Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

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

July 2009

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EXECUTIVE SUMMARY

This is the twelfth monthly Environmental Monitoring and Audit (EM&A) report for "Drainage Improvement in Southern Lantau Investigation". The environmental permit number is "EP-237/2005/A". The report concludes the impact monitoring for the activities undertaken during the period of 1st July 2009 to 31st July 2009. The major activities in this reporting month include excavation for pipe trench at Ling Tsui Tau, construction of box culverts at Pak Ngan Heung (PNH), formation of haul access between bottleneck A and B at Tai Tei Tong (TTT) River, construction of gabion walls at Luk Tei Tong (LTT) bypass channel and River.

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 76 non-compliance events of water quality criteria were recorded in this reporting month. Except natural fluctuation and influence of adverse weather exceedances were mainly caused by site water discharge due to poor site conditions.

During ecological monitoring survey, no White-shouldered Starling was recorded breeding in the watch tower. And there was no sign of disturbance from the Project to the watch tower, though the breeding season of White-shouldered Starling in this year has begun. 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. A yellow form regarding improper site practices and direct discharge of site wastewater was issued by EPD to the contractor on 15 July 2009. ET has been informed by the contractor on 23 July 2009 for the incident and carried out investigation for the corrective actions taken.

Key construction activity in the coming month will be construction of box culvert at PNH, haul access and gabion walls at TTT River and retaining walls, gabion blocks as well as box culvert at LTT River. 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 eleventh monthly Environmental Monitoring and Audit (EM&A) Report for "Drainage Improvement in Southern Lantau Investigation" project (Environmental Permit No. EP-237/2005/A)

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 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.

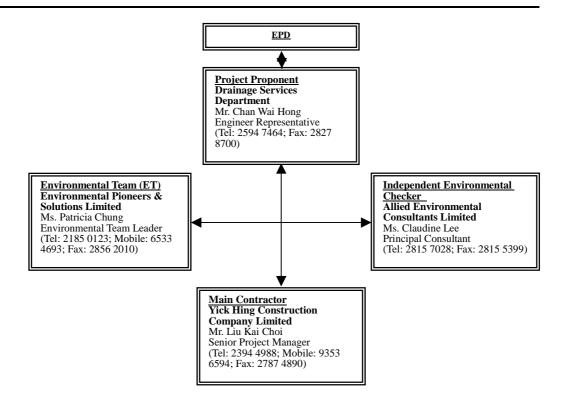


Figure. 2.2.1 Environmental Management structure for the project

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 box culverts BC5 to 8 at PNH;
- 2. Construction of retaining wall D at PNH River;
- 3. Construction of box culvert A at LTT
- 4. Construction of gabion blocks at bottleneck B of TTT River;
- 5. Construction of footpath and manhole along Ling Tsui Tau; and
- 6. Construction of retaining wall J (near Yuen's Compound) at LTT River.

3.2 Construction Activities for the coming month

Key Construction works in the coming month will include:

- 1. Finishing works for box culverts BC5 to 8 at PNH;
- 2. Construction of retaining wall D at PNH River;
- 3. Construction of box culvert A at LTT;
- 4. Construction of gabion blocks at bottleneck B of TTT River;
- 5. Construction of gabion wall (near mangrove area) along LTT River; and
- 6. Construction of retaining wall J (near Yuen's Compound) at LTT River.

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⁻¹ or wind with gust exceeding 10ms⁻¹. 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

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	Castle GA 607	IEC 942 Type 1	1						
Wind speed indicator	Kestrel K1000	N/A	1						
Remarks: Calibration	Remarks: Calibration details for the sound level meter is given in Appendix C for								

Table 4.2.1 Equipment List for Noise Monitoring

Remarks: Calibration details for the sound level meter is given in Appendix C for 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.

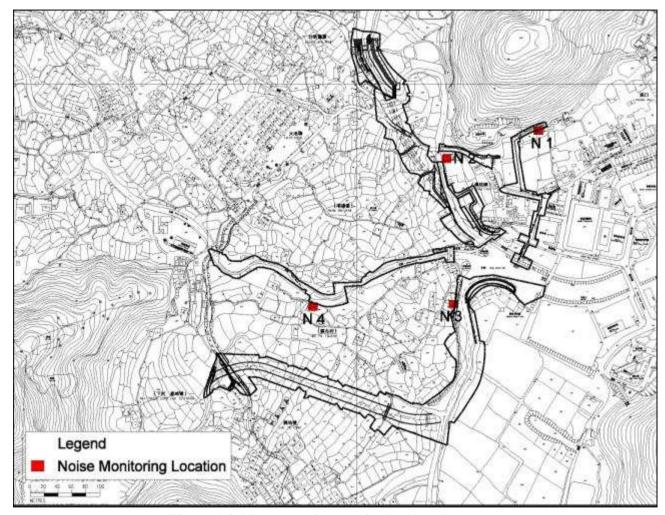


Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 4.4.1. The results, ranged between 48.8 dB (A) and 63.7 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 _{Aeq} dB(A)	Limit dB(A)	Exceedance	Weather			
N1	L _{eq 30mins}	6/07/09	15:08	48.8	75	N	Sunny			
N1	L _{eq 30mins}	13/07/09	14:45	49.6	75	N	Sunny			
N1	L _{eq 30mins}	20/07/09	15:03	50.4	75	N	Sunny			
N1	L _{eq 30mins}	27/07/09	14:45	50.4	75	N	Cloudy			
N2	L _{eq 30mins}	6/07/09	13:20	53.9	75	N	Sunny			
N2	L _{eq 30mins}	13/07/09	14:10	53.7	75	N	Sunny			
N2	L _{eq 30mins}	20/07/09	14:25	60.2	75	N	Sunny			
N2	L _{eq 30mins}	27/07/09	14:10	60.0	75	N	Cloudy			
N3*	L _{eq 30mins}	6/07/09	13:55	62.8	75	N	Sunny			
N3*	L _{eq 30mins}	13/07/09	13:35	55.5	75	N	Sunny			
N3*	L _{eq 30mins}	20/07/09	13:15	63.7	75	N	Sunny			
N3*	L _{eq 30mins}	27/07/09	13:00	57.8	75	N	Cloudy			
N4	L _{eq 30mins}	6/07/09	14:30	57.5	75	N	Sunny			
N4	L _{eq 30mins}	13/07/09	13:00	60.1	75	N	Sunny			
N4	L _{eq 30mins}	20/07/09	13:50	58.6	75	N	Sunny			
N4	L _{eq 30mins}	27/07/09	13:35	62.2	75	N	Cloudy			

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 recorded exceedance in the reporting month.

Table 4.5.1 Action and Limit Levels for Construction noise							
Time Period	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	 Notify IC(E) and Contractor; Carry out investigation; Report the results of investigation to the IC(E), ER and Contractor; Discuss with the Contractor and formulate remedial measures; Increase monitoring frequency to check mitigation effectiveness. 	 Review the analysed results submitted by the ET; Review the proposed remedial measures by the Contractor and advise ER accordingly; Supervise the implementation of remedial measures. 	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.	notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work	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.

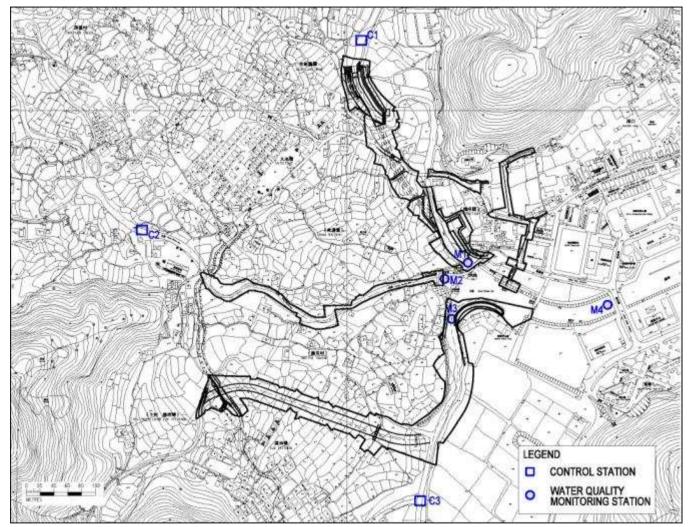


Figure 5.3.1 Water Quality Monitoring Locations

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 twelve times during May. 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.

Exceedance events on parameters of turbidity and suspended solids were recorded in this reporting period according to the established level. Findings from the investigations showed that the total 76 exceedance events were mainly caused by:

- 1.) Channel clearance activities carried out at the upper stream area of TTT River by the other project;
- 2.) Surface run-off due to defective site practices and/or mitigation measures for the formation of haul access between bottleneck A and B at TTT River;
- 3.) Surface run-off and leakage of site water due to defective site practices and/or mitigation measures for the construction activities along 3 rivers;
- 4.) Discharge of silty water to PNH River channel due to accumulation as well as overflow of site water from BC13; and
- 5.) Soil run-off and disturbance of sediment due to heavy rainstorm.

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

Table 5.5.1 Water quality monitoring results in July 2009

	M1			M2			М3			M4		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	1.1	35.7	8.0	0.0	186.5	13.1	3.7	66.0	12.7	0.0	14.2	5.8
DO (mg/l)	7.3	8.2	7.8	7.0	9.5	7.7	4.8	8.3	7.0	6.8	8.8	7.7
Suspended Solid (mg/l)	2.5	16.0	5.5	1.2	125.6	10.4	9.4	44.8	13.4	5.2	11.3	7.0

	C1			C2			C3		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	0.0	0.9	0.1	0.0	45.1	4.9	0.0	7.8	3.3
DO (mg/l)	7.2	7.9	7.5	7.1	8.5	7.6	5.1	7.3	5.9
Suspended Solid (mg/l)	1.0	5.4	1.6	1.0	31.8	4.2	3.1	9.8	5.2

^{*} 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	M1		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

EVENIT		AC ⁻	TION	TION				
EVENT	ET	IC(E)	ER	Contractor				
Action Level being exceed by one sampling day	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.	and Contractor on the mitigation measures; 2. Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the	IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. 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;				
Action level being exceed by more than two consecutive sampling days	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	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.	IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. 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;				
Limit level being exceeded by one sampling day	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	and Contractor on the mitigation measures; 2. Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. 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;				

5.7 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 in the next reporting period is scheduled for 3, 5, 7, 10, 12, 13, 17, 19, 21, 24, 25, 26, 31 August.

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, 20th 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.

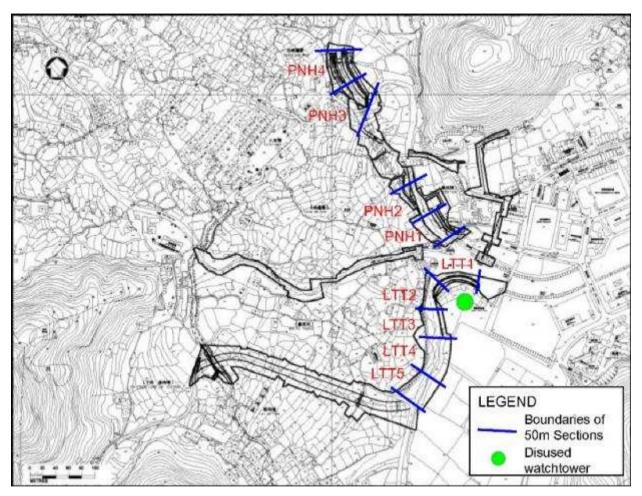


Figure 6.1 Ecological Monitoring Locations

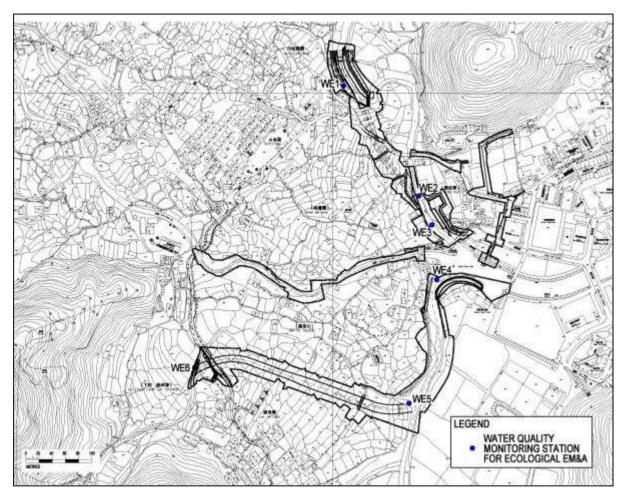


Figure 6.2 Ecological Water Quality monitoring locations

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

Surveys were conducted on 24 July 2009. The north section of Pak Ngan Heung Stream was fairly modified. Part of the west bank was lined with rock gabion bank and occupied by village houses and abandoned agricultural field. The stream channel was wider than the downstream section, but the stream bank was still fairly narrow and steep in gradient. Compared to the south section, the north section was relatively shaded due to presence of more trees with larger canopy.

The walk through survey recorded a total of 63 species, including 17 trees, 10 shrub, 19 herb and 7 grass species (Appendix D1). 48 of the species recorded are natives, while 15 were exotics. The quantitative sampling recorded 27 species at the north section. Large native (e.g. *Celtis sinensis, Cleistocalyx operculata, Ficus hispida*) and exotic trees (*Acacia confusa*) dominated the transects. Other species recorded include common and typical native pioneer forest and streamside tree species and ruderal species. No species of conservation interest was recorded.

Table 6.5.1 Relative percentage cover of vegetation recorded at Pak Ngan Heung (N) Section

	Relative	% cover
Species	PNH3	PNH4
Acacia confusa		11.64
Acorus graminifolia		0.14
Alocasia macrorrhiza		0.27
Aporosa dioica		0.75
Bamboo	14.72	
Celtis sinensis		0.41
Christella parasitica	0.88	1.34
Cleistocalyx operculata	8.83	
Dalbergia hancei	7.36	
Embelia ribes		2.17
Ficus hispida	3.19	1.22
Litsea glutinosa		1.36
Macaranga tanarius		1.43
Mallotus paniculatus	19.63	
Microstegium ciliatum		0.84
Mikania micrantha	1.23	3.53
Neyraudia reynaudiana		0.14
Panicum maximum		6.13
Phyllanthus urinaria		1.89
Pilea microphylla		10.88
Psychotria asiatica	0.98	1.62
Pueraria phaseoloides		53.60
Sageretia thea		0.58
Sporobolus fertilis		0.07
Sterculia lanceolata	8.83	
Syzygium jambos	31.90	
Wedelia triloba	2.45	
Total Relative % Cover	100.0	100.0
Total Transect Length (m)	13	34

^{*}Total Cover rounded up to one decimal place to avoid round-off error.

The south section of Pak Ngan Heung Stream was highly modified. Both banks were lined with rock gabions and were occupied by village houses immediately beyond the channel. The stream channel was lack of riparian zone and vegetation. A total of 17 species recorded, 13 of which were native and 4 were exotic. It was composed of isolated individuals of mangrove (*Kandelia obovata*), backshore species (*Clerodendrum inerme*), native (*Celtis sinensis*) and planted trees (*Acacia confusa*) (Appendix D2). No species of conservation interest was recorded.

Terrestrial Fauna

Surveys were conducted on 3 July 2009.

A total of five species of birds were recorded in the proposed work area of the Pak Ngan Heung River (Table 6.5.2). All 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	4				CW
	sinensis					
Red-whiskered	Pycnonotus			3		CW
Bulbul	jocosus					
Magpie Robin	Copsychus	2		1		CW
	saularis					
Common	Orthotomus	2				CW
Tailorbird	sutorius					
Masked	Garrulax	1				CW
Laughingthrush	perspicillatus					

CW = common and widespread, CL = common/uncommon and localized

Eight species of dragonfly was recorded in the proposed work area of the Pak Ngan Heung River (Table 6.5.3). All are common and widespread in Hong Kong.

Table 6.5.3 Dragonfly in Pak Ngan Heung River

Common names	Latin names	PNH	PNH	PNH	PNH	Commonness
		1	2	3	4	& distribution
Black-banded	Euphaea decorata	2	1		6	A
Gossamerwing						
Orange-tailed	Ceriagrion		2	1	1	A
Sprite	auranticum					
Orange-tailed	Agriocnemis			6	2	A
Midget	femina					
Wandering Midget	Agriocnemis			12	15	C
	рудтаеа					
Common Bluetail	Ischnura			3	2	A
	senegalensis					
Black Threadtail	Prodasineura				3	A
	autumnalis					
Yellow Featherlegs	Copera marginipes		2			A
Crimson Dropwing	Trithemis aurora				2	A

A = abundant, UC = uncommon

Aquatic fauna and fish

9 species of fish and 3 crustacean were recorded in the 4 sections 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				+
Barcheek Goby	Rhinogobius giurinus				++
Goby	Rhinogobius duospilus		+		
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				

⁺⁼ 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 24 July 2009. The Luk Tei Tong Stream Section was highly modified. Vegetation only established on isolated muddy patches at the estuary and remaining semi-natural banks of Section 1 and Section 2. Vegetation on the eastern stream bank from the second half of Section 3 to Section 5 were largely cleared while the western bank was still lined with rock gabions or concrete. The whole section appeared to be subject to tidal influence, as mangrove associated or backshore species were recorded along the whole channel.

The walk through survey recorded a total of 28 species, including 10 tree, 6 shrub, 4 grass species (Appendix D3). 22 of the species recorded are natives, while 5 were exotics. The quantitative sampling recorded 8 species at Sections 2. Section 2 was dominated by *Terminalia catappa* and *Wollastonia biflora*. No quantitative survey was carried out on Section 3 and 4 due to vegetation clearance on stream banks as part of the site clearance works under the project.

Due to the patchiness of streamside vegetation, the quantitative data should be interpreted with cautions and used as a reference only.

Table 6.5.5 Relative percentage cover of vegetation recorded at Luk Tei Tong Stream Section

	Relative % cover
Species	LLT2
Acanthus ilicifoius	2.43
Celtis sinensis	9.33
Execoecaria agallocha	7.20
Fimbristylis sp.	8.64
Kandelia obovata	7.58
Premna serratifolia	4.55
Terminalia catappa	35.63
Wollastonia biflora	24.64
	100.0

^{*}Total Cover rounded up to one decimal place to avoid round-off error.

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 3 July 2009.

A total of 13 species of birds were recorded in these sections (Table 6.5.6). All these species are common and widely distributed 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
Grey Heron	Ardea cinerea		1				CL
Spotted Dove	Streptopelia	2	5				CW
	chinensis						
White Wagtail	Motacilla alba				2		CW
Barn Swallow	Hirundo rustica					3	CW

Chinese Bulbul	Pycnonotus sinensis			2			CW
Red-whiskered	Pycnonotus jocosus	3	4				CW
Bulbul							
Masked	Garrulax		6				CW
Laughingthrush	perspicillatus						
Japanese White-eye	Zosterops japonica	2					CW
Great Tit	Parus major	1					CW
Crested Myna	Acridotheres	2			6		CW
	cristatellus						
Black-necked	Sturnus nigricollis			4		3	CW
Starling							
Common Magpie	Pica pica	2					CW
Eurasian Tree	Passer montanus				4		CW
Sparrow							

CW = common and widespread, CL = common/uncommon and localized, R = uncommon/rare and localised

Three species of dragonfly were recorded in the Luk Tei Tong River (Table 6.5.7). All are common and widespread in Hong Kong.

Table 6.5.7 Dragonfly in Luk Tei Tong River

Common names	Latin names	LTT	LTT	LTT	LTT	LTT	Commonness
		1	2	3	4	5	& distribution
Green Skimmer	Orthetrum sabina			1		2	C
Variegated Flutterer	Rhyothemis variegata					6	С
Crimson Dropwing	Trithemis aurora	2				1	A

A = abundant, C = common

Aquatic invertebrates and fish

5 species of fish, 2 species of crustacean and 3 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. As some parts of the original stream banks have been being modified for the new gabion walls, the species number and abundance of aquatic fauna in these parts were lower than that recorded in previous monitoring, such as Section LLT3 due to the temporarily loss of stream banks and the disturbance.

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				+	

^{+ =} 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 3 July 2009.

There was no sign (e.g., adults carrying food or nesting materials) of use of the watchtower as nesting habitat by White-shouldered Starling. This species was not observed during the July 2009 monitoring. No bird of other species was observed entering the watchtower.

Most birds in Hong Kong breed between March and July. No sign of nesting of White-shouldered Starling in the disused watchtower was observed during this period.

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 roosting or nesting habitat.

Ecological Water Quality Monitoring (EWQM)

EWQM was conducted on 03 July 2009. 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, the measured results were found similar with past months.

Table 6.9 Summarized Ecological water quality monitoring results (03 July 2009)

Parameters	Limit of detection	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1	1.25	2.20	8.35	16.70	7.30	1.00
Nitrogen (Ammonia) (mg/l)	0.01	0.03	0.15	0.17	0.27	0.87	0.03
Nitrogen (Nitrate) (mg/l)	0.01	0.09	0.14	0.14	0.36	0.07	0.10
Phosphorous (mg/l)	0.01	0.04	0.07	0.10	0.15	0.30	0.02
BOD₅ (mg/l)	1	2.00	2.00	2.00	2.00	3.00	2.00
DO (mg/l)	0.01	7.58	8.04	7.93	7.01	7.38	7.12
Turbidity (NTU)	0.1	0.00	0.00	17.20	17.90	3.50	0.00
Temperature (oC)	0.1	27.6	27.8	27.5	28.6	29.1	27.5
рН	0.01	6.74	7.79	7.47	6.75	6.63	6.30
Salinity (ppt)	0.1	0	0.1	0.1	4.2	0.2	0
Conductivity (ms/m)	0.1	7.4	24.1	29.0	742.0	58.5	5.2
Water Flow (m/s)	N/A	0.02	0.05	0.1	0.04	0.04	0.02

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
BOD ₅ (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 11th, 14th and 26th August, while ecological water quality monitoring is scheduled on 5th August.

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 76 non-compliance events of water quality limits (Dissolved Oxygen, Turbidity and Suspended Solids) were recorded in this reporting period according to the established level. ET has arranged site investigations for the exceedance events. Findings from the inspection showed causes were substantially attributable to:

- Channel clearance activities carried out at the upper stream area of TTT River by the other project;
- Surface run-off due to defective site practices and/or mitigation measures for the formation of haul access between bottleneck A and B at TTT River;
- Surface run-off and leakage of site water due to defective site practices and/or mitigation measures for the construction of gabion wall along LTT River;
- Discharge of silty water to PNH River channel due to accumulation as well as overflow of site water from BC13; and
- Soil run-off and disturbance of sediment due to natural fluctuation and adverse weather.

The summary of non-compliance is listed in Table 7.1 for reference.

Among the 76 events of non-compliance recorded in this reporting month, 16 of them were believed to be caused by improper site practice carried out by the contractor. Additional monitoring was carried out in the next day (unless cancelled due to heavy rainstorm) if exceedance of limit level was occurred.

Base on the nature of deficiencies observed, contractor was urged to carry out necessary mitigation measures so as to minimize the disturbance of water quality to minimal level. Site water seepage to the river channel due to overflow and ineffective protection measures were the major cause of exceedance observed. Contractor was advised to rectify bunds and barriers provided to prevent site water directly entering the stream courses. Contractor took the advice and implement corrective actions however, follow up actions provided were found not effective and further improvement was recommended. As reported by contractor, de-silting tanks are under preparation. Contractor was advised to provide effective de-silting facilities as soon as possible and soak-away on site ground should be prevented.

In accordance with the relevant contractual documents and environmental permits, Contractor was reminded to implement necessary mitigation measures before commencement of construction activities. Contractor was also advised again to be cautious on the conditions of sites as well as mitigation measures provided. Site practices should be reviewed and mitigation measures should be enhanced if water quality was still affected by works. Follow up actions should be taken immediately as to minimize deterioration of water quality as far as practicable.

