical Plot of Suspended Soild M2&C2 (May - Aug 10)



### Graphical Plot of Suspended Soild M3&C3 (May - Aug 10)



## Graphical Plot of Suspended Soild M4 (May - Aug 10)



Appendix J

Graphical plot of noise monitoring results