Table 7.1 Summary of Non-compliance for Water Quality

Date	Location	Parameter	Level of exceedance	Main cause of exceedance
	M1	Turbidity, S.S.		
02/07/09	M2	S.S.	Limit Level	M1, M2 & M3 – No particular observations
	М3	Turbidity, S.S.		
	M1	Turbidity, S.S.	Limit Level	M1 - Site water leakage from BC13 at PNH
03/07/09	M2	S.S	Limit Level	M2 – No particular observation
03/01/03	M3	Turbidity, S.S.		M3 - Surface run-off generate from the construction of retaining wall
IVIS		ruibidity, 3.3.	Action Level	and/or gabion wall
	M1	Turbidity, S.S.	Action Level	M1 – No particular observation
04/07/09	M3 Turbidity, S.S. L	Turbidity, S.S.	Limit Level, Action Level	
		for D.O.	M3 - Disturbance due to adverse rainy weather	
06/07/09	M1	Turbidity C C	Limit Level	M1 - Site water leakage from BC13 at PNH
06/07/09	M3	Turbidity, S.S.	Limit Level	M3 – No particular observation
07/07/09	M1	Turbidity, S.S.	Limit Level	Site water leakage from BC13 at PNH
08/07/00	M1	S.S.	Limit Level	M4 9 M2 No particular obcornations
08/07/09	М3	Turbidity, S.S.	Liffiit Level	M1 & M3 – No particular observations

40/07/00	M1		Limit Level			
10/07/09	М3	Turbidity, S.S.	Action Level, Limit Level	M1 & M3 – No particular observations		
	M1	Turbidity	Limit Level			
13/07/09	M2	S.S.	Limit Level	M1, M2 & M3 – No particular observations		
	М3	Turbidity, S.S.	Limit Level			
	M1					
14/07/09	M2	Turbidity, S.S.	Limit level	M1, M2 & M3 – No particular observations		
	М3					
	M1	Turbidity, S.S.		M1 & M3 – No particular observations		
15/07/09	M2	Turbidity, S.S.	Limit Level	M2 - Channel clearance activities carried out by the other project at upper		
	М3	Turbidity		stream area, and site water discharge from retaining wall H		
16/07/09	Mo	Tumbidity C.C.	LimitLoval	Channel clearance activities carried out by the other project at upper		
16/07/09	M2	Turbidity, S.S.	Limit Level	stream area		
20/07/00	M1	Turbidity C.C.	LimitLoval	M1 – No particular observations		
20/07/09	МЗ	Turbidity, S.S	Limit Level	M3 - Disturbance due to adverse rainy weather		
	M1			M1 & M3 – No particular observations		
22/07/09	M2	Turbidity, S.S.	Limit Level	M2 - Haul access formation between Bottleneck A and B of TTT River		
	М3			INZ - Hauf access formation between bottleneck A and B of TTT Niver		
23/07/09	M2	Turbidity, S.S.	Limit Level	Haul access formation between Bottleneck A and B of TTT River		
	M1	Turbidity, S.S.				
24/07/09	M2	S.S.	Limit level	M1, M2 & M3 – No particular observations		
	М3	Turbidity, S.S.				
	M1	Turbidity, S.S.				
27/07/09	M2	S.S.	Limit Level	M1, M2 & M3 – No particular observations		
	М3	Turbidity, S.S.				
	M1			M1 & M3 – No particular observations		
28/07/09	M2	Turbidity, S.S.	Limit Level	M2 - Haul access formation between Bottleneck A and B of TTT River		
	M3			Tradi access formation between bottlefleck A and b of 111 Rivel		
29/07/09	M2	S.S.	Limit Level	M2 – No particular observations		
31/07/09	M1	S.S.	Limit Level	M1 & M3 – No particular observations		
51/0//09	М3	0.0.	Littill LGVGI	THE THE PARTICULAR ODSCIVATIONS		

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 updated figures of the construction wastes disposal provided by the Contractor.

Table 8.1 Summary of Construction Waste Disposal

	Amount of Construction Waste disposed					
Month	Inert Waste	Chemical Waste				
	(to Public Fill)	(to Landfill)	(to treatment plant)			
1 st July 09 to	4191.30 (ton)	Nil	Nil			
31 st July 09						
Total (from June	17589.96 (ton)	65.23 (ton)	0			
08 to July 09)						

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	
Environmental Permit	EP-237/2005/A	05 Mar 2008		Issued	
Registration of C&D	7006521			Issued	
Waste Producer	7000321			Issueu	
Chemical Waste	5213-950-Y2443-03	12 Aug 2008		Issued	
Producer	3213-930-12443-03	12 Aug 2008		Issued	
Construction Noise	N/A	N/A	N/A	N/A	
Permit	IN/A	IN/A	IN/A	IN/A	
	EP890/W2/XG032				
	EP890/W2/XG033				
	EP890/W2/XG034				
	EP890/W2/XG035				
Effluent Discharge	EP890/W2/XG036	23 Oct 2008	31 Oct 2013	Issued	
License	EP890/W2/XG037	23 Oct 2008	31 Oct 2013	Issued	
	EP890/W2/XG038				
	EP890/W2/XG039				
	EP890/W2/XG040				
	EP890/W2/XG041				

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						
July 2009	0	0	0	0	0	
Total	0	0	0	0	0	

11. Site Environmental Audits

11.1 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 2, 10, 16, 22 and 27 July 2009.

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 ins	pection	
Date	Observations	Advice from ET	Action taken	Closing Date
21 May 09	Vehicle was found washing at the	Contractor was advised to assign	Still outstanding until the end of	Ongoing
	entrance of temporary access at	a proper wheel washing area with	the reporting month. To be follow	
	behind of Yuen's compound,	proper water collection facilities,	up	
	where without proper water	to avoid site runoff entering the		
	collection facility.	mangrove area.		
04, 11, 19 &	U-channel next to the site area	Contractor was advised to	U-channel was poorly covered	Ongoing
26 June 09	BC5 at PNH was not covered.	provide proper coverings to	with geo-textile materials and	
	Soil and construction debris was	protect the U-channel from the	plastic board prior to the	
	found entered the U-channel.	contamination of construction	inspection on 19 June. Further	
		materials	improvement was required and to	
			be follow up	
26 June 09	Pit poorly laid with geo-textile as	Contractor was advised to rectify	Soil surface of the pit was	10 July 2009
	a soak-away pond for site water	the laid geo-textile to prevent	covered by cement and the	
	treatment was provided next to	erosion of the pit itself. They	defective geo-textile was rectified	
	the gabion wall of the existing	should also ensure no site water	as advised	
	LTT River	can be seeped through the		
		gabion wall with filtration and		
		cause water quality impact to the		
		river		
02 July 09	Stagnant water was found in the	Contractor was recommended to	Ongoing practices are required	Ongoing
	drip pan of the power generator	regularly provide stagnant water	due to wet season	
	located at PNH construction site	removal and mosquito control		
		measures on sites as part of site		
		cleaning practices		
02 July 09	Accumulated site water in the	Although actions were taken	Still outstanding until the end of	Ongoing
	box culvert construction site at	previously to block the seepage	the reporting month. To be follow	
	PNH, was found seeped into the	from the outlet connected with	up	
	nearby PNH River and hence	the site. Contractor was advised		
	caused water pollution	to review the condition of the		
		outlet and make sure those was		
		properly sealed		
02, 10, 22,	Site water from the box culvert	Contractor was recommended	Although water diverted was	Ongoing
July 09	construction site at PNH was	again to provide effective	found clear as no site activities in	
	found diverted to a brushwood	de-silting facilities for site water	the concerned area during the	

	Table	11.1 Summary of site ins	pection	
Date	Observations	Advice from ET	Action taken	Closing Date
	area nearby	treatment prior to discharging in	follow up inspections. No action	
		accordance with the applied	was observed to be taken by	
		water discharge license	contractor	
02 July 09	A chemical drum without drip tray	Contractor was recommended to	Still outstanding until the end of	Ongoing
	was observed at the PNH	provide drip tray for all chemical	the reporting month. To be follow	
	construction site	drums on site. Idling drums	up	
		should be re-located into		
		designated chemical storage		
		cabin		
10 July 09	Open stockpiles of earth	Contractor was advised to control	Stockpiles were used and	16 July 09
	materials were observed tipped	size of the stockpiles and provide	removed from site prior to the	
	at LTT River site haul access	tarpaulin coverings to prevent	inspection on 16 July	
		erosion		
10, 16 & 22	Earth bunds for the gabion wall	Contractor was recommended to	Eroded earth bunds were	27 July 09
July 09	sites were found severely eroded	repair the eroded bunds and	repaired by providing sand bags	
	during inspection	provide geo-textile coverings to	and geo-textile coverings as	
		the exposed earth surface of	reported by contractor	
		bunds to prevent water quality		
		impact		
10, 16, 22,	Damaged water hoses were	Contractor was advised to	Still outstanding until the end of	Ongoing
27 July 09	observed used for diverting site	replace the damaged hose and	the reporting month. To be follow	
	water from retaining wall J	re-locate the hoses away from	up	
		the river channel in case of site		
		water leakage		
10, 16 & 22	Bunds formed by concrete blocks	Contractor was advised to rectify	Contractor took the advice by	27 July 09
July 09	for retaining wall H at TTT River	the observed deficiencies as	filling the gaps between concrete	
	were found defective during	soon as possible even no site	blocks with sandbags. Loosing	
	inspection. Gaps were observed	activities were being carried out	geo-textile was removed from the	
	between concrete blocks and	in the concerned site	channel and new coverings were	
	loosing geo-textile coverings		provided	
	were found clogging in the river			
	channel			
16, 22 & 27	Open stockpiles of earth	Contractor was advised to control	Still outstanding until the end of	Ongoing
July 09	materials were observed tipped	size of the stockpiles and provide	reporting month. To be follow up	
	at PNH BC2 site	tarpaulin coverings to prevent		
				•

Table 11.1 Summary of site inspection						
Date	Observations	Advice from ET	Action taken	Closing Date		
		erosion				
22 July 09	Soil run-off and erosion due to	Contractor was advised to	Geo-textile coverings were	Ongoing		
	excavation activities at	provide geo-textile coverings to	provided to the soil surface of			
	Bottleneck B at TTT River was	the bare soil surface of the bunds	bunds and haul access that			
	observed	and haul access. Contractor was	exposed to the river water.			
		also recommended to review and	However, improvement were still			
		rectify the site condition, bunds	required to the site condition at			
		as well as barriers provided as to	the concerned area			
		minimize water quality impact				
		due to site works				
27 July 09	Surface washing to the EVA at	Contractor was advised to direct	To be follow up	Ongoing		
	PNH section was being carried	the grey water to the effective site				
	out that grey water was found	water treatment facility for further				
	seeped into the public drain	discharge. Public drain				
		connected with project sites				
		should be sealed to prevent soil				
		and construction debris entering				
		the public drainage				

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.

During this reporting month, a yellow form regarding improper site practices and direct discharge of site wastewater was issued by EPD to the contractor on 15 July 2009. ET has been informed by the contractor on 23 July 2009 for the incident and carried out investigation for the corrective actions taken.

According to the details of the inspection carried out by EPD, the following aspects were the major concerns raised:

- Poor condition of earth bunds at retaining H of TTT River, causing site water seepage into the river channel;
- Inadequate treatment was provided that effluent quality unlikely to meet the limit of discharge license; and
- Suspected no wastewater treatment provided and site water directly discharged outside site boundaries.

Contractor was urged to implement corrective actions include rectification of bunds formed by concrete blocks at retaining wall H, as to prevent further seepage of site water. However, follow up actions were not effective that site water seepage was still observed. Contractor was advised to further enhance the environmental mitigation measures to prevent muddy water entering the river channel from sites.

Muddy water generated on sites was mostly treated by soak-away in site ground. Site water was not effectively treated and overflowed to the river channel and area outside site boundaries. As reported by contractor, de-silting tanks will be provided for site water treatment and natural soak-away will be prevented in their sites. As the de-silting tanks are still under installation, the condition and effectiveness of the de-silting facilities will be checked in the next reporting period.

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.

Further to the environmental concerns raised by green group during May 2009, Ecologist of ET has conducted a monthly survey to mangrove area at the east of Luk Tei Tong River. Details of findings refer to Appendix K.

Bottleneck at Tai Tei Tong River (located at the downstream of Mui Wo School) was remained half-done that follow up actions were ceased due to adverse weather in the reporting month.

12. Future key issues

Key construction activity in the coming month will include construction of retaining walls at PNH River and TTT River, gabion wall at LTT River, as well as box culvert at PNH River and LTT. 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 seriously advised to provide proper measures to mitigate water quality impacts to the river channels due to construction works. River based construction activities should be carried out in enclosed as well as dry condition to prevent discharge of site water to the stream; containment measures such as bunds and barriers should be provided as to restrict the carrying out of construction works within enclosed dry area of the river. Surface or earth bunds should be covered with tarpaulin to prevent soil erosion.

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; also reuse of site water should be considered. Channel, trench and manholes should be sealed to prevent site water entering public drainage and causing water quality impact.

Contractor was reminded that all vehicles should be washed before leaving

sites. Site entrances should be regularly cleaned to prevent soil and construction debris deposited to the public access. Grey water generated from vehicles and/or site washing should be collected and treated before discharge.

Contractor was reminded to be cautious on erosion and surface run-off from the stockpiles of earth materials and exposed earth surfaces. Coverings with tarpaulin and/or geo-textile materials should be provided to minimize the concerned impacts.

Dust impact may be resulted by boulder movement, breaking and installation works of gabion blocks, contractor is reminded to provide regular watering to the dusty static site area and stockpile. Meanwhile, size and height of stockpiles should be controlled as such erosion issue could be minimized.

13. Conclusions

In this reporting month, construction of retaining walls at PNH River and LTT River, box culvert at PNH and LTT, as well as gabion wall at TTT River were being carried out.

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 at the mid of the reporting month.

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

For water quality monitoring, total 76 non-compliance events of water quality criteria were recorded in this reporting month. Except natural fluctuation and influence of adverse weather exceedances were mainly caused by site water discharge due to poor site conditions. As such contractor was urged to review their site condition, working method and implementation status of mitigation measures as to prevent further water quality impact. Although follow up actions has been taken as reported by the Contractor, ongoing improvement works were required further to the outcome of the inspections and follow up investigations.

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 breeding season of White-shouldered Starling in this year has begun. However, 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 house 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. However, a yellow form regarding improper site practices and direct discharge of site wastewater was issued by EPD to the contractor on 15 July 2009. ET has been informed by the contractor on 23 July 2009 for the incident and carried out investigation for the corrective actions taken.

Site water control was the major concern in this reporting month. Contractor was recommended to provide proper de-silting facilities for site water treatment; conditions of the earth bunds provided should be rectified to prevent surface run-off and soil erosion due to site works. Corrective actions to the identified defects should be implemented as soon as possible to minimize deterioration of water quality.

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

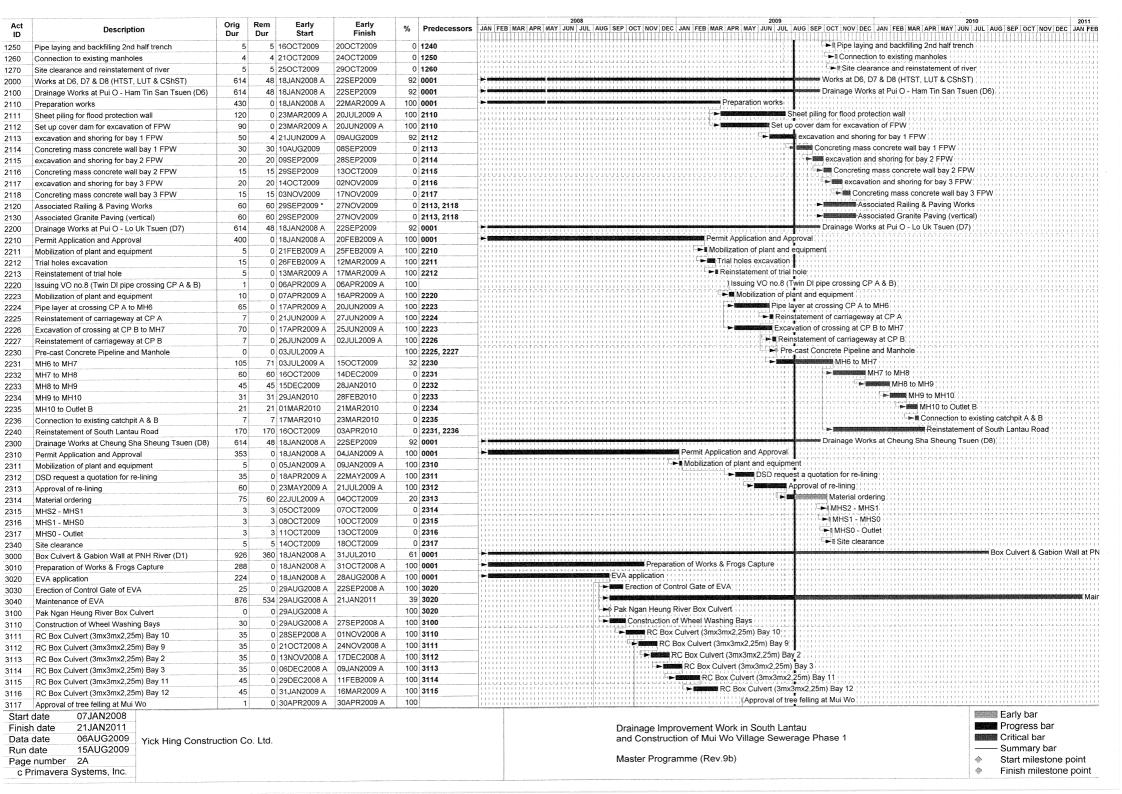
Construction
Programmer and
Location plan

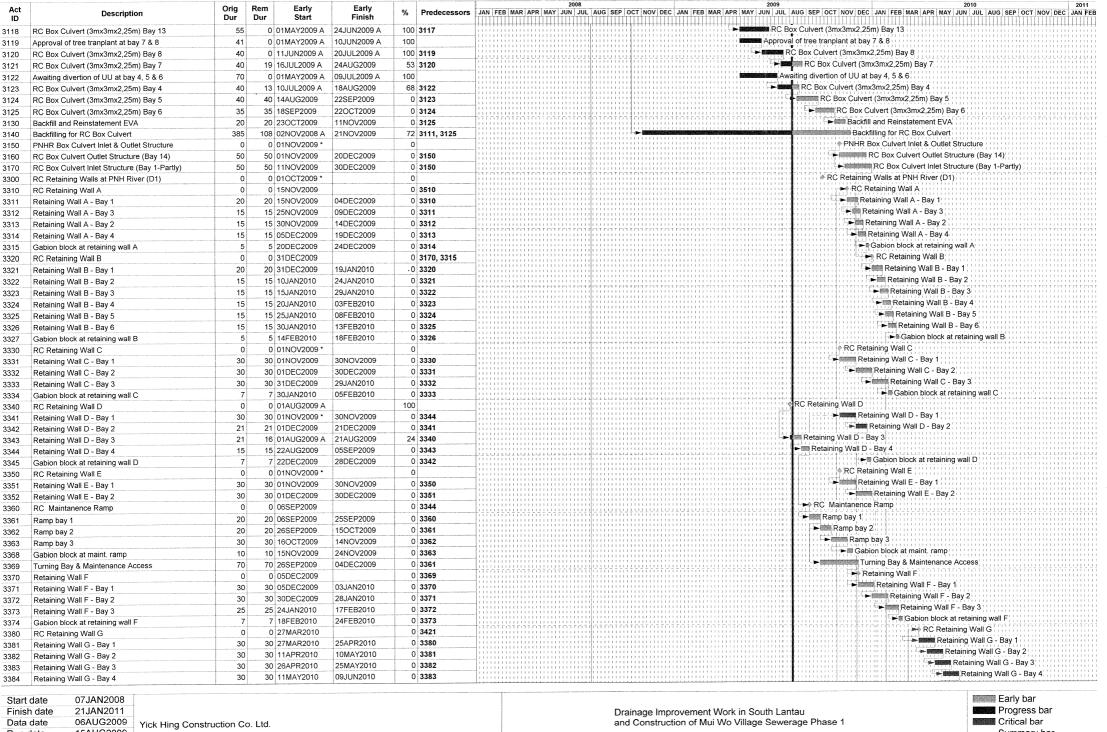
Act ID	Description	Orig Dur	Rem Dur	Early	Early Finish	% Predecessors	2008 2010 2011 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB
0000	DRAINAGE IMPROVEMENT WORK IN S LANTAU	534 *		Start 06AUG2009	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	F- tablish Base line monitoring for EP
0800	Monitoring for Environmental Permit	1001	534	26APR2008 A	21JAN2011	47 0070	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 1044 0 1045	
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 1140	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	առանությունը արտանությունը արտանությունը արտանությունը արտանությունը հայանական համանական արտանության արտանությ
	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
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	number 1A						Master Programme / Pay 9h) —— Summary bar

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Master Programme (Rev.9b)

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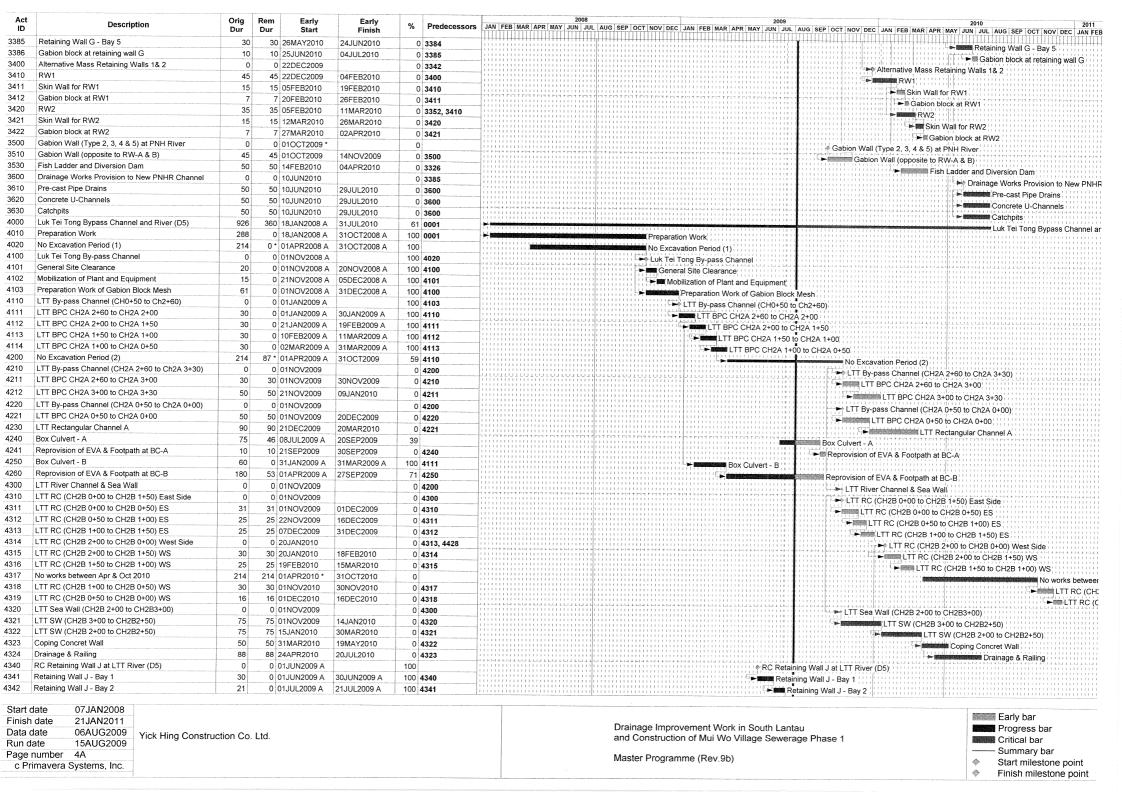


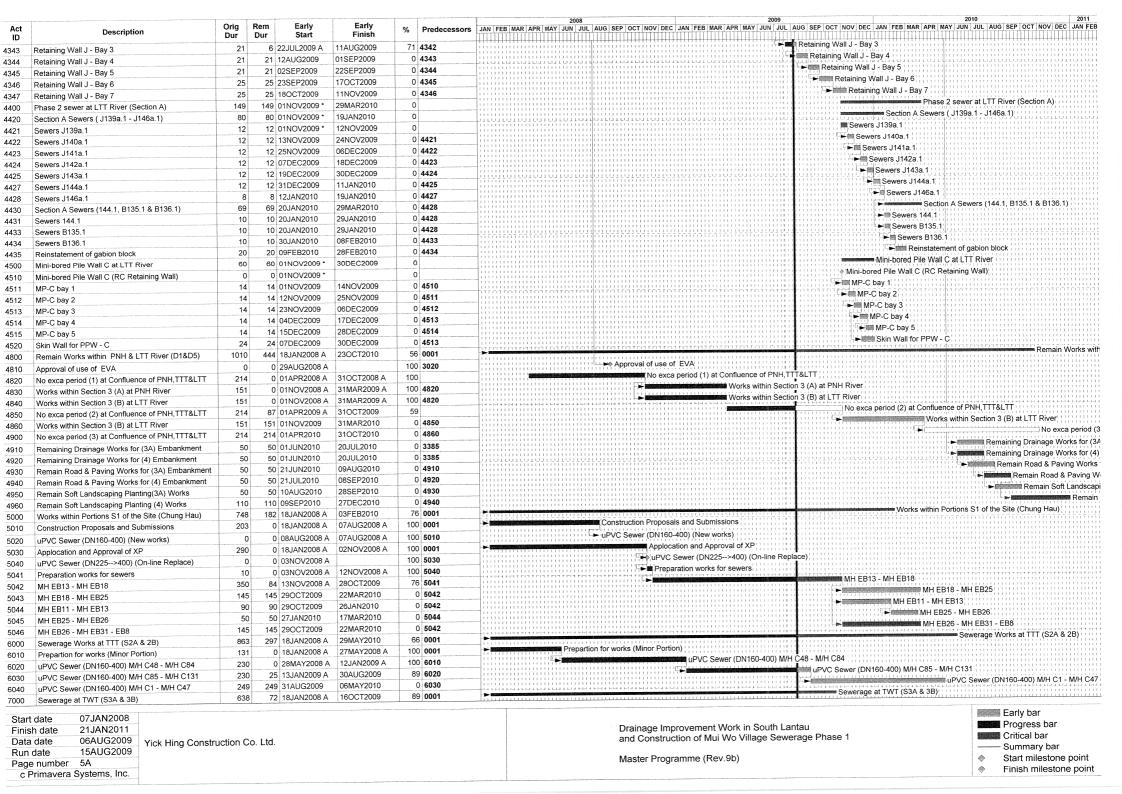


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Master Programme (Rev.9b)

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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 COLOUTOS CONTO	uPVC Sewer (DN160-400) M/H D1 - D27	1001001
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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Data date 06AUG2009
Run date 15AUG2009
Page number 6A
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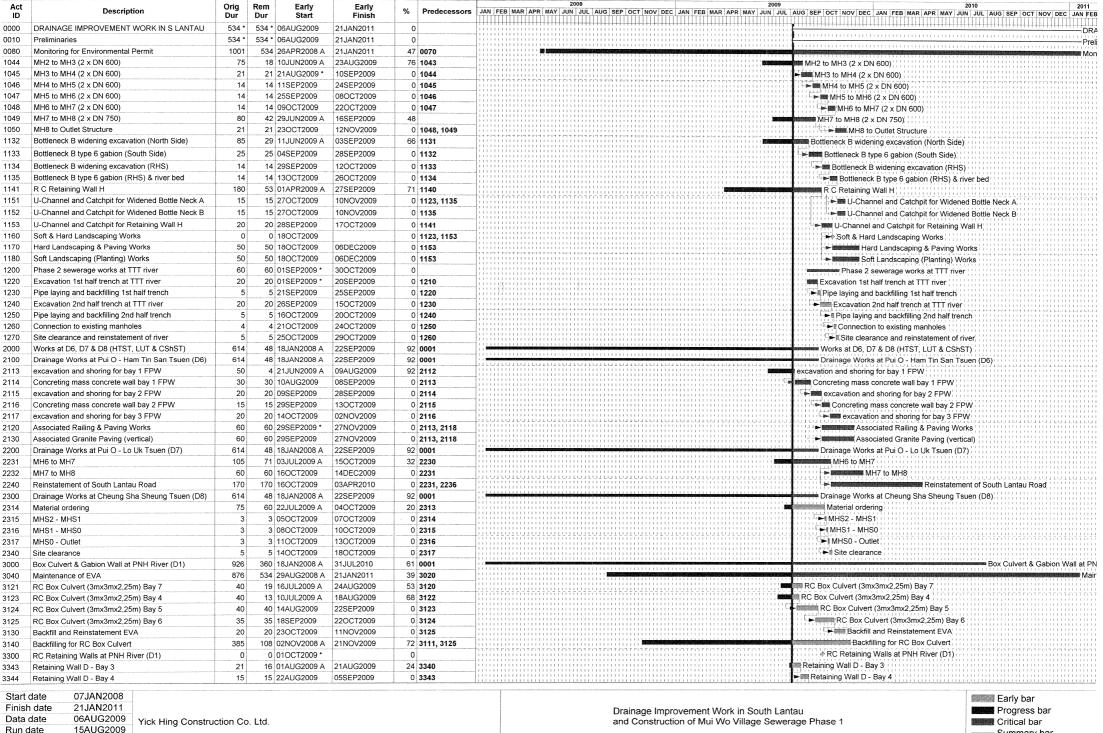
Yick Hing Construction Co. Ltd.

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

A a t		Orig	Dom	Early	Early	1		T			2008						2009		****				20	110			2011	
Act ID	Description	Dur	Rem Dur	Start	Early Finish	%	Predecessors	JAN FEB	MAR	APR MAY	JUN JUL	AUG SEP	OCT NOV DE	C JAN FE	B MAR AF	R MAY JU	JN JUL A	AUG SEP	OCT NOV	/ DEC JA	N FEB	MAR APR	MAY JUN	JUL AU	JG SEP OF	CT NOV D	DEC JAN FEE	B
3360	RC Maintanence Ramp	0	0	06SEP2009		1	3344		###	 	 	 	 	+++++++++++	 	 	1	▶ RC	Mainta	nence Ra	mp				4444444	+++++++++		4
3361	Ramp bay 1	20	20	06SEP2009	25SEP2009		3360	111111111	1111						11111111				Ramp ba	v 1				1111111	111111111	111111111		
3362	Ramp bay 2	20		26SEP2009	15OCT2009		3361	THULL	1111	1101101		DILLITO	LUILUILI	11 10 1 10		12212			Ramp	~11011				무무무를				1
3363	Ramp bay 3	30		16OCT2009	14NOV2009		3362	-	1111				1 1 1 1 1 1 1 1 1 1 1	1111111111	, , , , , , , , , , , , , , , , , , ,	111111111				Ramp bay	/ 3			111111	111111111	111111111		1
3369	Turning Bay & Maintenance Access	70		26SEP2009	04DEC2009		3361	111111111	1111	111111111		11111111111	11111111111		11111111	111111111		-				Maintena	nce Acce	SS	11111111	1 1 1 1 1 1 1 1 1		
3500	Gabion Wall (Type 2, 3, 4 & 5) at PNH River	0		01OCT2009 *			+	111111111	1111				1111111111			115151111			111111111	11111111	ČELEČEL.	4 & 5) at F		r		111113111		
3510	Gabion Wall (opposite to RW-A & B)	45		01OCT2009	14NOV2009		3500	11111111	1111			1111111111	11111111111									osite to R			13 11 13 111	$\begin{smallmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $		1
4000	Luk Tei Tong Bypass Channel and River (D5)	926		18JAN2008 A	31JUL2010		0001	-	++++	بأباب أجاباب			<u> </u>												ık Tei Ton	n Bypass	Channel a).
4200	No Excavation Period (2)	214		01APR2009 A	31OCT2009		4110	-	1111			11111111111	11111111111	1111111111					No	Excavati	on Perio	nd (2)		1111111	11111111	y Dypass	Charmera	
4240	Box Culvert - A	75		08JUL2009 A	20SEP2009	39	9	111111111	1111			11111111111	11111111111			111111111		F	lox Culve					111111	11111111	111111111		
4241	Reprovision of EVA & Footpath at BC-A	10		21SEP2009	30SEP2009		4240	11111111				11111111111	1111111111			111111111			Reprovi	sion of F\	/A & Fo	otpath at I	BC-A	1111111	111111111	111111111	. 11 1 1 1 1 1 1 1 1 1	1
4260	Reprovision of EVA & Footpath at BC-B	180	53	01APR2009 A	27SEP2009	71	4250		1111	111111111		11111111111	11111111111	1.11111111								otpath at E		111111	111111111		1111111111	1
4343	Retaining Wall J - Bay 3	21	6	22JUL2009 A	11AUG2009	71	4342	1313313	1111	11551155	ratrati	Mirata	thithin	HEHEE	18818	†55††56†			ng Wall J		nation.	Antort	517817	HHH	200	844848	348484	1
4344	Retaining Wall J - Bay 4	21	21	12AUG2009	01SEP2009	(4343	111111111				1111111111	1111111111	1111111111		111111111		J		all J - Bav	4	11111111			11111111	111111111		
4345	Retaining Wall J - Bay 5	21	21	02SEP2009	22SEP2009		4344					11111111111	111111111 1111111111			111111111	1111111		Retaining	Wall J -	Bay 5	11111111		1111111	111111111	111111111		. 1
4346	Retaining Wall J - Bay 6	25	25	23SEP2009	17OCT2009	C	4345		1111	1		11111111111	11111111111	1111111111	11111111	11111111		: 1 1 <u> 1 1 1</u> 1		ning Wall		6		1111111	311111111	$\begin{smallmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 &$	(1111111111	1
4347	Retaining Wall J - Bay 7	25	25	18OCT2009	11NOV2009	(4346	111111111	1111				1111111111	11111111		11111111			► R	etaining \	Wall J -	Bay 7		1111111	11111111	111111111		1
4800	Remain Works within PNH & LTT River (D1&D5)	1010	444	18JAN2008 A	23OCT2010	56	0001		11/			ntenten	TOTTOTA			marani	rottot	narani				mirnii	<u> Tratr</u>	int rint		Remain	Works wit	ιĥ
4850	No exca period (2) at Confluence of PNH,TTT<T	214	87	01APR2009 A	31OCT2009	59	9	11711111				11111111111			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11111111		1311111	No		iod (2) a	t Conflue	ice of PN	iH,TTT8	<u>k</u> LTT	$\begin{smallmatrix} 1 & 1 & 1 & 3 & 3 & 3 & 3 & 4 & 4 & 3 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1$		1
5000	Works within Portions S1 of the Site (Chung Hau)	748	182	18JAN2008 A	03FEB2010	76	0001	-											1111111		Wor	ks within F	ortions S	1 of the	Site (Chu	ung Hau)		1
5042	MH EB13 - MH EB18	350	84	13NOV2008 A	28OCT2009	76	5041		1111										MH	EB13 - N	AH EB1	3				111111111		
5043	MH EB18 - MH EB25	145	145	29OCT2009	22MAR2010	C	5042	11111111								1111111111						₩ MH EB	18 - MH	EB25	E	111111111		
5044	MH EB11 - MH EB13	90	90	29OCT2009	26JAN2010	C	5042	111111111	1111	11111111		11111111111	1111111111	12 10 11 11 11	11111111	111111111			-	11111111	₩МНE	B11 - MH	EB13	1111111		111111111		Ť
5046	MH EB26 - MH EB31 - EB8	145	145	29OCT2009	22MAR2010	C	5042	1				11111111111	11111111111	1:11:11:11			1111111		-			MH EE	26 - MH	EB31 -	EB8	31111111		1
6000	Sewerage Works at TTT (S2A & 2B)	863	297	18JAN2008 A	29MAY2010	66	0001	11111111	1111			1111111111	111111111	11111111	1111111								Sewe	erage W	/orks at T	TT (S2A &	₃ 2B)	
6030	uPVC Sewer (DN160-400) M/H C85 - M/H C131	230	25	13JAN2009 A	30AUG2009	89	6020		1111				1111111111					₩ uPV	C Sewer	(DN160-	400) M/	H C85 - M	/H C131		11111111	111111111		i.
6040	uPVC Sewer (DN160-400) M/H C1 - M/H C47	249	249	31AUG2009	06MAY2010	C	6030	111111111	1111			111111111111	1111111111	111111111	1 1 1 1 1 1 1 1 1	111111111		-					uPVC Se	ewer (DI	N160-400) M/H C1 -	- M/H C47	1
7000	Sewerage at TWT (S3A & 3B)	638	72	18JAN2008 A	16OCT2009	89	0001		1111					111111111				1 1 1 1 1 1 1 1	Sewe	rage at T	WT (S3	A & 3B)		1111111	111111111	111111111	1111111111	t
7030	uPVC Sewer (DN160-400) M/H A16 - M/H A34	465	30	28MAY2008 A	04SEP2009	94	7010		1111			111111111	111111111	11111111				₩₩ uP\	C Sewer	(DN160	-400) M	/H A16 - N	I/H A34		111111111			i
8000	Sewerage works at PNH (S4)	772	206	18JAN2008 A	27FEB2010	73	0001	:: :::::::	+++	 		11111111111		1111111	+++++	++++++	+++++	+++++	++++++	++++++	+++++	Sewerage	works at	PNH (S	4)			1
8030	uPVC Sewer (DN160-400) M/H D1 - D27	280	191	09MAY2009 A	12FEB2010	32	8020		1111			11111111111	11111111111								uP'	VC Sewer	(DN160-	400) M/	/H D1 - D2	27:::::::	111111111	ŀ
9000	Preservation & Protection of Exist Trees	534 *	534 *	06AUG2009	21JAN2011	C	0001	1::::::::::::::::::::::::::::::::::::::	1111				111111111111		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1								LI LI LI LI LI		ELECTION .	Pre	s
9020	Protection & Transplanting Works	1011	534	16APR2008 A	21JAN2011	47	9010	hilling	1111				1111111111			111111111											Pro	iti

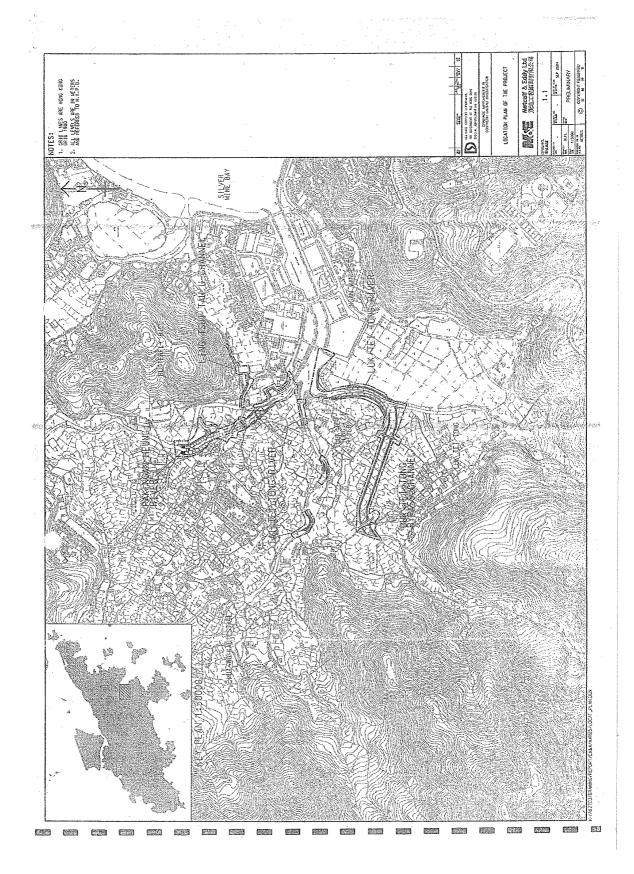
Start date 07JAN2008
Finish date 21JAN2011
Data date 06AUG2009
Run date 15AUG2009
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c Primavera Systems, Inc.

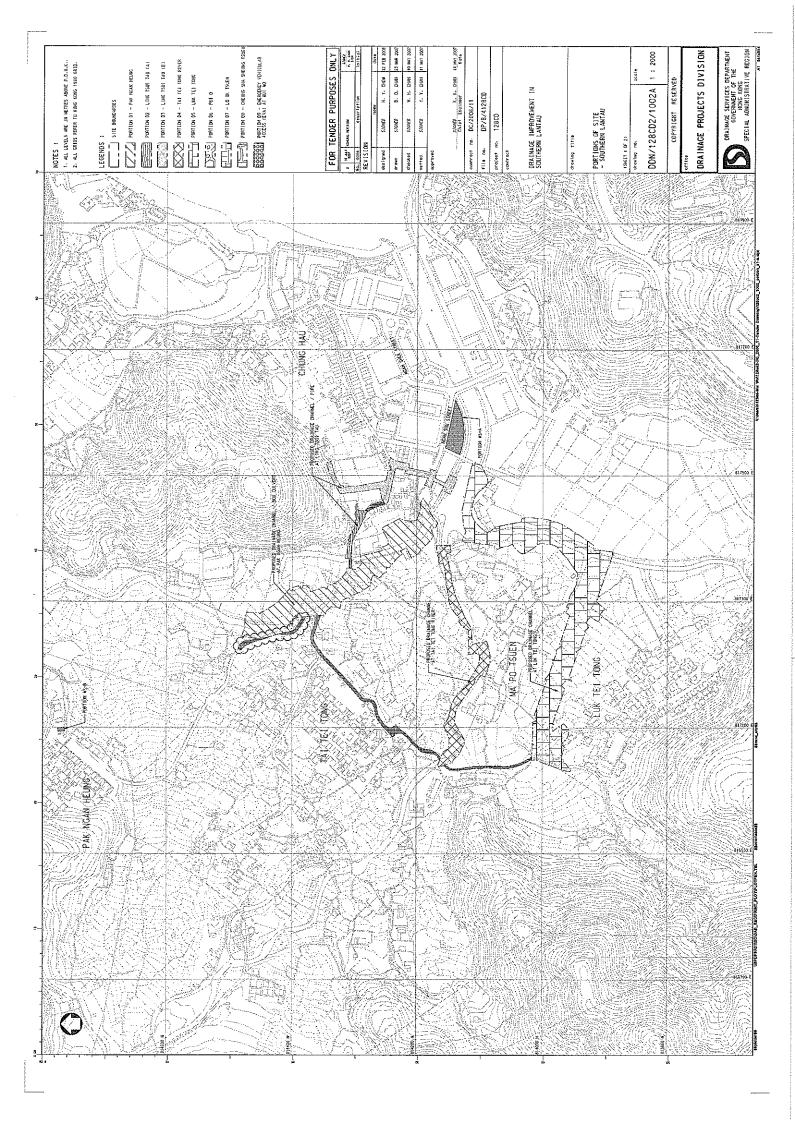
Yick Hing Construction Co. Ltd.

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 Name	Role	Title	Name	Telephone	Fax Number
Drainage Service Department	Project Proponent	Engineering Representative	Mr. Chan Wai Hong	2594 7464	2827 8700
Allied Environmental Consultants Limited	Independent Environmental Checker (IEC)	Principal Consultant	Ms. Claudine Lee	2815 7028	2815 5399
Yick-Hing Construction Company Limited	Main Contractor	Senior Project Manager	Mr. Liu Kai Choi	2394 4988	2787 4890
Environmental Pioneers & Solutions Limited	Environmental Team (ET)	Environmental	Ms. Patricia Chung	2185 0123	2856 2010

Appendix C

Calibration Certificates for Measuring Equipments



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

Calibration Reference	No. : <u>GC</u>	E/CAL/2009/MW	V/WQM/C2					
Client: ENV.	IRONMENTAL PIO	NEER AND SOI	LUTION LIMITED					
Equipment No. :	WQC-24	Location :	Mui Wo Site					
Manufacturer :	DKK-TOA	Serial No.:	617892					
Calibration Date: 0	7 to 09-05-2009	_ Due Date :	06-08-2009					
Criterion: (Repeatab	• •							
	: Both within ± 0.0							
Dissolved oxygen	: Both within ± 0.1	.mg/L						
Electric conductivity	Electric conductivity: Both within ±1%FS							
Turbidity	: Repeatability: w	ithin ±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 ²)		
0	0.0 mS/m*	0.0 mS/m			
0.001	14.7 mS/m	15.5 mS/m	1.0000		
0.005	71.8 mS/m	72.8 mS/m			
0.01	0.141 S/m	0.148 S/m			
0.05	0.667 S/m	0.675 S/m			
0.1	1.29 S/m	1.30 S/m	Acceptance Criterion		
0.5	5.87 S/m	5.88 S/m	$R^2 > 0.995$		
	1 st time	0.00, 5.88 S/m			
Repeatability	2 nd time	0.00, 5.88 S/m			
Repeatability	3 rd time	0.00, 5.88 S/m	<u>-</u>		
	0.00 , 5.88 S/m	0.00,0.00			

^{* 1} 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		Indicated value by meter	Linearity
Method (mg/L)		(mg/L)	(\mathbb{R}^2)
	0.00	0.00	
	3.72	3.85	0.9990
	6.28	6.47]
	8.56	8.81	
	10.69	10.58	Acceptance Criterion
	13.77	13.58	$R^2 > 0.995$
	1 st time	0.00,8.83	
Repeatability	2 nd time	0.00,8.80	
	3 rd time	0.00, 8.81	
	0.00, 8.56	0.00 , 0.03	

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

pH Value:

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

Calibration	Input value	Indicated pH value	Linearity		
pH buffer	(pH buffer)	by meter	_		
(25°C)	(25°C)	(25°C)	(R^2)		
pH = 1.67	1.67	1.70			
pH = 6.86	4.00	4.03	1.0000		
pH = 7.42	7.00	7.03			
pH = 9.18	10.00	10.04	Acceptance Criterion		
pH = 12.45	12.45	12.50	$R^2 > 0.995$		
	1 st time	4.03, 10.04			
Repeatability	2 nd time	4.03, 10.05	_		
	3 rd time	4.02, 10.04			
	pH 4.00, 10.00	0.01, 0.01			

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	lue by meter	Linearity
(°C)	(%		
5.0	4.		
15.0	15	$R^2 = 0.9999$	
25.0	24	And	
35.0	35	$SD = \pm 0.15$ °C	
45.0	45	Acceptance Criterion	
55.0	55	5.5	$R^2 > 0.995$ and
			within ± 5°C
	1 st time	5.2, 55.4	
Repeatability	2 nd time	5.2, 55.5	-
	3 rd time	5.1,55.6	
	5.0,55.0	0.1, 0.2	

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)	(R^2)	
0.0	0.		
20.0	21	1.0000	
100.0	103	7	
400.0	404	Acceptance Criterion	
800.0		5.4	$R^2 > 0.995$
	1 st time	0.3,805.8	
Repeatability	2 nd time	0.3,805.4	1
	3 rd time	0.3,805.0	
	0.0,800.0	0.0,0.8	

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
_				Gu Chin Chemist
Checked by :	Gu Chin	Date	:	9-5-208
		Page 3 of 3		•

Form No.: CAL/WQM/R (2-12-2008)



綜 合 試 驗 有 限 公 司 SOILS & MATERIALS ENGINEERING CO., LTD.

G/F, 9/F, 12/F, 13/F & 20/F, Leader Centre, 37 Wang Chuk Hang Road, Aberdeen, Hong Kong. 香港黃竹坑道37號利達中心地下,9樓,12樓,13樓及20樓 E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2565 7533



CERTIFICATE OF CALIBRATION

D094

2

Certificate No.:

09CA0102 01-01

Page

Item tested

Description:

Sound Level Meter (Type I) ACO, Japan

Microphone

Manufacturer:

ACO, Japan

Type/Model No.:

6224

7146

Serial/Equipment No.:

060166

34733

Adaptors used:

Item submitted by

Customer Name:

Geotechnics & Concrete Engineering (H.K.) Ltd.

Address of Customer:

G/F., 6 Ko Shan Road, Hung Hom, Kowloon, Hong Kong

Request No.: Date of request:

30-12-2008

Date of test:

02-01-2009

Reference equipment used in the calibration

Description:

Model: Serial No.

Expiry Date:

Traceable to:

Multi function sound calibrator Signal generator

B&K 4226 DS 360

2288444

11-01-2009 12-06-2009 CIGISMEC CEPREI

Signal generator

DS 360

33873 61227

18-07-2009

CEPREI

Ambient conditions

Temperature:

23 ± 2 °C

Relative humidity: Air pressure:

55 ± 15 % 1010 ± 15 hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2, replaced by an equivalent capacitance within a tolerance of ±20%.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580; Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

TV

Huang Jian Mir∳Feng Jun Qi

Approved Signatory:

Date:

02-01-2009

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.

Soils & Materials Engineering Co., Ltd.

Form No.CARP152-1/Issue 1/Rev.C/01/02/2007



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G.F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. 香港黃竹坑道37號利達中心地下,9樓,12樓,13樓及20樓 E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

D094

(Continuation Page)

Certificate No.:

09CA0102 01-01

Page

of

2

2

1. **Electrical Tests**

> The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The *-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Uncertanity (dB) / Coverage Factor
Self-generated noise	A	Pass	0.3
	С	Pass	1.0 2.1
	Lin	Pass	1.5 2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3
	Reference SPL on all other ranges	Pass	0.3
	2 dB below upper limit of each range	Pass	0.3
	2 dB above lower limit of each range	Pass	0.3
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3
Frequency weightings	Α	Pass	0.3
	С	Pass	0.3
	Lin	Pass	0.3
Time weightings	Single Burst Fast	Pass	0.3
	Single Burst Slow	Pass	0.3
Peak response	Single 100µs rectangular pulse	N/A	N/A
R.M.S. accuracy	Crest factor of 3	Pass	0.3
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3
	Repeated at frequency of 100 Hz	Pass	0.3
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4
Overload indication	SPL	Pass	0.3
	Leq	Pass	0.4

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Uncertanity (dB) / Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3
	Weighting A at 8000 Hz	Pass	0.5

3, Response to associated sound calibrator

N/A

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

End

Calibrated by: C.Y. Fung

Daté: 02-01-2009

calibrated on a schedule to maintain the required accuracy level.

Checked by:

Date:

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are

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Form No.CARP152-2/Issue 1/Rev.C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

2095

2

Certificate No.:

09CA0102 01-02

Page:

of

1

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer:

Castle Group Ltd. GA607

Type/Model No.: Serial/Equipment No.:

039543

Adaptors used:

Item submitted by

Curstomer:

Geotechnics & Concrete Engineering (H.K.) Ltd.

Address of Customer:

G/F., 6 Ko Shan Road, Hung Hom, Kowleen, Hong Kong

Request No.: Date of request:

30-12-2008

Date of test:

02-01-2009

Reference equipment used in the calibration

Description: Model: Serial No. Expiry Date: Traceable to: Lab standard microphone B&K 4180 2412857 29-06-2009 SCL Preamplifier B&K 2673 2239857 02-12-2009 CEPREI Measuring amplifier B&K 2610 2346941 03-12-2009 **CEPREI** Signal generator DS 360 61227 18-07-2009 **CEPREI** Digital multi-meter 34401A US36087050 03-12-2009 CIGISMEC Audio analyzer 8903B GB41300350 27-11-2009 CEPREI Universal counter 53132A MY40003662 11-07-2009 CEPREI

Ambient conditions

Temperature:

22 ± 1 °C

Relative humidity:

55 ± 10 %

Air pressure:

1010 ± 15 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

Details of the performed measurements are presented on page 2 of this certificate.

Huang Jian Min/Feng Jun Qi

Approved Signatory:

Date:

02-01-2009

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

C Soils & Materials Engineering Co., Ltd.

Form No.CARP156-1/Issua 1/Rev.D/01/03/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

09CA0102 01-02

Page:

of

2

2

D095

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

			(Output level in dB re 20 µPa)
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Uncertainty d8
1000	94.00	94.30	0.1

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.002 dB

Estimated uncertainty

 $0.005 \, dB$

3, **Actual Output Frequency**

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 1000.0 Hz

Estimated uncertainty

0.1 Hz

Coverage factor k = 2.2

4, **Total Noise and Distortion**

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 2.1%

Estimated uncertainty

0.7%

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

End

Calibrated by: Date: C.Y. Fung

02-01-2009

Checked by:

Date:

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

Soils & Materials Engineering Co., Ltd.

Form No.CARP156-2/Issue 1/Rev.C/01/05/2005

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation. Such terms of accreditation stipulate that the results shall be traceable to the International System of Units (S.I.) or recognised measurement standards. This certificate shall not be reproduced except in full.

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

			Relative	Occui	rence
Species	Habit	Native	Abundance	PNH3	PNH4
Acacia confusa	tree	no	occasional		+
Achyranthes aspera	herb	yes	scarce		+
Acorus gramineus	herb	yes	scarce		+
Alangium chinensis	tree	yes	scarce		+
Alocasia macrorrhiza	herb	yes	occasional	+	+
Aporosa dioica	tree	yes	occasional	+	+
Ardisia crenata	shrub	yes	occasional	+	+
Bamboo	herb	-	scarce	+	
Bidens pilosa	herb	yes	occasional		+
Bischofia javanica	herb	yes	scarce	+	
Bridelia tomentosa	tree	yes	scarce	+	+
Celtis sinensis	tree	yes	occasional	+	+
Centotheca lappacea	grass	yes	scarce	+	+
Christella parasitica	fern	yes	occasional	+	+
Cleistocalyx operculata	tree	yes	occasional	+	+
Colocasia esculenta	herb	no	scarce	+	
Commelina sp.	herb	yes	scarce	+	+
Conyza canadensis	herb	no	scarce	+	+
Desmos chinensis	shrub	yes	occasional	+	
Dimocarpus longan	tree	no	occasional		+
Embelia ribes	climber	yes	scarce		+
Ficus hispida	tree	yes	common	+	+
Ficus superba	tree	yes	occasional		+
Garcinia oblongifolia	tree	yes	occasional		+
Glochidion puberum	shrub	yes	scarce	+	
Hedychium coronarium	herb	no	scarce		+
Hedyotis hedyotidea	climber	yes	scarce		+
Hibiscus rosa-sinensis	shrub	no	occasional		+
Liriope spicata	herb	yes	scarce		+
Litsea glutinosa	tree	yes	occasional	+	+
Litsea rotundifolia	shrub	yes	scarce	+	
Lophatherum gracile	grass	yes	scarce	+	
Lygodium japonicum	fern	yes	scarce	+	

			Relative	Occur	rence
Species	Habit	Native	Abundance	PNH3	PNH4
Macaranga tanarius	tree	yes	occasional	+	+
Mallotus paniculatus	tree	yes	scarce	+	
Microcos paniculata	tree	yes	scarce	+	+
Microstegium ciliatum	grass	yes	common	+	+
Mikania micrantha	climber	no	common	+	+
Mimosa pudica	herb	yes	scarce	+	
Murraya paniculata	shrub	no	scarce	+	
Musa paradisiaca	tree	no	scarce	+	
Mussaenda erosa	shrub	yes	scarce	+	
Neyraudia reynaudiana	grass	yes	occasional	+	+
Panicum maximum	grass	no	common	+	+
Phyllanthus urinaria	herb	yes	scarce	+	+
Pilea microphylla	herb	no	occasional		+
Plantago major	herb	yes	scarce		+
Pogonatherum crinitum	grass	yes	scarce		+
Polygonum chinense	herb	yes	occasional	+	
Polygonum sp.	herb	yes	scarce	+	
Psychotria asiatica	shrub	yes	common	+	+
Pteris ensiformis	fern	yes	scarce		+
Pueraria phaseoloides	climber	yes	occasional	+	+
Sageretia thea	climber	yes	occasional		+
Scoparia dulcis	herb	yes	scarce		+
Severinia buxifolia	shrub	yes	scarce		+
Sporobolus fertilis	grass	yes	scarce		+
Sterculia lanceolata	tree	yes	common	+	+
Syngonium podophyllum	climber	no	occasional	+	
Syzygium jambos	tree	no	common	+	+
Urena lobata	herb	yes	scarce		+
Uvaria microcarpa	shrub	yes	occasional	+	+
Wedelia trilobata	climber	no	scarce	+	

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

			Relative	Occur	rrence
Species	Habit	Native	Abundance	PNH1	PNH2
Acacia confusa	tree	no	occasional	+	
Acanthus ilicifolius	shrub	yes	scarce	+	
Acrostichum aureum	fern	yes	scarce	+	
Celtis sinensis	tree	yes	occasional	+	
Clerodendrum inerme	shrub	yes	occasional	+	
Dendrotrophe frutescens	climber	yes	scarce	+	
Ficus microcarpa	tree	yes	scarce		+
Ficus superba	tree	yes	occasional		+
Ipomoea cairica	climber	yes	occasional		+
Kandelia obovata	shrub	yes	scarce	+	
Melaleuca quinquenervia	tree	no	common	+	
Neyraudia reynaudiana	grass	yes	occasional	+	
Panicum maximum	grass	no	common	+	+
Phyllanthus urinaria	shrub	yes	common		+
Sapium sebiferum	tree	yes	occasional		+
Wedelia triloba	climber	no	occasional	+	+
Wollastonia biflora	climber	yes	occasional	+	

Appendix D3 Plant species recorded at Luk Tei Tong River

			Relative	Occurrence				
Species	Habit	Native	Abundance	LLT1	LLT2	LLT3	LLT4	LLT5
Acanthus ilicifolius	shrub	yes	common	+	+			
Acrostichum aureum	fern	yes	scarce					+
Aegiceras corniculatum	shrub	yes	scarce	+				
Bougainvillea spectabilis	climber	no	scarce	+				
Bridelia tomentosa	tree	yes	occasional	+				
Celtis sinensis	tree	yes	scarce	+	+			
Clerodendrum inerme	shrub	yes	abundant	+	+		+	
Cyperus malaccensis	sedge	yes	occasional		+			
Derris trilfoliata	climber	yes	occasional		+			
Excoecaria agallocha	shrub	yes	common	+	+			
Ficus superba	tree	yes	occasional	+				
Fimbristylis ferruginea	sedge	yes	occasional		+		+	
Hibiscus tiliaceus	tree	yes	abundant	+			+	
Kandelia obovata	tree	yes	common	+	+			
Lantana camara	shrub	no	scarce		+			
Leucaena leucocephala	tree	no	occasional	+				
Litsea glutinosa	tree	yes	scarce		+			
Neyraudia reynaudiana	grass	yes	occasional	+				+
Panicum maximum	grass	no	common	+				
Paspalum paspaloides	grass	no	occasional		+			
Premna serratifolia	tree	yes	scarce		+			
Saccharum								
arundinaceum	grass	yes	scarce	+				
Sageretia thea	climber	yes	scarce		+			
Scolopia chinensis	tree	yes	scarce				+	
Terminalia catappa	tree	no	scarce		+			
Toxocarpus wightianus	climber	yes	scarce		+		+	
Wikstroemia indica	shrub	yes	scarce				+	
Wollastonia biflora	climber	yes	occasional		+			

Appendix D4

Ecological Water Monitoring Results (on-site measurements)

Environmental Pioneers & Solutions Limited

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

Date of Sampling: 3/7/09 Weather Condition: Sunny

Date of Gampling.	0,1,00					idition.	- Curring											
Monitoring Location		WE1			WE2			WE3			WE4			WE5			WE6	
Time (hhmm)		1135			1125			1045			1110			1205		1150		
Tide Mode		ebb			ebb			ebb			ebb			ebb			ebb	
River Condition		Normal			Normal			Muddy			Muddy			Normal		Normal		
Water Depth (m)		< 1.0			< 1.0			< 1.0			< 1.0			< 1.0			< 1.0	
pH value		6.74			7.79			7.47			6.75			6.63			6.30	
Temperature (oC)		27.6			27.8			27.5			28.6			29.1			27.5	
Salinity (ppt)		0.0			0.1			0.1		4.2			0.2		0.0			
Conductivity (ms/m)		7.4			24.1 29		29.0		742.0		58.5		5.2					
Water flow (m/s)		0.020			0.050			0.100			0.040			0.040			0.020	
Turbidity (NTU)	0.0	0.0	Average 0.00	0.0	0.0	Average 0.00	17.2	17.2	Average	17.9	17.9	Average	3.5	3.5	Average 3.50	0.0	0.0	Average 0.0
DO (mg/l)	7.58	7.58	Average 7.58	8.04	8.04	Average 8.04	7.93	7.93	Average 7.93	7.01	7.01	Average 7.01	7.38	7.38	Average 7.38	7.12	7.12	Average 7.12
DO Saturation (%)	97	97	Average 97	103	103	Average	102	102	Average 102	93	93	Average 93	96	96	Average 96	90	90	Average 90

Name

Prepared By: Jimmy Cheng

Signature

Date 3/7/09

remark or

Muddy water is observed at WE3 due to water without desilting properly

observation: discharged to the public drain of box culvert. Muddy water is observed

at location WE4 due to the silted water leakage at Luk Tei Tong river.

Appendix D5

Ecological Water Monitoring Results (lab report)

: GCC090700022

Report No.



TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Date of Issue : 09-07-2009

Client*	: Envi	ronmental	Pioneers	& Solu	tions Lin	nited				Date Receive	d :	08-0	09-2008
Client Address*	: 8/F,	Chaiwan	Industrial	Centre	Building	, 20 Lee (Chur	ng Street, C	haiwan,	HK.			
	DSD	Contract	No. DC/2	2006/1	1 - Draina	age Impro	vem	ent in Sout	hern Lan	tau & Consti	uction	of	
Project*	: Mui	Wo Village	e Sewera	ge Pha	se 1								
Fest Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.										Date Started	:	03-0	07-2009
W.O. No.*	:			Sa	mple Typ	oe* : R	iver	Water		Date Comple	ed :	04-0	07-2009
GCE Serial No.		vi072009		-	E Reg. N	lo G	CE	081096		Test Unit No.		CH (08258
				_	riog. r			001000		rest offic rec.	•	011	30230
Analysis Descrip	tion Test Method Units C						Quality	Control Resu	its				
			27A *c:			Metho Blank		QC 500 m	ng/L Q	C Duplicate	RPD% Spike 25		Spike 25 mg/l
Suspended Solid	is (SS)	APHA	4 20ed 2!	540 D	mg/L	< 1.0)	499	,	494	1.0	,	25.3
		rines.)	Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol Li	mit ≤ 514	≤ ±5	i%	21 ≤ R ≤ 29
		1- 17	10/54	V	VE1			WE2]	WE3	_		
	San	nple ID	WE1	Dup	olicate	WE2	נ	Duplicate	WE3	Duplicate	,		
TEST RESULTS	:	mpling e/Time	03 July	3 July 2009 / 11:35		03 July	200	9 / 11:25	03 Jul	03 July 2009 / 10		~~~~	<u></u>
	LOD	Units				- VATORIA CI		-		1884			
Suspended Solids (SS)	1	mg/L	1.1	,	1.4	2.1		2.3	8.4	8.3			
	San	nple ID	WE4		VE4 olicate	WE5		WE5 Duplicate	WE6	WE6			
TEST RESULTS		mpling e/Time	03 July	2009	/ 11:10	03 July				3 July 2009 / 11:50			
	LOD	Units									- t		
Suspended Solids (SS)	1	mg/L	16.2	1	7.2	7.1		7.5	< 1.0	< 1.0			
: Information p	rovided	by client							· · · · · · · · · · · · · · · · · · ·	Addition			
S-4- This I													
iote: This la	aborator	y has no r	esponsibi	ility on	sampling	and all th	he te	est results r	elate onl	y to the sam	ole test	ted a	is received.
lemarks : Lo	cation N	VI1 & WE3	Band Loc	ation M	13 & WE	4 are the	sam	e location.					
	541,511 1		varia Eoo	40011 19	~	End		e location.		*****			
						LIQ -							
ested By ;		K.L. Fo	na				Ann	roved Signa	atory ·	1	j£		
, · · -			<u> </u>				Nam	=		GU CH	≤∠∴ IIN		
hecked By :		GU CHI	N						•				
′ -			21 IIIN					Post : Chemist					

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700242		Page 1 of 1 Date of Issue : 29-07-2009			
Client * : Environmental Pioneers Client Address* : 8/F, Chaiwan Industrial DSD Contract No. DC/2	Centre Building, 20 Lee Chung Stre	Order Received : 08-09-2008 eet, Chaiwan, HK. Southern Lantau & Construction of			
Project* : Mui Wo Village Sewerag					
Test Location : G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 03-07-2009			
W.O. No.* :	Contract No.* :	Date Completed : 10-07-2009			
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009	9 / 11:35 Sample Type* : River Water			
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE1			
Descripption : River Water					
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT			
Appearance	APHA 20ed 2110				
Odour	ADUA 20-4 2150 B	Odour Characteristics :			
Ododi	APHA 20ed 2150 B	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 ₃ D	0.03			
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E				
	APHA 18ed 4500-NH ₃ C				
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ E	0.09			
Phosphorus mg/L	APHA 20ed 4500-P D	0.04			
Biochemical Oxygen Demand (BOD ₅) 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				
* : Information provided by client	***************************************				
Note: This laboratory has no responsible Sample received on 03 July 2 REMARKS: Sample Location WE1.		ults relate only to the sample tested as received.			
Janiple Location WET.	End				
Tooted Du	0.00.15	/ 11			
Tested By : T.W. Lam, K.L. F	ong Certified E 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. : GCC090700250	*******************************	Date of Issue	Page 1 of 1 : 29-07-2009					
Client* : Environmental Pioneers &	Solutions Limited	Order Received	: 08-09-2008					
Client Address*: 8/F, Chaiwan Industrial C	dress*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chai							
DSD Contract No. DC/20	06/11 - Drainage Improvement in	Southern Lantau & Construc	ction of					
Project* : Mui Wo Village Sewerage	e Phase 1							
Test Location : G/F, 20 Pak Kung Stree	et, Hung Hom, Kowloon.	Date Started	: 03-07-2009					
W.O. No.* :	Contract No.* :	Date Completed	d : <u>10-07-2009</u>					
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009) / 11:35 Sample Type*	: River Water					
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.*	: WE1 Duplicate					
Descripption : River Water								
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST	RESULT					
Appearance	APHA 20ed 2110							
Ode	ADILA GO- 4 GARO D	Odour Characteristics :						
Odour	APHA 20ed 2150 B	Threshold Odour Number (TON):						
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B							
Colour TCU	APHA 20ed 2120 B		V-Procedure.					
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 ₃ D	0	.02					
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E							
	APHA 18ed 4500-NH ₃ C							
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ - E	0.	.09					
Phosphorus mg/L	APHA 20ed 4500-P D	0.	.04					
Biochemical Oxygen Demand (BOD ₅) 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							
* : Information provided by client		.1						
Note: This laboratory has no responsibili Sample received on 03 July 20	ty on sampling and all the test res	ults relate only to the sample	e tested as received.					
REMARKS: Sample Location WE1.	pr .							
Tested By :T.W. Lam, K.L. Fo	End ong Certified B	iv :	16					
Chacked Ry Gu Chin	Name	: Gu Ch	in					

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700268		Date of Issue :	Page 1 of 1 29-07-2009		
Client* : Environmental Pioneers 8	Solutions Limited	Order Received :	08-09-2008		
Client Address* : 8/F, Chaiwan Industrial C	Centre Building, 20 Lee Chung Stre	et, Chaiwan, HK.			
DSD Contract No. DC/20	06/11 - Drainage Improvement in	Southern Lantau & Construction	n of		
Project* : Mui Wo Village Sewerage	e Phase 1				
Test Location : G/F, 20 Pak Kung Stree	et, Hung Hom, Kowloon.	Date Started :	03-07-2009		
W.O. No.* :	Contract No.* :	Date Completed :	10-07-2009		
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009	Sample Type* :	River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* :	WE2		
Descripption : River Water	77/Ada				
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RES	ULT		
Appearance	APHA 20ed 2110				
Odour	ADMA 30. 4 2450 D	Odour Characteristics :			
Odour	APHA 20ed 2150 B	Threshold Odour Number (TO)	1):		
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 ₃ D	0.14			
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E				
	APHA 18ed 4500-NH ₃ C				
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ E	0.14			
Phosphorus mg/L	APHA 20ed 4500-P D	0.06			
Biochemical Oxygen Demand (BOD ₅) 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				
* : Information provided by client					
Sample received on 03 July 20	ty on sampling and all the test resu	ults relate only to the sample te	sted as received.		
REMARKS: Sample Location WE2.	End	Ph			
Tested By : T.W. Lam, K.L. Fo		y :			

Post

Chemist

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

Checked By : Gu Chin



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No.	: GCC090700276			Date of Issue	Page 1 of 1 : 29-07-2009	
Client*	: Environmental Pioneer	s & Solutions Limited		Order Received	: 08-09-2008	
Client Address*	: 8/F, Chaiwan Industria	l Centre Building, 20 Lee Chung Stre	eet, Chaiwa	n, HK.		
	DSD Contract No. DC/	2006/11 - Drainage Improvement in	Southern L	antau & Constructio	n of	
Project*	: Mui Wo Village Sewer	age Phase 1		·		
Test Location	: G/F, 20 Pak Kung St	reet, Hung Hom, Kowloon.		Date Started	: 03-07-2009	
W.O. No.*	:	Contract No.* :		Date Completed	: 10-07-2009	
GCE Serial No.	: WQM072009	Sampling Date* : 03-07-2009	9 / 11:25	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 RE	SULT	
Appearance		APHA 20ed 2110				
Odour		APHA 20ed 2150 B	Odour Ch	aracteristics:		
Odour		AFNA 20eu 2130 B	Threshold	d Odour Number (TC	N):	
pH Value at tem	nperature [] °(APHA 20ed 4500-H ⁺ B				
Colour	тс	U APHA 20ed 2120 B				
Turbidity	NT	U APHA 20ed 2130 B				
Conductivity at	25°C μS/cr	n APHA 20ed 2510 B		***		
Salinity	g/	L APHA 20ed 2520 B				
		APHA 20ed 4500-NH ₃ D		0.19	5	
Nitrogen (Ammo	onia) mg/	L APHA 20ed 4500-NH ₃ E				
		APHA 18ed 4500-NH ₃ C		***		
Nitrogen (Nitrate	e) mg/	L APHA 20ed 4500-NO ₃ E		0.14	,	
Phosphorus	mg/	L APHA 20ed 4500-P D		0.07	,	
Biochemical Oxy	ygen Demand (BOD ₅) mg/	L APHA 20ed 5210 B	A Caracian C	2		
Chemical Oxyge	en Demand (COD) mg/	L APHA 20ed 5220 D				
Total Suspender	d Solid mg/	L APHA 20ed 2540 D				
* : Information	provided by client	- 		introdución de la contraction		
Note: This	laboratory has no responsi	bility on sampling and all the test res	sults relate (only to the sample t	ested as received.	
	ample received on 03 July ample Location WE2.	2009.				
	ampio cooddoir VVLZ.	End		7		
Tested By :	T.W. Lam, K.L.	Fong Certified I	Ву	: /1		
		Name		: Gu Chin		
Checked By :	Gu Chin	Post		: Chemist		

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1 : 29-07-2009 Report No. : GCC090700284 Date of Issue 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 : Mui Wo Village Sewerage Phase 1 Project* **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009 W.O. No.* Contract No.* Date Completed: 10-07-2009 GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 10:45 Sample Type* : River Water GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE3 Descripption : River Water TEST REFERENCE DESCRIPTION **TEST RESULT** (In-House Method based on) Appearance APHA 20ed 2110 Odour Characteristics: --Odour APHA 20ed 2150 B 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-NH₃ D 0.17 Nitrogen (Ammonia) mg/L APHA 20ed 4500-NH3 E APHA 18ed 4500-NH₃ C Nitrogen (Nitrate) mg/L APHA 20ed 4500-NO₃ E 0.14 Phosphorus mg/L APHA 20ed 4500-P D 0.1 Biochemical Oxygen Demand (BOD₅) mg/L APHA 20ed 5210 B 2 APHA 20ed 5220 D Chemical Oxygen Demand (COD) mg/L Total Suspended Solid mg/L APHA 20ed 2540 D * : 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. Sample received on 03 July 2009. REMARKS: Sample Location WE3. ---- End -----T.W. Lam, K.L. Fong Tested By Certified By Name Gu Chin

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

Gu Chin

Checked By :



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1 : GCC090700292 Report No. Date of Issue : 29-07-2009 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 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009 W.O. No.* Date Completed: 10-07-2009 Contract No.* GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 10:45 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 **TEST RESULT** (In-House Method based on) Appearance APHA 20ed 2110 Odour Characteristics: --Odour APHA 20ed 2150 B Threshold Odour Number (TON):] °C pH Value at temperature [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-NH₃ D 0.16 Nitrogen (Ammonia) APHA 20ed 4500-NH3 E mg/L APHA 18ed 4500-NH₃ C Nitrogen (Nitrate) mg/L APHA 20ed 4500-NO3 E 0.13 Phosphorus mg/L APHA 20ed 4500-P D 0.10 Biochemical Oxygen Demand (BOD5) mg/L APHA 20ed 5210 B 2 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 03 July 2009. REMARKS: Sample Location WE3. ---- End -----Tested By T.W. Lam, K.L. Fong Certified By Gu Chin Name Checked By : Gu Chin

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



Page 1 of 1

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

	Date of Issue : 29-07-2009								
& Solutions Limited	Order Received : 08-09-2008								
Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chai									
	Southern Lantau & Construction of								
	Date Started : 03-07-2009								
Test Unit No. : CH 08258	Sample I.D.* : WE4								
TEST REFERENCE (In-House Method based on)	TEST RESULT								
APHA 20ed 2110									
ADUA 2004 2450 D	Odour Characteristics:								
APHA 2080 2150 B	Threshold Odour Number (TON):								
APHA 20ed 4500-H ⁺ B									
APHA 20ed 2120 B									
APHA 20ed 2130 B									
APHA 20ed 2510 B									
APHA 20ed 2520 B									
APHA 20ed 4500-NH ₃ D	0.27								
APHA 20ed 4500-NH ₃ E									
S ALCOHOL .									
	0.36								
	0.15								
	2								
ALTIA 2000 2040 D									
ility on sampling and all the test res	sults relate only to the sample tested as received.								
2009.									
Fnd									
Liju	/ . /								
Fong Certified E									
	: Gu Chin								
	Centre Building, 20 Lee Chung Street 006/11 - Drainage Improvement in 19 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2								

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No.	: GCC090700315		Date of Issue	Page 1 of 1 : 29-07-2009					
Client*	: Environmental Pioneers	& Solutions Limited	Order Received	: 08-09-2008					
Client Address*	: 8/F, Chaiwan Industrial	Centre Building, 20 Lee Chung Stree	et, Chaiwan, HK.						
D :	DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of								
Project*	: Mui Wo Village Sewerag	-							
Test Location	: G/F, 20 Pak Kung Stre		Date Started	: 03-07-2009					
W.O. No.*	:	Contract No.* :	Date Completed						
GCE Serial No.	: WQM072009	Sampling Date* : 03-07-2009		: River Water					
GCE Reg. No.	: GCE 081096	Test Unit No. : CH 08258	Sample I.D.*	: WE4 Duplicate					
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 :						
ododi		ATTIA 2060 2130 B	Threshold Odour Number (TON):						
pH Value at ten	nperature [] °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							
	A Company of the Comp	APHA 20ed 4500-NH ₃ D	0.2	6					
Nitrogen (Ammo	onia) mg/L	APHA 20ed 4500-NH ₃ E							
		APHA 18ed 4500-NH ₃ C							
Nitrogen (Nitrate	e) mg/L	APHA 20ed 4500-NO ₃ - E	0.35						
Phosphorus	mg/L	APHA 20ed 4500-P D	0.1	4					
Biochemical Oxy	ygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	210 B 2						
Chemical Oxyge	en Demand (COD) mg/L	APHA 20ed 5220 D							
Total Suspende	d Solid mg/L	APHA 20ed 2540 D							
* : Information	provided by client	<u> </u>	I						
Note: This	·	lity on sampling and all the test res	ults relate only to the sample	tested as received.					
· · · <u>-</u>	m—naku	End							
Tested By :	T.W. Lam, K.L. F	Fong Certified B		1					
Checked By : Gu Chin		Name Post	: Gu Chir : Chemis						

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700323	Page 1 of 1 Date of Issue : 29-07-2009		
Client * : Environmental Pioneers & S/F, Chaiwan Industrial C		Order Received : 08-09-2008 et, Chaiwan, HK.	
DSD Contract No. DC/20 Project* : Mui Wo Village Sewerag	006/11 - Drainage Improvement in S e Phase 1	Southern Lantau & Construction of	
Test Location : G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 03-07-2009	
W.O. No.* :	Contract No.* :	Date Completed : 10-07-2009	
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009	/ 12:05 Sample Type* : River Water	
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE5	
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 ⁺ 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 ₃ D	0.86	
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E		
	APHA 18ed 4500-NH ₃ C		
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ E	0.06	
Phosphorus mg/L	APHA 20ed 4500-P D	0.29	
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	3	
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 responsibil Sample received on 03 July 2 REMARKS: Sample Location WE5.		ults relate only to the sample tested as received.	
THE SECOND SECON	End		
Tested By : T.W. Lam, K.L. F	ong Certified B	y :	
	Name	: Gu Chin	

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: Chemist

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

Checked By : Gu Chin



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700331	oort No. : GCC090700331								
	lient* : Environmental Pioneers & Solutions Limited lient Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan								
	DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of								
Project* : Mui Wo Village Sewerage	: Mui Wo Village Sewerage Phase 1								
Test Location : G/F, 20 Pak Kung Street	et, Hung Hom, Kowloon.	Date Started : 03-07-2009							
W.O. No.* :	Contract No.* :	Date Completed : 10-07-2009							
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009	/ 12:05 Sample Type* : River Water							
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE5 Duplicate							
Descripption : River Water									
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT							
Appearance	APHA 20ed 2110								
Odavis	ADUA 60 10450 D	Odour Characteristics :							
Odour	APHA 20ed 2150 B	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 ₃ D	0.87							
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E								
	APHA 18ed 4500-NH ₃ C	<u></u>							
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.07							
Phosphorus mg/L	APHA 20ed 4500-P D	0.30							
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	3							
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 03 July 20	-	alts relate only to the sample tested as received.							
REMARKS: Sample Location WE5.	End	NO.							
Tested By : T.W. Lam, K.L. Fo		y : Gu Chin							

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

Checked By : ____ Gu Chin



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700349		Date of Issu	Page 1 of 1 le : 29-07-2009						
Client* : Environmental Pioneers 8	107.	Order Recei	ved : 08-09-2008						
	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								
	DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1								
	et, Hung Hom, Kowloon.	Date Started	i : 03-07-2009						
W.O. No.* :	Contract No.* :	———— Date Comple	eted : 10-07-2009						
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009	/ 11:50 Sample Type	e* : River Water						
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.	* : WE6						
Descripption : River Water									
DECORPTION .	TEST REFERENCE								
DESCRIPTION	(In-House Method based on)	TES	ST RESULT						
Appearance	APHA 20ed 2110								
Odour	APHA 20ed 2150 B	Odour Characteristics :							
Guda	AITIA 20eu 2190 B	Threshold Odour Number (TON):							
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B		all age						
Colour TCU	APHA 20ed 2120 B								
Turbidity NTU	APHA 20ed 2130 B								
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	74.4							
Salinity g/L	APHA 20ed 2520 B								
	APHA 20ed 4500-NH ₃ D		0.03						
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E								
	APHA 18ed 4500-NH ₃ C								
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.10							
Phosphorus mg/L	APHA 20ed 4500-P D	0.02							
Biochemical Oxygen Demand (BOD ₅) 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								
* : Information provided by client	MICH.	<u> </u>							
	ty on sampling and all the test resu	ults relate only to the san	nple tested as received.						
REMARKS: Sample Location WE6.									
	End		The state of the s						
Tested By : T.W. Lam, K.L. Fo	ong Certified B		Chin						

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

Checked By : ____ Gu Chin



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700357		Page 1 of 1 Date of Issue : 29-07-2009	
Client* : Environmental Pioneers 8	& Solutions Limited	Order Received : 08-09-2008	
Client Address*: 8/F, Chaiwan Industrial (eet, Chaiwan, HK.		
		Southern Lantau & Construction of	
Project* : Mui Wo Village Sewerag			
Test Location : G/F, 20 Pak Kung Stre	WATH ARREST	Date Started : 03-07-2009	
W.O. No.* ;	Contract No.* :	· · <u></u>	
GCE Serial No. : WQM072009	Sampling Date* : 03-07-2009		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE6 Duplicate	
Descripption : River Water	- VM-No. as had a		
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT	
Appearance	APHA 20ed 2110		
Odour	ADUA 20-4 2450 B	Odour Characteristics :	
Ododi	APHA 20ed 2150 B	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		
AAA	APHA 20ed 4500-NH ₃ D	0.03	
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ E		
	APHA 18ed 4500-NH ₃ C		
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.10	
Phosphorus mg/L	APHA 20ed 4500-P D	0.02	
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2	
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	APHA 20ed 2540 D	-	
*: Information provided by client			
Sample received on 03 July 2		ults relate only to the sample tested as received.	
REMARKS: Sample Location WE6.	Es. i		
	End	, ,	
Fested By : T.W. Lam, K.L. F	ong Certified E	By :	
	Name	: Gu Chin	

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

Checked By : Gu Chin

Appendix E



Monitoring Location		N1	N2		
Description of Location			Façade	Façade	
Date of Monitoring			6/7/2	2009	
Measurement Start Time	е	(hhmm)	15:08	13:20	
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	(r	n/s)	0.7	1.3	
	L90	(dB(A))	44.7	50.2	
Measurement Results	L10	(dB(A))	50.6	55.5	
	Leq	(dB(A))	48.8	53.9	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring			no construction works are being carried out during measurement.	Excavator noise Construction trucks noise Power generator noise	
Other Noise Source(s) During Monitoring				1. Public noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	4	6/7/2009



Monitoring Location		N3	N4		
Description of Location			Freefield	Facede	
Date of Monitoring			6/7/2	2009	
Measurement Start Time	е	(hhmm)	13:55	14:30	
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)	m/s)	1.4	1.3	
	L90	(dB(A))	48.8	53.3	
Measurement Results	L10	(dB(A))	62.4	61.7	
	Leq	(dB(A))	59.8	57.5	
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 (Bicycles)	1. Public noise	
Remarks					

	Name & Designation	<u>Signature</u>	Date:
Prepared by:	Jimmy Cheng	4	6/7/2009



Monitoring Location		N1	N2		
Description of Location			Façade	Façade	
Date of Monitoring			13/7/	/2009	
Measurement Start Time	е	(hhmm)	14:45	14:10	
Measurement Time Len	gth	(mins.)	30 ı	mins	
Noise Meter Model/ Ider	ntification	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	ication		Castle Gro	up, GA607	
Wind Speed	(1	m/s)	0.5	0.7	
	L90	(dB(A))	45.7	50.7	
Measurement Results	L10	(dB(A))	51.3	55.0	
	Leq	(dB(A))	49.6	53.7	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring			no construction works are being carried out during measurement.	Excavator noise Power generator noise	
Other Noise Source(s) During Monitoring				1. Public noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng		13/7/2009



Monitoring Location		N3	N4		
Description of Location			Freefield	Facede	
Date of Monitoring			13/7/	/2009	
Measurement Start Time	е	(hhmm)	13:35	13:00	
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)	1.1	0.9	
	L90	(dB(A))	42.5	47.6	
Measurement Results	L10	(dB(A))	54.9	64.9	
	Leq	(dB(A))	52.5	60.1	
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) During Monitoring			Public noise Traffic noise (Bicycles)	1. Public noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	13/7/2009
		17	



Monitoring Location			N1	N2				
Description of Location			Façade	Façade				
Date of Monitoring			20/7/2009					
Measurement Start Time	е	(hhmm)	15:03 14:25					
Measurement Time Len	gth	(mins.)	30 r	mins				
Noise Meter Model/ Ider	ntificatio	n	ACO Japan,	model 6224				
Calibrator Model/ Identif	ication		Castle Gro	up, GA607				
Wind Speed	(r	n/s)	0.4	1.3				
	L90	(dB(A))	46.8	56.4				
Measurement Results	L10	(dB(A))	52.7	61.4				
	Leq	(dB(A))	50.4	60.2				
Weather condition:			Su	nny				
Major Construction Nois Monitoring	se Sours	se(s) During	No construction works are being carried out during measurement. 1. Excavtor noise 2. Power generator noi					
Other Noise Source(s) [Ouring N	Monitoring		1. Public noise				
Remarks								

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng		20/7/2009



Monitoring Location			N3	N4				
Description of Location			Freefield	Facede				
Date of Monitoring			20/7/2009					
Measurement Start Time	е	(hhmm)	13:15	13:50				
Measurement Time Len	gth	(mins.)	30 r	mins				
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	, model 6224				
Calibrator Model/ Identif	ication		Castle Gro	oup, GA607				
Wind Speed	1)	n/s)	0.8	1.1				
	L90	(dB(A))	49.8	51.7				
Measurement Results	L10	(dB(A))	62.8	62.3				
	Leq	(dB(A))	60.7	58.6				
Weather condition:			Su	nny				
Major Construction Nois Monitoring	se Sour	se(s) During	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) Dog barking noise	1. Public noise				
Remarks								

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	20/7/2009



Monitoring Location			N1	N2					
Description of Location			Façade	Façade					
Date of Monitoring			27/072009						
Measurement Start Time	е	(hhmm)	14:45 14:10						
Measurement Time Len	gth	(mins.)	30 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	1.1					
	L90	(dB(A))	46.8	58.2					
Measurement Results	L10	(dB(A))	52.7	61.0					
	Leq	(dB(A))	50.4	60.0					
Weather condition:			Clo	udy					
Major Construction Nois Monitoring	se Sour	se(s) During	No construction works are being carried out during measurement. 1. Excavator noise 2. Power generator noise 3. Concrete curing no						
Other Noise Source(s) [Ouring N	Monitoring		1. Public noise					
Remarks									

	Name & Designation	<u>Signature</u>	Date:
		1	
Prepared by:	Jimmy Cheng	4	27/7/2009



Monitoring Location			N3	N4				
Description of Location			Freefield	Facede				
Date of Monitoring			27/7/2009					
Measurement Start Time	е	(hhmm)	13:00	13:35				
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	m/s)	0.4	0.8				
	L90	(dB(A))	42.5	49.1				
Measurement Results	L10	(dB(A))	56.7	66.7				
	Leq	(dB(A))	54.8	62.2				
Weather condition:			Clo	udy				
Major Construction Nois Monitoring	se Sour	se(s) During	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 Dog barking noise				
Remarks								

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	4	27/7/2009

Appendix F1

Water Quality
Monitoring Data Sheet

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

Date of Sampling:	2/7/200	9		Sunny	У																
Monitoring Location		M1		M2				М3			М4			C1			C2			C3	
Time (hhmm)		1110			1115			1123			1130			1140			1150		1205		
Tide Mode		mid-ebb)		mid-ebb	1	mid-ebb				mid-ebb			mid-ebb			mid-ebb			mid-ebb	1
River Condition		normal			normal			normal			normal normal			normal				normal			
Water Depth (m)		<1		< 1			< 1				< 1			< 1			< 1			< 1	
pH value		5.97		6.19			6.67			7.24 7.29			6.51			6.67					
Temperature (oC)		28.2		29.0			30.2			30.4 28.2			29.1			30.1					
Salinity (ppt)		0.0		0.0			2.9			3.8		0.0		0.0			0.2				
Turbidity (NTU)	1.3	1.4	Average	0.0	0.0	Average 0.0	11.8	12.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	2.4	2.5	Average 2.5
DO (mg/l)	8.23	8.21	Average 8.22	7.52	7.51	Average 7.52	6.25	6.26	Average 6.26	7.48	7.46	Average 7.47	7.37	7.37	Average 7.37	7.47	7.45	Average 7.46	5.08	5.06	Average 5.07
DO Saturation (%)	106	106	Average 106	99	99	Average 99	84	84	Average 84	102	102	Average	95	95	Average 95	98	98	Average 98	67	67	Average 67

Name
Prepared By: Jimmy Cheng

Signature	
	

Date 2/7/2009

remark or observation:

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

Monitoring																					
Location		M1		M2			М3				M4			C1			C2		C3		
Time (hhmm)		1045		1055				1110			1035		1135				1140		1158		
Tide Mode		mid-ebb)		mid-ebb			mid-ebb)		mid-ebb	ı		mid-ebb)		mid-ebb)		mid-ebb	ı
River Condition		Muddy			normal		Muddy				normal		normal				normal			normal	
Water Depth (m)		<1			< 1		< 1				< 1		< 1				< 1		< 1		
pH value		7.47		6.79			6.75				7.32 6.74			6.46			6.43				
Temperature (oC)		27.5		27.9			28.6			28.5 27.6			27.6			28.2					
Salinity (ppt)		0.1			0.0		4.2		3.6		0.0		0.0			0.1					
Turbidity (NTU)	17.2	17.2	Average	0.0	0.0	Average	17.9	17.9	Average	0.4	0.4	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Averag
			17.2			0.0			17.9			0.4			0.0			0.0			0.0
DO (mg/l)	7.93	7.93	Average	7.64	7.64	Average	7.01	7.01	Average	7.90	7.89	Average	7.58	7.58	Average	7.87	7.87	Average	6.72	6.72	Averag
			7.93			7.64			7.01			7.90			7.58			7.87			6.7
DO Saturation (%)	102	102	Average	99	99	Average	93	93	Average	105	105	Average	97	97	Average	101	101	Average	87	87	Averag
			102			99			93			105			97			101			8.

Name Prepared By: Jimmy Cheng



Date 3/7/2009

M1 - Direct discharge of site water from site retaining wall D without

remark or observation: proper treatment. M3- Site run-off from gabion wall site nearby

mangrove area

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	4/7/200	9		Cloudy	/																
Monitoring Location	M1		M2		М3			M4			C1			C2			C3				
Time (hhmm)	1110						1120						1140						1130		
Tide Mode	mid-ebb			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			1.1			<1			<1			<1		
pH value	7.05						6.73						6.83						6.80		
Temperature (oC)	26.4						26.9						26.6						26.8		
Salinity (ppt)	0.4						4.5						0.0						0.3		
Turbidity (NTU)	7.8	7.8	Average			Average	12.3	12.3	Average			Average	0.0	0.0	Average			Average	1.0	1.0	Average
DO (mg/l)	7.28	7.28	7.8 Average		-	#DIV/0!	4.79	4.79	Average			#DIV/0! Average	7.24	7.24	0.0 Average			#DIV/0! Average	5.76	5.76	1.0 Average
DO Saturation (%)	91	91	7.28 Average			#DIV/0! Average #DIV/0!	62	62	4.79 Average			#DIV/0! Average #DIV/0!	90	90	7.24 Average			#DIV/0! Average #DIV/0!	71	71	5.76 Average

Name
Prepared By: Jimmy Cheng



Date 4/7/2009

The reading of DO of location M3 is lower than the DO action level due to the raining before taking water sample.

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

Date of Sampling:	6/7/200	9		Sunny	У																
Monitoring Location	M1		M2			М3			M4			C 1			C2			C 3			
Time (hhmm)	1215			1205			1200			1225			1305			1315			1150		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	Muddy			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			1.1			< 1			<1			<1		
pH value	6.76			7.21			6.85			6.83			6.79			6.93			6.59		
Temperature (oC)	27.2			26.9			27.5			27.6			26.4			27.2			27.5		
Salinity (ppt)	0.0			0.0			1.2			0.3			0.0			0.0			0.1		
Turbidity (NTU)	35.7	35.7	Average 35.7	0.0	0.0	Average 0.0	15.1	15.1	Average	14.2	14.2	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	2.3	2.3	Average 2.3
DO (mg/l)	7.61	7.61	Average	7.97	7.97	Average	6.89	6.89	Average	7.54	7.54	Average	7.37	7.37	Average	7.12	7.12	Average	5.42	5.42	Average
DO Saturation (%)	96	96	7.61 Average	99	99	7.97 Average	87	87	6.89 Average	96	96	7.54 Average	94	94	7.37 Average	91	91	7.12 Average	69	69	5.42 Average

Name Prepared By: Jimmy Cheng



Date 6/7/2009 Muddy water is observed at location M1 due to the silted

remark or observation: water leakage at box culvert.

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	7/7/200	9		Sunny													
Monitoring Location		M1		M2	<u>}</u>		М3		M4			C1		C2			C3
Time (hhmm)		1255									1245						
Tide Mode		mid-ebl	0	mid-e	bb	mid-ebb			mid-ebb		mid-ebb			mid-el	ob	m	id-ebb
River Condition		normal		norm	al	r	normal		normal			normal		norm	al	n	ormal
Water Depth (m)		<1		< 1			< 1		1.1			< 1		< 1			< 1
pH value		6.61										6.87					
Temperature (oC)		28.6										29.1					
Salinity (ppt)		0.2										0.0					
Turbidity (NTU)	17.5	17.5	Average		Average		Average			Average	0.0	0.0	Average		Average		Average
			17.5		#DIV/0!		#DIV/0	!		#DIV/0!			0.0		#DIV/0!		#DIV/0
DO (mg/l)	8.11	8.11	Average		Average		Average			Average	7.65	7.65	Average		Average		Average
			8.11		#DIV/0!		#DIV/0	!		#DIV/0!			7.65		#DIV/0!		#DIV/0
DO Saturation (%)	105	105	Average		Average		Average			Average	100	100	Average		Average		Average
			105		#DIV/0!		#DIV/0	!		#DIV/0!			100		#DIV/0!		#DIV/0

Name Prepared By: Jimmy Cheng



Date 7/7/2009

Muddy water is observed at location M1 due to water remark or observation: without desitling properly discharge to the public drain at box culvert.

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	8/7/200	9		Sunny	y																
Monitoring Location		M1			M2			М3		M4			C1				C2		СЗ		
Time (hhmm)		1320			1325		1330			1310			1400			1350					
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			< 1			< 1			< 1	
pH value		7.20		7.03				6.87			6.97			7.12			6.87				
Temperature (oC)		28.9		29.5			30.7			29.7			29.3			29.6			30.5		
Salinity (ppt)		1.0			0.3			3.3			3.2			0.0			0.0			0.5	
Turbidity (NTU)	1.1	1.1	Average	0.0	0.0	Average 0.0	3.8	3.8	Average	2.3	2.3	Average 2.3	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	2.7	2.7	Average 2.7
DO (mg/l)	7.94	7.94	Average 7.94	7.48	7.48	Average 7.48	6.90	6.90	Average 6.90	7.52	7.52	Average 7.52	7.43	7.43	Average 7.43	7.15	7.15	Average 7.15	6.71	6.71	Average 6.71
DO Saturation (%)	104	104	Average	98	98	Average 98	94	94	Average 94	101	101	Average	98	98	Average 98	96	96	Average 96	91	91	Average 91

Name	Signature	Date
Prepared By: Jimmy Cheng	<u> </u>	8/7/20

remark or		
observation:_		
_	-	•

Date of Sampling:	10/7/20	09		Sunny	y																	
Monitoring Location		M1			M2			М3			M4			C1			C2		C 3			
Time (hhmm)		1425			1430		1440				1415			1445			1455			1505		
Tide Mode		mid-ebb)		mid-ebb	1	mid-ebb				mid-ebb	1		mid-ebb)		mid-ebb))		
River Condition		normal			normal		normal				normal			normal			normal			normal		
Water Depth (m)		<1			< 1			< 1			< 1			< 1			< 1			< 1		
pH value		7.35		7.18				6.97			7.08			7.24			6.72					
Temperature (oC)		30.4		31.0			31.1			31.3			30.3			30.0			31.5			
Salinity (ppt)		1.9			0.5			5.3			6.4			0.0			0.0			1.1		
Turbidity (NTU)	2.3	2.3	Average	1.3	1.3	Average	7.2	7.2	Average	3.3	3.3	Average	0.0	0.0	Average	4.3	4.3	Average	5.7	5.7	Average	
DO (mg/l)	8.08	8.08	Average 8.08	7.41	7.41	1.3 Average 7.41	7.42	7.42	7.2 Average 7.42	7.65	7.65	3.3 Average 7.65	7.35	7.35	0.0 Average 7.35	7.37	7.37	Average 7.37	6.37	6.37	5.7 Average 6.37	
DO Saturation (%)	109	109	Average	100	100	Average	103	103	Average	108	108	Average	98	98	Average 98	98	98	Average 98	80	80	Average 80	

	Name
Prepared By:	Jimmy Cheng

Signature	
7	
4	

Date 10/7/2009

remark or	
bservation:	

Date of Sampling:	13/7/20	09		Suuny	У																	
Monitoring Location		M1			M2		М3			M4			C1				C2		C3			
Time (hhmm)		1540			1550		1555			1530			1625				1615					
Tide Mode		mid-ebb)		mid-ebb	1	mid-ebb				mid-ebb			mid-ebb			mid-ebb))		
River Condition		normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)		<1		< 1				< 1			1.1			< 1			< 1			< 1		
pH value		7.09		6.81				6.90			7.13		6.96				6.93			7.27		
Temperature (oC)		30.5			31.1			31.1			31.7			30.7			29.8			29.5		
Salinity (ppt)		0.2			0.0			3.8			5.0			0.0			0.0			29.5		
Turbidity (NTU)	11.8	11.8	Average	0.0	0.0	Average 0.0	3.7	3.7	Average 3.7	4.7	4.7	Average 4.7	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	2.1	2.1	Average 2.1	
DO (mg/l)	7.72	7.72	Average 7.72	7.42	7.42	Average 7.42	7.51	7.51	Average 7.51	7.71	7.71	Average 7.71	7.52	7.52	Average 7.52	7.41	7.41	Average	6.09	6.09	Average 6.09	
DO Saturation (%)	103	103	Average	101	101	Average	103	103	Average	109	109	Average	99	99	Average 99	98	98	Average 98	80	80	Average 80	

	Name
Prepared By:	Jimmy Cheng

Signature	
<u> </u>	

Date 13/7/2009

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 14/7/2009 Sunny

Date of Sampling:	14/7/20	09		Sunny	<u> </u>																	
Monitoring Location		M1			M2		М3			M4			C 1			C2			С3			
Time (hhmm)		1610			1620		1555			1630			1510			1525			1540			
Tide Mode		mid-ebb)		mid-ebb)	mid-ebb			mid-ebb				mid-ebb	1		mid-ebb))		
River Condition		normal			normal		normal			normal			normal			normal			normal			
Water Depth (m)		<1			< 1			< 1			1.2			< 1			< 1			< 1		
pH value		7.31			7.54			7.12			7.28			6.51			6.21		6.			
Temperature (oC)		30.2			29.4		30.0				30.0		28.0				28.6		28.7			
Salinity (ppt)		1.1			0.2			5.0			4.2			0.0			0.0			0.1		
Turbidity (NTU)	5.3	5.3	Average	4.4	4.4	Average	13.7	13.7	Average	5.4	5.4	Average	0.0	0.0	Average	0.0	0.0	Average	7.8	7.8	Average	
			5.3			4.4			13.7			5.4			0.0			0.0			7.8	
DO (mg/l)	7.71	7.71	Average	7.81	7.81	Average	7.68	7.68	Average	8.27	8.27	Average	7.61	7.61	Average	8.50	8.50	Average	5.67	5.67	Average	
			7.71			7.81			7.68			8.27			7.61			8.50			5.67	
DO Saturation (%)	102	102	Average	103	103	Average	104	104	Average	112	112	Average	98	98	Average	110	110	Average	73	73	Average	
			102			103			104			112			98			110			73	

Name	Signatur
Prepared By: Jimmy Cheng	<u></u>

gnature	Date
	14/7/2009

remark or observation:

Date of Sampling:	15/7/20	09		Sunny	1										-						
Monitoring Location		M1			M2			М3			M4			C1			C2			С3	
Time (hhmm)		1650			1645			1640		1700			1610			1620			1630		
Tide Mode		mid-ebb)		mid-ebb)		mid-ebb	1		mid-ebb			mid-ebb)		mid-ebb)		mid-ebb)
River Condition		normal			Muudy			normal			normal			normal			Muddy			normal	
Water Depth (m)		<1			< 1			< 1			1.1			< 1			< 1			< 1	
pH value		6.91			7.45			7.09			7.12			7.01			6.83			6.39	
Temperature (oC)		29.2			30.8			31.4			31.6			29.3			29.3			30.2	
Salinity (ppt)		0.0			0.1			3.4			1.8			0.0			0.0			0.8	
Turbidity (NTU)	2.3	2.3	Average	186.5	186.5	Average	6.7	6.7	Average	5.9	5.9	Average	0.0	0.0	Average	45.1	45.1	Average	3.8	3.8	Average
			2.3			186.5			6.7			5.9			0.0			45.1			3.8
DO (mg/l)	7.50	7.50	Average	7.36	7.36	Average	8.26	8.26	Average	8.77	8.77	Average	7.36	7.36	Average	7.68	7.68	Average	6.03	6.03	Average
			7.50			7.36			8.26			8.77			7.36			7.68			6.03
DO Saturation (%)	98	98	Average	99	99	Average	114	114	Average	120	120	Average	97	97	Average	100	100	Average	76	76	Average
			98			99			114			120			97			100			76

Name Prepared By: Jimmy Cheng



Date 15/7/2009 Muddy water is observed at locaion C2 due to the construction works being carried out at

remark or

observation: point C2 by the HAD. Muddy water is observed at location M2 due to the construction

works being carried out beside the point M2 by Yick Hing Construction.

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	16/7/2009		Sunny	y													
Monitoring Location	M1			M2		М3		M4			C 1			C2		C3	
Time (hhmm)				1630										1615			
Tide Mode	mid-el	ob		mid-ebb		mid-ebb		mid-ebb		ı	mid-ebb			mid-ebb)	mid-ebb	1
River Condition	norma	al		normal		normal		normal			normal			Muddy		normal	
Water Depth (m)	<1			< 1		< 1		1.1			< 1			< 1		< 1	
pH value				6.65										6.87			
Temperature (oC)				31.4										29.3			
Salinity (ppt)				0.0										0.0			
Turbidity (NTU)		Average	7.1	7.1	Average	-	Average		Average			Average	33.5	33.5	Average		Average
		#DIV/0!			7.1	1	#DIV/0!		#DIV/0!			#DIV/0!			33.5		#DIV/0!
DO (mg/l)		Average	7.68	7.68	Average		Average		Average			Average	7.23	7.23	Average		Average
		#DIV/0!			7.68	1	#DIV/0!		#DIV/0!			#DIV/0!			7.23		#DIV/0!
DO Saturation (%)		Average	104	104	Average		Average		Average			Average	94	94	Average		Average
		#DIV/0!			104	i	#DIV/0!		#DIV/0!			#DIV/0!			94		#DIV/0!

Name
Prepared By: Jimmy Cheng

Signature

Date 16/7/2009

Muddy water is observed at location C2 due to the

remark or observation: construction works being carried out at location C2 by the HAD construction activity

Date of Sampling:	20/7/20	09		Sunny	У																
Monitoring Location		M1			M2			М3			М4			C1			C2			СЗ	
Time (hhmm)		1045			1050			1100		1035			1130			1120					
Tide Mode		mid-ebb)		mid-ebb			mid-ebb			mid-ebb			mid-ebb	•		mid-ebb)		mid-ebb)
River Condition		normal			normal			Muddy			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			< 1			< 1			< 1			< 1	
pH value		6.79			6.71			6.75			6.91			6.73			6.53			6.95	
Temperature (oC)		28.4			27.6			29.1			27.8			27.4			27.1			29.0	
Salinity (ppt)		0.0			0.0			1.1			0.3			0.0			0.0			0.1	
Turbidity (NTU)	11.5	11.5	Average	0.0	0.0	Average 0.0	66.0	66.0	Average 66.0	11.1	11.1	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	1.2	1.2	Average
DO (mg/l)	7.98	7.98	Average 7.98	7.94	7.94	Average 7.94	6.92	6.92	Average 6.92	7.76	7.76	Average 7.76	7.86	7.86	Average 7.86	7.54	7.54	Average 7.54	5.12	5.12	Average 5.12
DO Saturation (%)	103	103	Average 103	101	101	Average	91	91	Average 91	100	100	Average	101	101	Average	98	98	Average 98	67	67	Average 67

Name Prepared By: Jimmy Cheng



Date 20/7/2009

Muddy water was observed generated from the streamlet at remark or observation: the upstream area of LTTR. No construction activities were being carried out during measurement.

Date of Sampling:	22/7/20	09		Sunny	y	_															-
Monitoring Location		M1			M2			М3			М4			C1			C2			СЗ	
Time (hhmm)		1255			1250			1245			1305			1215			1225				
Tide Mode		mid-ebb)		mid-ebb			mid-ebb			mid-ebb)									
River Condition		normal			Muddy			normal													
Water Depth (m)		<1			< 1			< 1			< 1			< 1			< 1			< 1	
pH value		7.02			7.12			6.91			7.07			6.71			6.74			6.54	
Temperature (oC)		29.1			29.7			30.0			30.5			28.0			28.7			29.7	
Salinity (ppt)		2.2			0.7			5.9			5.1			0.0			0.0			0.8	
Turbidity (NTU)	1.3	1.3	Average	11.2	11.2	Average	4.8	4.8	Average	5.7	5.7	Average	0.0	0.0	Average	0.0	0.0	Average	2.4	2.4	Average
			1.3			11.2			4.8			5.7			0.0			0.0			2.4
DO (mg/l)	7.84	7.84	Average	7.35	7.35	Average	6.55	6.55	Average	7.11	7.11	Average	7.84	7.84	Average	7.78	7.78	Average	5.86	5.86	Average
			7.84			7.35			6.55			7.11			7.84			7.78			5.86
DO Saturation (%)	104	104	Average	97	97	Average	89	89	Average	98	98	Average	101	101	Average	100	100	Average	81	81	Average
			104			97			89			98			101			100			81

Name
Prepared By: Jimmy Cheng



Date 22/7/2009

Muddy water is observed at location M2 due to the

remark or observation: construction activities being carried carried out at Tiger

House the upper location M2

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	23/7/2009		Sunny	y														
Monitoring Location	M1			M2		М3			M4			C1			C2		C3	
Time (hhmm)				1315											1330			
Tide Mode	mid-ebb			mid-ebb	1	mid-ebb		I	mid-ebb		ı	mid-ebb	1		mid-ebb)	mid-ebb)
River Condition	normal			normal		normal			normal			normal			normal		normal	
Water Depth (m)	<1			< 1		< 1			1.1			< 1			< 1		< 1	
pH value				7.18											7.14			
Temperature (oC)				29.7											28.6			
Salinity (ppt)				1.5											0.1			
Turbidity (NTU)	A	Average	2.8	2.8	Average	Α	Average			Average			Average	0.0	0.0	Average		Average
	#	:DIV/0!			2.8	#	:DIV/0!			#DIV/0!			#DIV/0!			0.0		#DIV/0!
DO (mg/l)	A	Average	7.27	7.27	Average	A	Average			Average			Average	7.62	7.62	Average		Average
	#	:DIV/0!			7.27	#	:DIV/0!			#DIV/0!			#DIV/0!			7.62		#DIV/0!
DO Saturation (%)		Average	97	97	Average	A	Average			Average			Average	99	99	Average		Average
	#	:DIV/0!			97	#	:DIV/0!			#DIV/0!			#DIV/0!			99		#DIV/0!

Name	Signature	Date	<u> </u>	
Prepared By: Jimmy Cheng		23/7/2009	remark or observation:	

Date of Sampling: 24/7/2009 Sunny Monitoring М2 C2 Location M1 М3 М4 C1 C3 1410 1415 1420 1400 1500 1445 1450 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 < 1 < 1 1.1 < 1 < 1 < 1 Water Depth (m) 7.26 7.01 7.19 6.73 6.87 7.12 7.16 pH value 28.7 28.7 29.1 28.9 29.0 29.3 29.6 Temperature (oC) 2.6 1.1 5.9 9.6 0.0 0.0 0.5 Salinity (ppt) Average Average Average Average Average 0.0 2.2 Turbidity (NTU) 4.0 0.0 0.0 5.0 5.2 0.0 0.0 0.0 4.1 0.0 5.1 5.3 0.0 0.0 2.3 Average Average DO (mg/l) 7.94 7.92 9.48 9.50 7.29 7.27 6.77 6.75 7.83 7.83 7.88 7.86 5.71 5.73 7.93 9.49 7.28 6.76 7.83 7.87 5.72 Average Average Average Average Average Average Average DO Saturation (%) 105 105 98 98 98 98 94 94 103 103 102 102 76 76

	Name
Prepared By:	Jimmy Cheng

Signature	
<u> </u>	

105

Date 24/7/2009

98

remark or observation:

94

103

102

76

98

Date of Sampling: 27/7/2009 Sunny Monitoring М2 М4 C2 Location M1 М3 C1 C3 1610 1605 1600 1620 1530 1540 1550 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) 6.92 7.34 6.91 7.08 6.68 6.19 6.36 pH value 28.6 29.3 28.2 27.9 28.4 28.6 29.1 Temperature (oC) 0.2 0.1 1.8 1.5 0.0 0.0 0.1 Salinity (ppt) Average Average Average Average Average 0.9 4.9 Turbidity (NTU) 5.1 0.4 7.3 7.3 5.4 5.4 0.9 0.0 0.0 5.1 0.4 7.3 5.4 0.9 0.0 4.9 Average Average Average DO (mg/l) 7.58 7.58 7.44 7.44 6.91 7.59 7.59 7.54 7.54 7.52 7.52 5.43 6.91 5.43 7.58 7.44 6.91 7.59 7.54 7.52 5.43 Average Average Average Average Average Average Average DO Saturation (%) 97 96 96 91 91 100 100 97 97 97 97 69 69 97 96 91 100 97 97 69

Name
Prepared By: Jimmy Cheng

Signature	
	

Date

27/7/2009 observa

remark or	
bservation:	

Date of Sampling:	28/7/20	09		Sunny	У																
Monitoring Location		M1			M2			М3			M4			C1			C2			СЗ	
Time (hhmm)		1650			1645			1640			1700			1600			1620			1630	
Tide Mode		mid-ebb)		mid-ebb			mid-ebb			mid-ebb)		mid-ebb)		mid-ebb	1		mid-ebb)
River Condition		normal			normal			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			1.2			< 1			< 1			< 1	
pH value		6.98			7.18			6.91			6.96			6.93			6.44			6.63	
Temperature (oC)		29.7			30.1			30.6			30.6			29.1			29.3			30.1	
Salinity (ppt)		0.0			0.1			2.5			1.3			0.0			0.0			0.8	
Turbidity (NTU)	3.1	3.1	Average 3.1	8.7	8.7	Average	11.8	11.8	Average	5.8	5.8	Average 5.8	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	6.5	6.5	Average 6.5
DO (mg/l)	7.37	7.37	Average	7.02	7.02	Average	6.96	6.96	Average	7.37	7.37	Average	7.46	7.46	Average	7.62	7.62	Average	7.31	7.31	Average
DO Saturation (%)	97	97	7.37 Average	94	94	7.02 Average	94	94	6.96 Average	99	99	7.37 Average	98	98	7.46 Average	100	100	7.62 Average	95	95	7.31 Average

Name Prepared By: Jimmy Cheng



Date 28/7/2009

The reading of Turbidity at location M2 exceeded the limit level due to the construction activities being carried out at the bottleneck B of Tai Tei Tong River the Location M2

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling:	29/7/2009		Sunny	y												
Monitoring Location	M	1		M2		М3		M4		C1			C2		C3	
Time (hhmm)				1630									1620			
Tide Mode	mid-	ebb		mid-ebb)	mid-ebb		mid-ebb		mid-ebb	1		mid-ebb)	mid-ebb	1
River Condition	norr	nal		normal		normal		normal		normal			normal		normal	
Water Depth (m)	<′	I		< 1		< 1		1.1		< 1			< 1		< 1	
pH value				6.87									6.61			
Temperature (oC)				28.6									28.0			
Salinity (ppt)				0.0									0.0			
Turbidity (NTU)		Average	0.0	0.0	Average		Average		Average		Average	0.0	0.0	Average		Average
		#DIV/0!			0.0		#DIV/0!		#DIV/0!		#DIV/0!			0.0		#DIV/0!
DO (mg/l)		Average	7.33	7.33	Average	-	Average		Average		Average	7.86	7.86	Average		Average
		#DIV/0!			7.33	;	#DIV/0!		#DIV/0!		#DIV/0!			7.86		#DIV/0!
DO Saturation (%)		Average	96	96	Average		Average		Average		Average	101	101	Average		Average
		#DIV/0!			96	;	#DIV/0!		#DIV/0!		#DIV/0!			101		#DIV/0!

Name	Signature	Date			
Prepared By: Jimmy Cheng		29/7/2009	remark or observation:	_	

Date of Sampling: 31/7/2009 Sunny Monitoring М2 М4 C2 Location M1 М3 C1 C3 1040 1050 1100 1140 1130 1120 1110 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 < 1 < 1 1.1 < 1 < 1 < 1 Water Depth (m) 7.04 6.82 6.96 7.47 6.65 7.31 7.17 pH value 29.5 29.0 30.7 28.9 30.6 30.9 29.7 Temperature (oC) 0.0 0.0 2.3 1.7 0.0 0.0 0.3 Salinity (ppt) Average Average Average Average Average Turbidity (NTU) 1.1 1.1 0.0 0.0 3.7 3.7 11.8 11.8 0.0 0.0 0.0 0.0 4.1 1.1 0.0 3.7 11.8 0.0 0.0 4.1 Average Average DO (mg/l) 8.14 7.85 7.69 7.72 7.72 8.11 5.60 8.14 8.03 8.03 7.85 7.69 8.11 5.60 8.14 8.03 7.85 7.69 7.72 8.11 5.60 Average Average Average Average Average Average Average DO Saturation (%) 106 106 105 105 107 107 104 104 101 101 107 107 75 75 106 105 107 104 101 107 75

Name
Prepared By: Jimmy Cheng



Date 31/7/2009

remark or observation:

Appendix F2

Water Quality
Monitoring Lab report



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC0	907000	14							Date of Issue		: 09-0	07-2009
Client*	: Enviro	onmental	Pioneers	& Solu	tions Lim	nited			I	P.O. Receive	d	: 08-0	09-2008
Client Address*	: 8/F, 0	Chaiwan I	Industrial	Centre	Building	, 20 Lee (Chui	ng Street, C	haiwan,	нк.			
	DSD	Contract	No. DC/2	006/11	l - Draina	age Impro	vem	ent in Sout	hern Lan	tau & Constr	ucti	on of	
Project*	: Mui V	Vo Village	e Seweraç	ge Phas	e 1	····	·····		*******************************	A /			
Test Location	:G/F	, 20 Pak	Kung Stre	et, Hu	ng Hom,	Kowloon	•		[Date Started		: 02-0	07-2009
W.O. No.*	;			Sar	mple Typ	oe* : R	iver	Water	[Date Comple	ted	: 03-0	07-2009
GCE Serial No.	: WQM	072009		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096	<u>-</u>	Γest Unit No.		: CH (08258
Analysis Descrip	tion	Т	est Metho	od	Units				Quality	Control Resu	ılts		
- VARONI (Alta and and and and and and and and and an						Metho Blank		QC 500 m	ıg/L Qı	C Duplicate	R	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	АРНА	A 20ed 25	540 D	mg/L	< 1.0		499		493		1.2	24.1
			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	of the total decision and the second	
TEST RESULTS	ı	npling r/Time	02 July	2009	/ 11:40	02 July	200	09 / 11:50	02 Jul	y 2009 / 12:	05		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	< 1.0	<	1.0	< 1.0		< 1.0	4.6	4.3			
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	МЗ	M3 Duplic	ate	M4	M4 Duplicate
TEST RESULTS	i	pling /Time	02 July	2009	/ 11:10	02 July	200	09 / 11:15	02 Jul	y 2009 / 11:	23	02 Ju	ly 2009 / 11:30
	LOD	Units				:							
Suspended Solids (SS)	1	mg/L	4.2	4	.1	1.5		1.7	10.4	10.1		9.3	9.2
* : Information p	rovided	by client	!					l		<u></u>		I	
Note: This la	ahorator	, has no	raenoneihi	ility on	eampling	and all t	ho t	act raculte r	olato on	ly to the sam	nla.	tastad :	na ragaiwad
note: this is	aboratory	7 1103 110	геаропато	inty Off	admihii i	g and an i	ווט נ	est results i	ciate on	ly to the same	hie	testeu (as receiveu.
Remarks :						Cl							
						End -							
Tested By :		K.L. FC	ONG				ΙqΑ	proved Sign	atory :) L	K	
							Nai	me	:	GU C			
Checked By :		GU CH	IN				Pos	st	:	Chem	ist		

: GCC090700022

Report No.



TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

: 09-07-2009

Date of Issue

Client*	: Envir	onmental	Pioneers	& Solu	tions Lim	nited				P.O. Received	d	: 08-0	9-2008
Client Address*	: 8/F,	Chaiwan I	ndustrial	Centre	Building	, 20 Lee (Chur	ng Street, C	 haiwa	n, HK.			
										antau & Constr	ucti	on of	
Project*	: Mui \	Wo Village	Sewerag	ge Phas	e 1			· · · · · · · · · · · · · · · · · · ·					
Test Location	:G/F	, 20 Pak	Kung-Stre	et, Hu	ng Hom,	Kowloon				Date Started		: 03-0	7-2009
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	iver	Water	T. V. 1	Date Complet	ted	: 04-0	7-2009
GCE Serial No.	: WQN	/1072009		GC	E Reg. N	lo. : G	CE	081096		Test Unit No.		: CH C	8258
Analysis Descrip	tion	T	est Metho	od	Units				Quali	ty Control Resu	ılts		
MAY (MAY) a solu				Land Land		Metho Blank		QC 500 m	g/L	QC Duplicate	R	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	20ed 25	540 D	mg/L	< 1.0)	499		494		1.0	25.3
			Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol	Limit ≤ 514	≤	±5%	21 ≤ R ≤ 29
	San	nple ID	C1	C1 Di	uplicate	C2	C2	2 Duplicate	СЗ	C3 Duplica	ate		
TEST RESULTS		npling e/Time	03 July	2009 ,	/ 11:35	03 July	200	09 / 11:40	03 J	uly 2009 / 11:	58		1
	LOD	Units											
Suspended Solids (SS)	1	mg/L	< 1.0	1	.1	< 1.0		< 1.0	4.4	4.7			
	San	nple ID	M1	M1 Di	uplicate	M2	M2	2 Duplicate	M3	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	03 July	2009 /	10:45	03 July	200	09 / 10:55	03 J	uly 2009 / 11:	10	03 July	/ 2009 / 10:35
18.10 P M document	LOD	Units											
Suspended Solids (SS)	1	mg/L	8.4	8	.3	1.4		1.6	16.2	17.2		5.4	5.5
*: Information p		·	esponsibi	ility on	sampling	ı and all ti	ne to	est results r	elate d	only to the sam	ple ·	tested a	s received.
Remarks : Lo	cation N	И1 & WE3	and Loc	ation M		4 are the End -		e location.					
Гested Ву :		K.L. Fo	ng				Арр	proved Signa	ntory	:	<u></u>		
Shook of B		O					Nan			: GU CI		_	
Checked By :		GU CHI	N				Pos	t		:Chem	ist		

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC090700030 Date of Issue : 09-07-2009 Client* : Environmental Pioneers & Solutions Limited P.O. 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 : Mui Wo Village Sewerage Phase 1 Project* Date Started : 04-07-2009 Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. W.O. No.* Sample Type* : River Water Date Completed: 06-07-2009 GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 : CH 08258 Test Unit No.

Analysis Descrip	tion	Т	est Metho	od	Units				Qualit	y Control Resu	ilts		
		**************************************				Metho Blank		QC 500 m	ng/L	QC Duplicate	RPD	%	Spike 25 mg/L
Suspended Solid	s (SS)	АРН	4 20ed 25	540 D	mg/L	< 1.0)	497		502	-1.0)	24.5
	· · · · · · · · · · · · · · · · · · ·		Acce	eptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol	Limit ≤ 514	≤ ± 5	5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	⊔plicate	C2	C2	2 Duplicate	С3	C3 Duplic	ate		
TEST RESULTS		npling e/Time	04 July	2009	/ 11:40				04 J	uly 2009 / 11:	30		_!
	LOD	Units											
Suspended Solids (SS)	1	mg/L	< 1.0	<	1.0				4.5	4.3			7
	Sam	ple ID	M1	M1 D	uplicate	M2	М2	2 Duplicate	МЗ	M3 Duplic	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	04 July	2009 /	11:10			** 1 = 1 · ·	04 J	uly 2009 / 11:	20		
į	LOD	Units							1	- 1000			
Suspended Solids (SS)	1	mg/L	5.0	4	.9				12.0	12.1			

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
Checked By	:	GU CHIN	Post	:	Chemist

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

*: Information provided by client



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC0	9070009	98 							Date of Issue		: 16-0	7-2009
Client*	: Enviro	nmental	Pioneers	& Solut	tions Lim	nited				P.O. Received	l	: 08-0	9-2008
Client Address*	: 8/F, C	haiwan I	ndustrial	Centre	Building,	, 20 Lee (Chur	ng Street, Cl	haiwan,	нк.			
	DSD (Contract	No. DC/2	006/11	- Draina	age Impro	vem	ent in South	nern Lan	tau & Constr	uctio	n of	
Project*	: Mui V	Vo Village	Sewera	ge Phas	e 1								
Test Location	:G/F,	, 20 Pak	Kung Str	eet, Hui	ng Hom,	Kowloon	•		<u> </u>	Date Started		: 06-0	7-2009
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	iver	Water	1	Date Complet	ed	: 07-0	7-2009
GCE Serial No.	: WQM	072009		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096		Test Unit No.		: <u>CH (</u>)8258
Analysis Descrip	tion	Т.	est Meth	od	Units				Quality	Control Resu	lts		
			,			Metho Blank		QC 500 m	g/L Q	C Duplicate	RF	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	A 20ed 2!	540 D	mg/L	< 1.0)	492		486	1	.2	25.3
			Acce	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	C	2 Duplicate	C3	C3 Duplica	ate		
TEST RESULTS	Sampling Date/Time 06 July 2009 / 13:05 06 July 2009 / 13:15								06 Jul	y 2009 / 11:	50		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	1.1		1.3	1.5		1.4	3.8	3.8			
	Sam	ple ID	M1	M1 D	uplicate	M2	M.	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	06 July	2009	/ 12:15	06 July	200	09 / 12:05	06 Jul	y 2009 / 12:	00	06 Ju	ly 2009 / 12:25
	LOD	Units		A CONTRACTOR AND A CONT		:							
Suspended Solids (SS)	1	mg/L	15.9	1	6.1	1.1		1.3	9.5	9.3		6.7	6.3
* : Information p	rovided	by client	•			:	·		<u> </u>		.		
Note: This la	aboratory	y has no	responsit	oility on	samplin	g and all t	he 1	est results r	elate or	ly to the sam	ple t	ested a	as received.
Remarks :													
						End							
Tooted Pr		V 1 F/	NG.				۸-	proped Sic-	otom	. /	ر ۲	Ĺ	
Tested By :		K.L. FC	טוועט				Ар Na	proved Sign me	αιυΓΥ	GU C	HIN		
Checked By :		GU CH	IN				Pos		:	: Chem			



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC0	9070010)3 							Date of Issue	:	16-0	17-2009
Client*	: Enviro	nmental	Pioneers	& Solut	tions Lim	ited			P.O. Received	ı :	08-0	9-2008	
Client Address*	: 8/F, C	haiwan l	ndustrial	Centre	Building,	20 Lee 0	hur	g Street, Ch	aiwan,	, нк.			what w
	DSD (Contract	No. DC/2	006/11	- Draina	ige Impro	vem	ent in South	ern Laı	ntau & Constr	uction	of	
Project*	: Mui V	Vo Village	Sewerag	ge Phas	e 1					- January			
Test Location	:G/F,	20 Pak	Kung Stre	et, Hu	ng Hom,	Kowloon				Date Started		07-0	7-2009
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	ver	Water		Date Complet	ed :	08-0	7-2009
GCE Serial No.	: WQM	072009		_ GC	E Reg. N	o. : <u>G</u>	CE (081096		Test Unit No.	:	CH (08258
Analysis Descrip	tion	т	est Meth	od	Units				Quality	Control Resu	lts		
			L CALII.A II.AINV			Metho Blank		QC 500 mg	g/L C	1C Duplicate	RPC)%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	A 20ed 2	540 D	mg/L	< 1.0)	499		491	1.6	6	24.0
			Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ Co	ontrol L	imit ≤ 514	≤ ±	5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C2	2 Duplicate	СЗ	C3 Duplic	ate		
TEST RESULTS	Date/Time 07 July 2009 / 12:55												
	LOD	Units											
Suspended Solids (SS)	1	mg/L	1.7		1.9			J					ALLEY COLLOCATION
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	М3	M3 Duplic	ate	М4	M4 Duplicate
TEST RESULTS	1	npling e/Time	07 July	2009	/ 12:45								
	LOD	Units											
Suspended Solids (SS)	1	mg/L	10.2	1	0.4						- Linda discussion and the		
* : Information p	rovided	by client	'	•			 	<u>'</u>		·			
Note: This I	aborator	v has no	responsib	ility on	samplin	g and all t	he t	est results r	elate o	nly to the san	nple te	sted	as received.
		,		,						•			
Remarks :													
						End							
Tested By :		K.L. F(ONG				Ар	proved Signa	atory	: <u>/</u>	11	<u> </u>	
•						mental and a remove	Na:		-	: GU C	HIN		
Checked By :		GU CH	IIN				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.	: GCC0	0907001	11							Date of Issue	:	16-0	7-2009
Client*	: Envir	onmental	Pioneers	& Solut	tions Lim	nited			F	P.O. Received	i :	08-0	9-2008
Client Address*	: 8/F, 0	Chaiwan	Industrial	Centre	Building	, 20 Lee 0	Chung	Street, C	haiwan,	нк.			
	DSD	Contract	No. DC/2	006/11	- Draina	age Impro	vemei	nt in South	nern Lan	tau & Constr	uctior	of	
Project*	: Mui V	Vo Villag	e Seweraç	je Phas	e 1								
Test Location	:G/F	, 20 Pak	Kung Stre	et, Hu	ng Hom,	Kowloon	• • • • • • • • • • • • • • • • • • • •			Date Started	• • • • • •	08-0	7-2009
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	iver V	/ater	[Date Complet	ed :	09-0	7-2009
GCE Serial No.	: WQN	1072009		GC	E Reg. N	lo. : <u>G</u>	CE 08	31096		Гest Unit No.	:	CH ()8258
Analysis Descrip	tion	Т	est Metho	od	Units				Quality	Control Resu	lts		
	N					Metho Blank	[ΩC 500 m	g/L Q	C Duplicate	RPE)%	Spike 25 mg/l
Suspended Solid	is (SS)	APH	A 20ed 25	540 D	mg/L	< 1.0		497		502	-1.	0	22.9
			Acce	ptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol Li	mit ≤ 514	≤ ±	5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 Du	uplicate	C2	C2 [Duplicate	СЗ	C3 Duplica	ite		
TEST RESULTS	i	npling e/Time	08 July	2009	/ 14:00	08 July	2009	/ 13:50	08 Jul	y 2009 / 13:	40		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	1.9	2	2.1	2.2		2.7	4.2	3.8			
	Sam	ple ID	M1	M1 Di	uplicate	M2	M2 I	Duplicate	М3	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	08 July	2009 /	13:20	08 July	2009	/ 13:25	08 Jul	y 2009 / 13:	30 0)8 Jul	y 2009 / 13:10
	rod	Units											
Suspended	1	mg/L	3.9	3	,	2.0		2.2	11.6	11.2		5.5	5.9

GEOTECHNICS & CONCRETE ENGINEERING (H. K.) LTD. 6 KO SHAN RD., GROUND FL., HUNG HOM, KOWLOON, HONG KONG. FAX NO.: 852-2765 8034 TEL.: 852-2365 9123



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : 16-07-2009 : GCC090700129 Date of Issue Report No. P.O. Received : 08-09-2008 : 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 Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 10-07-2009 Date Completed: 11-07-2009 W.O. No.* : River Water Sample Type* : CH 08258 GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. **Quality Control Results** Analysis Description **Test Method** Units Method RPD% Spike 25 mg/L QC 500 mg/L QC Duplicate Blank

Suspended Solida	ids (SS) API		20ed 25	40 D	mg/L	< 1.0)	501		495	'	1.2	23.5
			Acce	ptance	Criteria	< 2.5 mg	g/L 4	175 ≤ C	ontrol Li	nit ≤ 514	≤	±5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 Du	uplicate	C2	C2 Du	plicate	С3	C3 Duplic	ate		
TEST RESULTS	Date/Time		10 July	2009 /	14:45	10 July	2009 /	14:55	10 July	, 2009 / 15	:05		L
	LOD	Units										~	
Suspended Solids (SS)	1	mg/L	< 1.0	<	1.0	3.4	3.	.7	5.7	5.2			
	Sam	ple ID	M1	M1 D	uplicate	M2	M2 Du	ıplicate	М3	M3 Dupli	cate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	10 July	2009 /	/ 14:25	10 July	2009 /	14:30	10 Jul	/ 2009 / 1 ²	l:40	10 July	, 2009 / 14:15
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.0	2	.8	2.2	2.	.5	9.5	9.5		5.1	5.2

*: Information provided by client

Note:	This I	aboratory has no responsibility on sampling and a	II the test results relate	only to	the sample tested as received.
Remarks :	_	Et	nd		
Tested By	:	K.L. FONG	Approved Signatory Name	:	GU CHIN
Checked B	у:	GU CHIN	Post	:	Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC0	907001	95 							Date of Issue		: 21-0	07-2009 	
Client*	: Enviro	onmental	Pioneers	& Solu	tions Lim	ited			1	P.O. Received	i	: 08-0	9-2008	
Client Address*	: 8/F, C	Chaiwan I	ndustrial	Centre	Building,	, 20 Lee (Chur	ng Street, Cl	haiwan,	HK.			- Ash	
	DSD (Contract	No. DC/2	006/11	- Draina	age Impro	vem	ent in South	nern Lan	tau & Constr	uctio	on of		
Project*	: Mui V	Vo Village	e Seweraç	ge Phas	e 1								A a fa W	
Test Location	: <u>G/F</u>	, 20 Pak	Kung Stre	et, Hu	ng Hom,	Kowloon	• • • • • • • •			Date Started		: 13-0	7-2009	
W.O. No.*	:			Sar	nple Typ	ie* : <u>R</u>	River Water Date Completed : 14-07-2009							
GCE Serial No.	: <u>WQM</u>	072009		_ GC	E Reg. N	lo. : <u>G</u>	CE (081096		Test Unit No.		: <u>CH</u>	08258	
Analysis Descrip	Analysis Description Test Method Ur							Quality Control Results						
	4004.00					Metho Blank		QC 500 m	g/L Q	C Duplicate	Rf	PD%	Spike 25 mg/L	
Suspended Solid	olids (SS) APHA 20ed 2540 D mg/L					< 1.0)	498		503		1.0	23.7	
	Accept					<2.5 m	g/L	475 ≤ C	ontrol Li	mit ≤ 514	≤ :	±5%	21 ≤ R ≤ 29	
	Sample ID C1 C1 D					C2	C2 Duplicate		СЗ	C3 Duplica	ate			
TEST RESULTS		npling e/Time	13 July	C1 C1 Duplicate 13 July 2009 / 16:25		13 July	200	09 / 16:15	13 Jul	y 2009 / 16:	05			
	LOD	Units					The state of the s		:					
Suspended Solids (SS)	1	mg/L	5.6	į	5.2	< 1.0	PANAMANAN PANAMA	< 1.0	6.4	6.7	CORRESPONDE AND THE PERSON AND THE P			
	Sam	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate	
TEST RESULTS		npling e/Time	13 July	2009	/ 15:40	13 July	200	09 / 15:50	13 Jul	y 2009 / 15:	55	13 Ju	ly 2009 / 15:30	
77-17-11-11-11-11-11-11-11-11-11-11-11-1	LOD	Units								on-vorman community				
Suspended Solids (SS)	1	mg/L	5.7	ε	.0	2.3		2.6	10.9	10.9		5.5	5.9	
*: Information p	rovided l	by client												
Note: This la	aboratory	y has no	responsib	ility on	sampling	g and all t	he t	est results r	elate on	ly to the sam	iple t	tested	as received.	
Remarks :														
						End -								
Tested By :		K.L. FO)NG				Δn	proved Signa	atorv •		راز	Į.		
, .			- · • -				Nai	•	:	GU C	≝√. HIN	*		
Checked By :		GU CH	IN				Pos	st	:	Chem	iist			



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC)907002	00 							Date of Issue		: 21-0	7-2009 	
Client*	: Envire	onmental	Pioneers	& Solut	tions Lim	nited			F	P.O. Received	i	: 08-0	9-2008	
Client Address*	: 8/F, 0	Chaiwan I	ndustrial	Centre	Building	, 20 Lee (Chur	ng Street, C	haiwan,	нк.				
	DSD	Contract	No. DC/2	2006/11	- Draina	age Impro	vem	ent in South	nern Lan	tau & Constr	uctio	n of		
Project*	: Mui V	Vo Village	Sewera	ge Phas	e 1									
Test Location	:G/F	, 20 Pak	Kung Str	eet, Hu	ng Hom,	Kowloon	•		[Date Started		: 14-0	7-2009	
W.O. No.*	:	The second secon		Sar	nple Typ	ne* : <u>R</u>	River Water Date Completed : 15-07-2009							
GCE Serial No.	: <u>WQN</u>	1072009	·~	_ GC	E Reg. N	lo. : <u>G</u>	CE (081096		Гest Unit No.		: <u>CH (</u>)8258	
Analysis Descrip	tion	т	est Meth	od	Units		Quality Control Results							
**************************************						Method Blank		QC 500 m	g/L Q	L QC Duplicate		PD%	Spike 25 mg/L	
Suspended Solid	s (SS)	APHA	4 20ed 2	540 D	mg/L	< 1.0)	497	1	501	-0	8.0	25.0	
		1	Acce	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	СЗ	C3 Duplica	ate	 		
TEST RESULTS		mple ID			/ 15:10	14 July	200	09 / 15:25	14 Jul	y 2009 / 15:	40		,	
	LOD	Units												
Suspended Solids (SS)	1	mg/L	1.1	1	1.3	< 1.0		< 1.0	6.2	6.5				
	Sam	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	М3	M3 Duplic	ate	M4	M4 Duplicate	
TEST RESULTS		npling e/Time	14 July	2009	/ 16:10	14 July	200	09 / 16:20	14 Jul	y 2009 / 15:	55	14 Jul	y 2009 / 16:30	
M-6 \$	LOD	Units												
Suspended Solids (SS)	1	mg/L	4.1	3	.9	2.6		2.5	11.5	10.9		6.3	6.5	
* : Information p	rovided	by client						'			h.			
Note: This la	aborator	y has no	responsib	oility on	sampling	g and all t	he t	est results r	elate on	ly to the sam	ple t	ested a	is received.	
Remarks :		V	·								10-m-1	····		
						End -								
Tested By :		K.L. FC	ONG				Api	proved Signi	atory :	Lunt]!	<u> </u>		
•							Nar		:	GU C	HIN			
Checked By :		GU CH	IN				Pos	st	:	Chem	ist			



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC090700218 Date of Issue : 21-07-2009 Client* : Environmental Pioneers & Solutions Limited P.O. 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 : 15-07-2009 W.O. No.* Sample Type* : River Water Date Completed: 17-07-2009 GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 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 mg/L < 1.0 502 491 2.2 24.1 Acceptance Criteria < 2.5 mg/L $475 \le Control \ Limit \le 514$ $\leq \pm 5\%$ $21 \le R \le 29$ Sample ID C1 C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 15 July 2009 / 16:10 15 July 2009 / 16:20 15 July 2009 / 16:30 Date/Time LOD Units Suspended 1 mg/L < 1.0 < 1.0 31.2 32.4 9.5 10.0 Solids (SS) Sample ID M1 M1 Duplicate M2 M2 Duplicate МЗ M3 Duplicate Μ4 M4 Duplicate **TEST RESULTS** Sampling 15 July 2009 / 16:50 15 July 2009 / 16:45 15 July 2009 / 16:40 15 July 2009 / 17:00 Date/Time LOD Units Suspended mg/L 2.5 1 2.5 122.8 128.4 11.2 11.6 6.1 6.4 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. : GCC090700226 Date of Issue : 21-07-2009 Client* : Environmental Pioneers & Solutions Limited P.O. 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 : 16-07-2009 W.O. No.* Sample Type* : River Water Date Completed: 17-07-2009 GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 **Analysis Description Test Method** Units **Quality Control Results** Method QC 500 mg/L RPD% QC Duplicate Spike 25 mg/L Blank Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 502 491 2.2 24.1 Acceptance Criteria < 2.5 ma/L475 ≤ Control Limit ≤ 514 ≤ ±5% $21 \le R \le 29$ C1 C1 Duplicate Sample ID C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 16 July 2009 / 16:15 Date/Time LOD Units Suspended 1 mg/L 17.8 18.2 Solids (SS) Sample ID M1 M1 Duplicate M2 M2 Duplicate М3 M3 Duplicate Μ4 M4 Duplicate **TEST RESULTS** Sampling 16 July 2009 / 16:30 Date/Time LOD Units Suspended 1 mg/L 3.7 3.6 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: 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

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Report No.	: GCC0	9070036	65 							Date of Issue		: 30-0	7-2009 				
Client*	: Enviro	onmental	Pioneers	& Solut	tions Lim	nited				P.O. Received	l :	: 08-0	9-2008				
Client Address*	: 8/F, C	Chaiwan I	ndustrial	Centre	Building,	, 20 Lee (Chur	ng Street, Cl	haiwan,	HK.							
	DSD (Contract	No. DC/2	006/11	- Draina	age Impro	vem	ent in South	nern Lar	tau & Constr	uctio	n of					
Project*	: Mui V	Vo Village	Seweraç	ge Phas	e 1			· · · · · · · ·									
Test Location	: G/F	, 20 Pak	Kung Stre	eet, Hui	ng Hom,	Kowloon	•			Date Started		: 20-0	7-2009				
W.O. No.*	:	Sample Type* : River Water								Date Completed : 21-07-2009							
GCE Serial No.	: WQM072009 GCE Reg. No. : GCE 081096							081096		Test Unit No.		: CH 0	8258				
Analysis Descrip	tion	ion Test Method Units								Control Resu	lts						
						Metho Blank		QC 500 m	g/L Q	C Duplicate	RP	PD%	Spike 25 mg/L				
Suspended Solid	s (SS)	APHA	\ 20ed 2!	540 D	mg/L	< 1.0)	504		496	1	.6	24.1				
			Acce	eptance	Criteria	<2.5 m	<2.5 mg/L 475 ≤ 0		ontrol Limit ≤ 514		≤ ±5%		21 ≤ R ≤ 29				
	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	C3	C3 Duplica	ate						
TEST RESULTS	7	npling e/Time	20 July	2009	/ 11:30	20 July	200	09 / 11:20	20 Ju	ly 2009 / 11:	10						
Marsh Assessment of the State of Assessment of	LOD	Units															
Suspended Solids (SS)	1	mg/L	1.8		1.9	1.7		1.9	4.0	3.7							
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	М3	M3 Duplica	ate	M4	M4 Duplicate				
TEST RESULTS		npling e/Time	20 July	2009	/ 10:45	20 July	200	09 / 10:50	20 Ju	ly 2009 / 11:	00	20 Jul	y 2009 / 10:35				
	LOD	Units															
Suspended Solids (SS)	1	mg/L	6.8	6	5.4	2.3	***************************************	2.1	45.0	44.6		10.4	10.8				
* : Information p	rovided	by client	1			•				<u> </u>			·				
Note: This la	aborator	y has no	responsib	oility on	sampling	g and all t	he t	test results r	elate or	aly to the sam	ple t	ested a	s received.				
		•	'	,	•	•				•							
Damanka .																	
Remarks :						End											
						LIIU											
Tested By :		K.L. FO	ONG				Αn	proved Sign	atorv	. /		人					
. Joiled Dy .		14.2.1					Na		y	: GU C	برکے HIN		Wasania a sanara				
Checked By :		GU CH	IIN				Pos			: Chem							



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC0	907003	73							ate of Issue		: 30-0)7-2009 			
Client*	: Enviro	nmental	Pioneers	& Solut	tions Lim	ited			F	2.0. Received	ŀ	: 08-0	9-2008			
Client Address*	: 8/F, C	Chaiwan I	ndustrial	Centre	Building,	. 20 Lee (Chur	ng Street, Cl	haiwan,	нк.						
	DSD (Contract	No. DC/2	2006/11	- Draina	ige Impro	vem	ent in South	nern Lan	tau & Constr	uctio	on of				
Project*	: Mui V	Vo Village	e Sewera	ge Phas	e 1											
Test Location	:G/F	, 20 Pak	Kung Stre	eet, Hui	ng Hom,	Kowloon	·		E	Date Started : 22-07-2009						
W.O. No.*	:			Sar	nple Typ	ie* : <u>R</u>	iver	Water	E	ate Complet	ed	: 24-0	7-2009			
GCE Serial No.	: WQM	072009		_ GC	E Reg. N	lo. : <u>G</u>	CE (081096		est Unit No.		: <u>CH</u>	08258			
•																
Analysis Descrip	tion	т	est Meth	od	Units				Quality	ality Control Results						
						Metho Blank		QC 500 m	g/L Q	Duplicate	RI	PD%	Spike 25 mg/L			
Suspended Solid	s (SS)	APHA	A 20ed 2	540 D	mg/L	< 1.0)	499		494		1.0	25.3			
			Acce	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	СЗ	C3 Duplica	ite					
TEST RESULTS		npling r/Time	22 July	, 2009	/ 12:15	22 July	200	09 / 12:25	22 Jul	y 2009 / 12:	35	***************************************	an bannayay			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	1.3		1.2	< 1.0		< 1.0	2.9	3.3						
	Sam	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	M3	M3 Duplica	ete	M4	M4 Duplicate			
TEST RESULTS		npling e/Time	22 July	2009	/ 12:55	22 July	200	09 / 12:50	22 Jul	y 2009 / 12:	45	22 Ju	ly 2009 / 13:05			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	3.7	3	3.8	9.0		8.9	9.4	9.3		6.5	6.2			
* : Information p	rovided	by client	•	·												
Note: This la	aborator	y has no	responsit	oility on	samplin	g and all t	he t	test results r	elate on	ly to the sam	ple	tested	as received.			
Remarks :						End										
Tested By :		K.L. FO	ONG				•	proved Sign	atory :	000	2	<u>/</u>				
Checked By :		GU CH	IIN				Na:		:	GU C Chem						



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC(09070038	31 							Date of Issue 		: .30-()7-200 9 			
Client*	: Envir	onmental	Pioneers	& Solu	tions Lin	nited				P.O. Received	Ė	: 08-0	09-2008			
Client Address*	: 8/F, 0	Chaiwan I	ndustrial	Centre	Building	, 20 Lee (Chui	ng Street, Cl	haiwan,	нк.			2007 O 700 000 100 pm			
	DSD	Contract	No. DC/2	2006/11	1 - Draina	age Impro	vem	ent in South	nern Lan	itau & Constr	uctio	on of				
Project*	: Mui V	Vo Village	Sewera	ge Phas	se 1											
Test Location	:G/F	, 20 Pak	Kung Str	eet, Hu	ng Hom,	Kowloon	on. Date Started : 23-07-20						7-2009			
W.O. No.*	:			Sai	mple Typ	oe* : <u>R</u>	iver	Water	Market Market	Date Comple	ted	: 24-0	7-2009			
GCE Serial No.	: WQM	1072009		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096		Test Unit No.		: <u>CH</u>	08258			
Analysis Descrip	tion	Te	est Meth	od	Units	}			Qual			lity Control Results				
	TO STORY OF A HARMA WAS A MANAGE A A					Metho Blank		QC 500 mg	g/L Q	C Duplicate	RF	PD%	Spike 25 mg/L			
Suspended Solid	Accept					< 1.0)	499		494	1	.0	25.3			
						<2.5 m	ig/L 475 ≤ Cont		ontrol Li	trol Limit ≤ 514		±5%	21 ≤ R ≤ 29			
<u> </u>	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	СЗ	C3 Duplica	ate					
TEST RESULTS		npling e/Time				23 July	200	09 / 13:30								
	LOD	Units									j					
Suspended Solids (SS)	1	mg/L				< 1.0		< 1.0								
	San	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	МЗ	M3 Duplic	ate	M4	M4 Duplicate			
TEST RESULTS		npling e/Time				23 July	200	09 / 13:15								
	LOD	Units														
Suspended Solids (SS)	1	mg/L				3.1		3.0		**						
* : Information p	rovided	by client	1	<u> </u>	,	!	ı			1		····				
Note: This la	aborator	y has no r	esponsib	oility on	sampling	g and all t	he t	est results re	elate on	ly to the sam	ple t	ested a	as received.			
										•	•					
Remarks :																
						End -										
Tested By :		K.L. FO	NG				Apı	proved Signa	atory :		<u>)</u>	<u> </u>				
							Nar	me	:	GU C	HIN					
Checked By :		GU CHI	N				Pos	:t		Chem	ist					



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC	0907003		• • • • • • • • • • • • • • • • • • • •						Date of Issue	· 	: 30-(07-2009
Client*	: Envir	onmental	Pioneers	& Solu	tions Lin	nited				P.O. Receive	d	: 08-0	09-2008
Client Address*	: 8/F,	Chaiwan I	ndustrial	Centre	Building	, 20 Lee	Chu	ng Street, C	haiwan,	нк.			
	DSD	Contract	No. DC/2	006/11	l - Draina	age impro	ven	ent in Sout	hern Lar	ntau & Constr	uctio	on of	
Project*	: Mui \	Wo Village	e Seweraç	ge Phas	ie 1								
Test Location	:G/F	, 20 Pak	Kung Stre	eet, Hu	ng Hom,	Kowloor)		······································	Date Started		: 24-0	07-2009
W.O. No.*	:	•		Sar	mple Typ	oe* : <u>F</u>	liver	Water		Date Comple	ted	: 25-0	07-2009
GCE Serial No.	: WQN	1072009		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096		Test Unit No.	•	: <u>CH</u>	08258
Analysis Descrip				Quality	Control Resu	ılts							
						Metho Blank		QC 500 m	ıg/L Q	C Duplicate	RPD%		Spike 25 mg/L
Suspended Solid	pended Solids (SS) APHA 20ed 2540 D mg/L					< 1.0	0	505		496	1	.8	24.5
	Acceptance Criteria					<2.5 m	ıg/L	475 ≤ C	ontrol Li	imit ≤ 514	≤ ±5%		21 ≤ R ≤ 29
	San	nple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	С3	C3 Duplica	ate		
TEST RESULTS		npling e/Time	24 July	2009	/ 15:00	24 July	200	09 / 14:45	24 Jul	y 2009 / 14:	30		L
·	LOD	Units											
Suspended Solids (SS)	1	mg/L	< 1.0	<	1.0	< 1.0		< 1.0	5.1	4.9			
	San	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate
TEST RESULTS		npling e/Time	24 July	2009 /	/ 14:10	24 July	200	9 / 14:15	24 Jul	y 2009 / 14:	20	24 Jul	ly 2009 / 14:00
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.4	3	.1	2.8		2.9	10.5	10.9		5.6	5.5
* : Information p	rovided	by client		•						4	.!.		-
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11100	iborator	y 1143 110 1	eaponaioi	iiity Off	σαπιμιπίζ	janu an t	116 [est results r	eiate on	iy to the sam	pie t	ested a	is received.
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Tested By :		K.L. FC	NG				App Nar	proved Signa	atory :	GU CI		_	
Checked By :		GU CH	N				Pos		:	Chem			



# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : 04-08-2009 Date of issue : GCC090700412 Report No. : 08-09-2008 P.O. Received : Environmental Pioneers & Solutions Limited Client* 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 : Mui Wo Village Sewerage Phase 1 Project* : 27-07-2009 Date Started G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Test Location Date Completed: 28-07-2009 : River Water Sample Type* W.O. No.* : CH 08258 Test Unit No. : GCE 081096 GCE Reg. No. GCE Serial No. : WQM072009 Quality Control Results Units **Test Method** Analysis Description Spike 25 mg/L Method QC Duplicate RPD% QC 500 mg/L Blank 25.7 1.4 498 505 < 1.0 APHA 20ed 2540 D mg/L Suspended Solids (SS)  $21 \le R \le 29$ ≤ ±5% 475 ≤ Control Limit ≤ 514 <2.5 mg/L Acceptance Criteria C3 Duplicate C2 Duplicate C3 C1 Duplicate C2 C1 Sample ID 27 July 2009 / 15:50 Sampling 27 July 2009 / 15:40 TEST RESULTS 27 July 2009 / 15:30 Date/Time Units LOD 4.3 4.5 < 1.0 Suspended < 1.0 2.7 2.6 mg/L 1 Solids (SS) M4 Duplicate M4 M3 Duplicate М3 M2 Duplicate M2 M1 Duplicate M1 Sample ID 27 July 2009 / 16:20 27 July 2009 / 16:00 27 July 2009 / 16:05 TEST RESULTS Sampling 27 July 2009 / 16:10 Date/Time Units LOD 6.4 6,6 10.6 10.9 2.7 2.9 Suspended 4.6 4.6 mg/L 1 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 : K.L. FONG Tested By **GU CHIN** Name Chemist Post GU CHIN Checked By



# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : 04-08-2009 Date of Issue : GCC090700420 Report No. : 08-09-2008 P.O. Received : Environmental Pioneers & Solutions Limited Client* 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 : Mui Wo Village Sewerage Phase 1 Project* G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 28-07-2009 Test Location Date Completed: 30-07-2009 : River Water Sample Type* W.O. No.* : CH 08258 Test Unit No. : GCE 081096 GCE Reg. No. GCE Serial No. : WQM072009 **Quality Control Results** Units **Test Method** Analysis Description Method Spike 25 mg/L RPD% QC 500 mg/L QC Duplicate Blank 25.7 1.0 497 502 < 1.0 mg/L APHA 20ed 2540 D Suspended Solids (SS) ≤ ±5%  $21 \le R \le 29$ 475 ≤ Control Limit ≤ 514 < 2.5 mg/L Acceptance Criteria C3 Duplicate C3 C2 C2 Duplicate C1 Duplicate C1 Sample ID 28 July 2009 / 16:30 28 July 2009 / 16:20 TEST RESULTS Sampling 28 July 2009 / 16:00 Date/Time LOD Units 7.0 6.6 Suspended < 1.0 < 1.0 mg/L < 1.0 < 1.0 1 Solids (SS) M4 Duplicate M4 M3 Duplicate М3 M2 Duplicate M2 M1 Duplicate Sample ID M1 28 July 2009 / 17:00 28 July 2009 / 16:40 28 July 2009 / 16:45 TEST RESULTS Sampling 28 July 2009 / 16:50 Date/Time LOD Units 7.0 6.9 11.2 11.5 Suspended 8.2 8.2 2.4 2.7 mg/L 1 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 : K.L. FONG Tested By **GU CHIN** Name Chemist Post **GU CHIN** Checked By :

# TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Date of Issue : 04-08-2009

eport No. :	GCC090	700438						Da	ate or issue	. 0-		
ient* :	Environ	nental Pi	oneers &	Soluti	ons Limit	ed		P.	O. Received	: 08	8-09	-2008
ient Address* :	8/F Ch	aiwan Inc	dustrial Co	entre E	Building,	20 Lee Ch	nung Street, Cha	iwan, <u>F</u>	ıK			
ent Address" :	DSD Co	otract No	n. DC/200	06/11	- Drainag	je improve	ement in Southe	rn Lant	au & Constru	action of	f	
-i+* ·			Sewerage									
•						Cowloon.		D	ate Started	: 2	9-07	-2009
	-						ver Water		ate Complet	ed : 3	0-07	-2009
1.O. No.* :					nple Type				est Unit No.	_		3258
CE Serial No. :	WQM0	72009		GCI	E Reg. No	o. : <u>GC</u>	CE 081096		est Offit No.			
nalysis Descripti	ion	Te	st Metho	d	Units		(	Quality	Control Resu	ılts		<del></del>
						Method Blank	1 QC 500 mg	g/L Q	C Duplicate	RPD%	6	Spike 25 mg/L
Suspended Solids	s (SS)	дрна	20ed 25	40 D	mg/L	< 1.0	502		497	1.0		25.7
,			Acce	ptance	Criteria	< 2.5 m	g/L 475 ≤ Co	ontrol Li	imit ≤ 514	≤ ±5	%	21 ≤ R ≤ 29
	Samı	ole ID	C1	C1 D	uplicate	C2	C2 Duplicate	СЗ	C3 Duplic	ate		
TEST RESULTS		pling /Time				29 July	2009 / 16:20					
	LOD	Units										
										ļ		
Suspended Solids (SS)	1	mg/L				1.4	1.5				.,	
	Sam	ple ID	M1	M1	Duplicate	M2	M2 Duplicate	M3	M3 Dupli	cate	M4	M4 Duplicat
TEST RESULTS	1	npling e/Time				29 July	y 2009 / 16:30					
	LOD	Units								ļ		
Suspended Solids (SS)	1	mg/L				2.3	2.5					
* : Information						<u> </u>		.—-	*			
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Tested By	:	K.L.	FONG		_,		Approved Sig	gnatory				
,							Name		•	J CHIN		
Checked By	:	GU C	CHIN				Post		:C	nemist		

GEOTECHNICS & CONCRETE ENGINEERING (H. K.) LTD. 6 KO SHAN RD., GROUND FL., HUNG HOM, KOWLOON, HONG KONG. FAX NO.: 852-2765 8034 TEL.: 852-2365 9123



## TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : 04-08-2009 Date of Issue : GCC090700446 Report No. : 08-09-2008 : Environmental Pioneers & Solutions Limited P.O. Received Client* 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 : 31-07-2009 Test Location Date Completed: 01-08-2009 W.O. No.* Sample Type* : River Water GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 : WQM072009 GCE Serial No. **Quality Control Results Test Method** Units **Analysis Description** Method Spike 25 mg/L RPD% QC 500 mg/L QC Duplicate Blank 498 505 -1.4 25.1 APHA 20ed 2540 D < 1.0 Suspended Solids (SS) mg/L  $475 \le Control \ Limit \le 514$ ≤ ±5%  $21 \le R \le 29$ Acceptance Criteria < 2.5 mg/L C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate Sample ID C1 **TEST RESULTS** Sampling 31 July 2009 / 11:40 31 July 2009 / 11:30 31 July 2009 / 11:20 Date/Time LOD Units Suspended 6.2 5.7 1.2 2.7 2.7 1 mg/L 1.4 Solids (SS) M4 Duplicate M1 Duplicate М2 M2 Duplicate МЗ M3 Duplicate M4 Sample ID М1 **TEST RESULTS** Sampling 31 July 2009 / 10:50 31 July 2009 / 11:10 31 July 2009 / 10:40 31 July 2009 / 11:00 Date/Time LOD Units Suspended 3.0 2.9 11.5 11.2 11.4 11.2 1 3.8 4.0 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	
Tested By	:	K.L. FONG	Approved Signatory :	
		- MTO	Name : GU CHIN	
Checked By	:	GU CHIN	Post : Chemist	

Appendix G

Monitoring Schedule
for July 2009

# **Environmental Pioneers and Solutions Limited**

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

Master Schedule of EM&A works in July 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6/28	6/29	6/30	7/1	7/2	7/3	7/4
				WQM at: 10:30	WQM, EWQM at: 10:02	additional WQM at: 11:25
				Site Inspection		
7/5	7/6	7/7	7/8	7/9	7/10	7/11
	WQM at: 11:56 Noise monitoring	additional WQM at: 12:50	WQM at: 13:04		WQM at: 14:07 Ecological Survey Site Inspection	
7/12	7/13	7/14	7/15	7/16	7/17	7/18
	WQM at: 15:39	WQM at: 16:14	WQM at: 16:56	additional WQM at: 16:20		
	Noise monitoring				Ecological Survey Site Inspection	
7/19	7/20	7/21	7/22	7/23	7/24	7/25
	WQM at: 10:40		WQM at: 12:29	additional WQM at: 13:20	WQM at: 14:04	
	Noise monitoring				Site Inspection	
7/26	7/27	7/28	7/29	7/30	7/31	8/1
	WQM at: 16:06	WQM at: 16:48	additional WQM at: 16:25		WQM at: 10:00	
	Noise monitoring				Site Inspection	

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

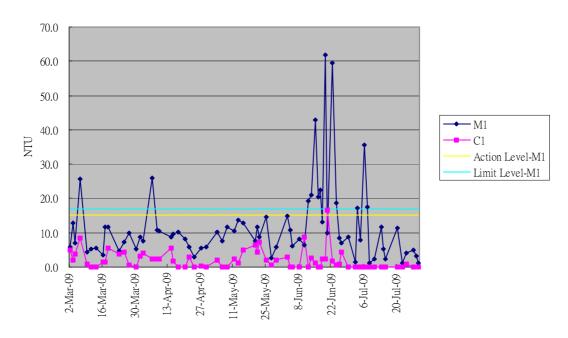
Environmental	Protection / Mitigation Measures	Implementation	Follow-up
	Total of Militarion Measures	_	_
Aspect		status	action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Implemented	
	Use of frequent watering for 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;	Implemented	-
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	Defects found on May 09	Ongoing
	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	-
TOISE	Adoption of movable noise barriers and temporary noise barriers	stage	-
	Application of good site practices mentioned in EM&A manual Clause 3.8.1		-
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.	Defects found on June 09	Ongoing
	Temporary ditches should be provided to facilitate	Defects found in this	Ongoing
	run-off discharge into appropriate watercourses, via a silt retention pond. No site run-off should enter the freshwater marshes at Luk Tei Tong.	reporting month	
	Sand/ silt removal facilities such as sand traps, silt traps		Ongoing
	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.	reporting month	
		Deficiencies found in	Ongoing
	be discharged into silt removal facilities.	this reporting month	
	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.	Implemented	-
	Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce potential of soil erosion.	Defect found in this month	Follow up actions were taken. Defects were settled on 27 July
	Open stockpiles of construction materials or construction wastes on-site of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms.	reporting month	Ongoing
	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 applicable	-
	The excavation and widening works for the drainage improvements to the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei Tong River	Implemented	-
	and Luk Tei Tong By-pass Channel should be carried out in sections (approximately 300 -400 m in length) and in dry condition.		

Environmental	Protection / Mitigation Measures	Implementation	Follow-up
Aspect		status	action
	Maintenance desiliting 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 desiliting 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.	Deficiencies found in this reporting month	Ongoing
	Construction wastes should be managed and disposed to the designated public fill and landfill areas in acceptable manner.		-
	All waste disposals managed in a proper manner i.e. trip ticket system implementation.	Implemented	-

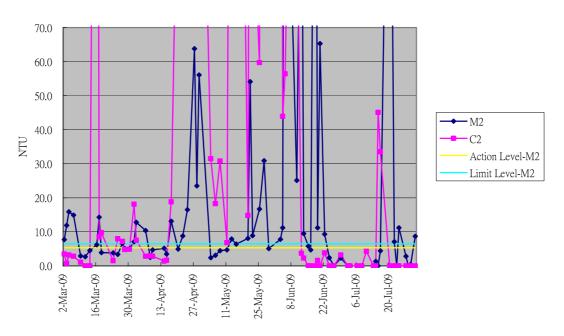
# Appendix I

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

#### Graphical Plot of Turbidity Trend M1&C1 (Apr - July 09)

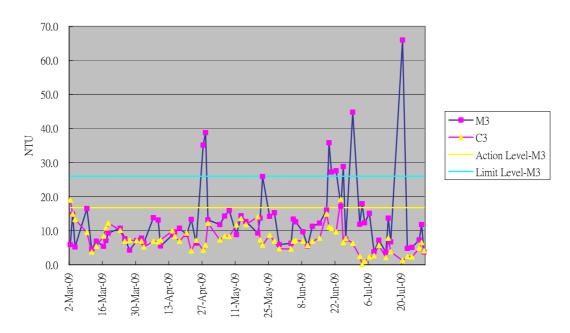


#### Graphical Plot of Turbidity Trend M2&C2 (Apr - July 09)

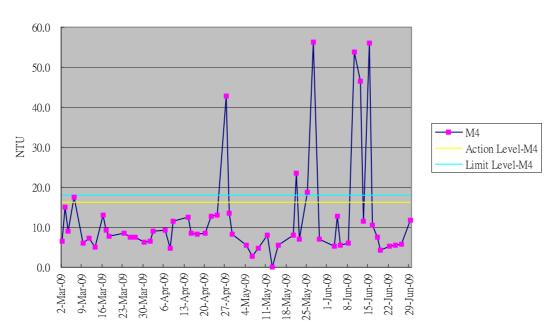


Remarks: The reading of M1 on  $3^{rd}$ ,  $6^{th}$  and  $7^{th}$  July 2009 is 17.2, 35.7 and 17.5, M2 on  $15^{th}$   $16^{th}$   $22^{nd}$  and  $28^{th}$  July 2009 is 186.5, 7.1, 11.2 and 8.7, M3 on  $3^{rd}$  and  $20^{th}$  July 2009 is 17.9 and 66.0 which was over the range of the plot.

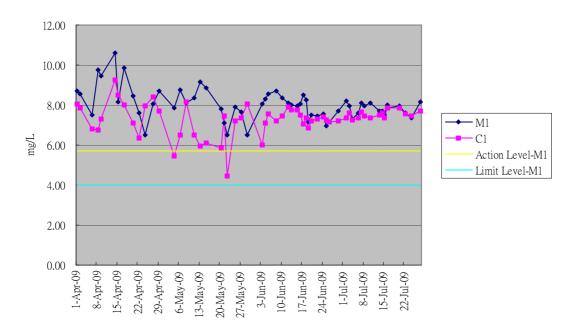
#### Graphical Plot of Turbidity Trend M3&C3 (Apr - July 09)



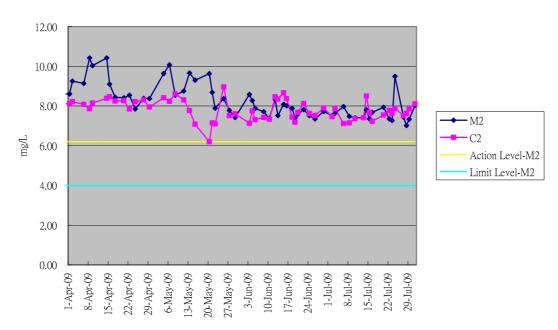
## Graphical Plot of Turbidity Trend M4 (Apr - July 09)



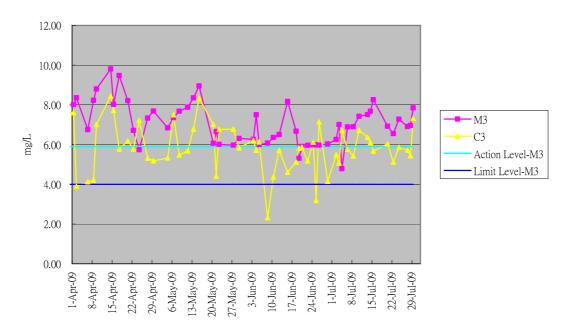
## Graphical Plot of Dissolved Oxygen Trend M1&C1 (Apr - July 09)



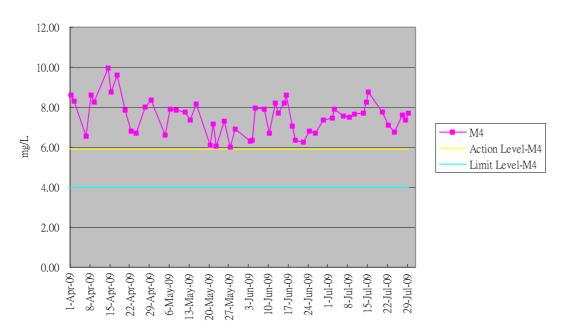
# Graphical Plot of Dissolved Oxygen Trend M2&C2 (Apr - July 09)



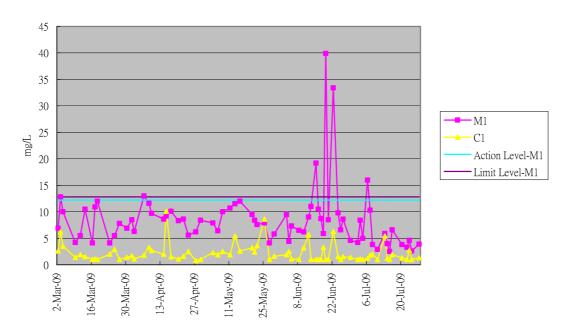
#### Graphical Plot of Dissolved Oxygen Trend M3&C3 (Apr - July 09)



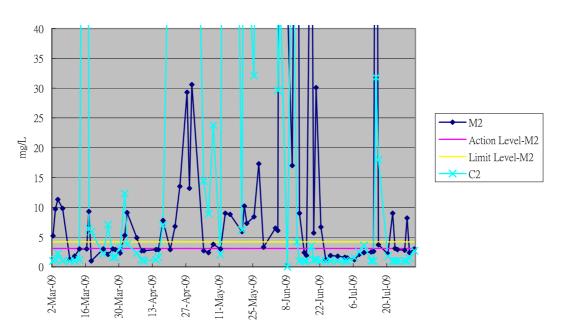
## Graphical Plot of Dissolved Oxygen Trend M4 (Apr - July 09)



#### Graphical Plot of Suspended Soild M1&C1 (Apr - July 09)

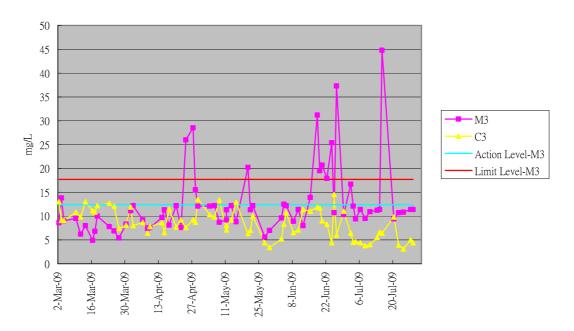


# Graphical Plot of Suspended Soild M2&C2 (Apr - July 09)

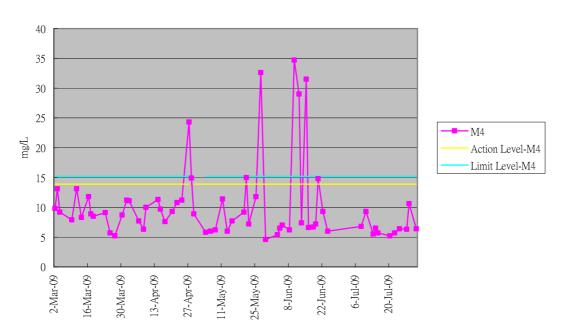


Remarks: The reading of M1 on  $6^{th}$  July 2009 is 16, M2 on  $15^{th}$ ,  $16^{th}$ ,  $22^{nd}$ ,  $23^{rd}$  and  $28^{th}$  June 2009 is 125.6, 3.7, 9, 3.1 and 8.2, M3 on  $3^{rd}$  and  $20^{th}$  July is 16.7 and 44.8 which was over the range of the plot.

#### Graphical Plot of Suspended Soild M3&C3 (Apr - July 09)

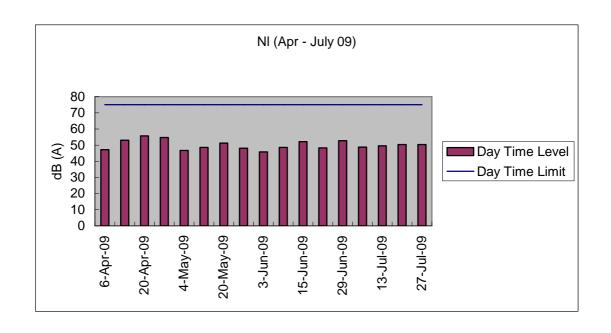


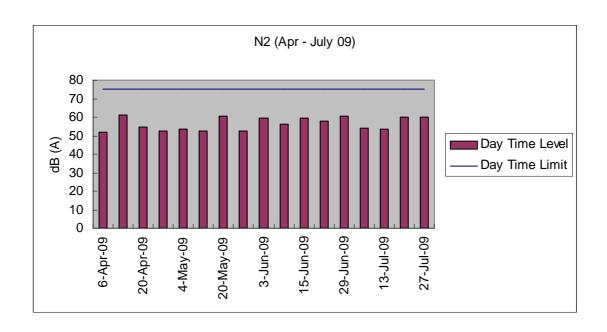
# Graphical Plot of Suspended Soild M4 (Apr - July 09)

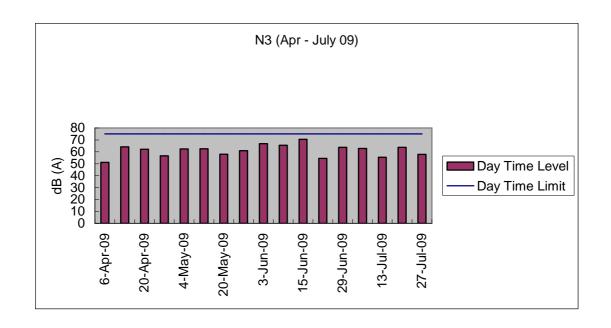


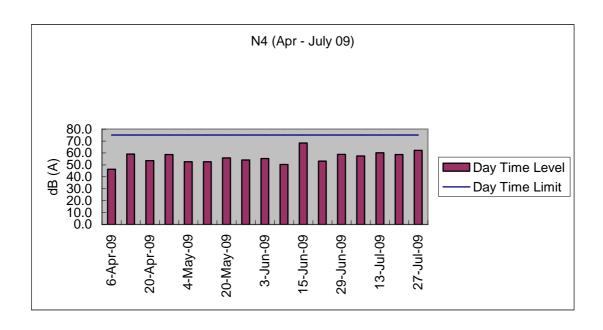
Appendix J

Graphical plot of noise monitoring results









Appendix K

**Ecological Survey Report** 

for the mangrove area at Luk Tei Tong

# Ecological Survey Report for the mangrove area at Luk Tei Tong

# **Background**

In response to the concerns from green groups on the mangrove area to the east of Luk Tei Tong River, contractor took action to install pipes between Luk Tei Tong River and the mangrove area on 25 May 2009 as agreed on a meeting in mid May.

The inlet pipes from Luk Tei Tong River to the mangrove area consist of two sections. The first section is between the mangrove area wetland and the excavation area. The second section is between the excavation area and Luk Tei Tong River.

The inlet pipes would be constructed at a level of 1.7mPD so as to allow water to flow naturally from Luk Tei Tong River during high tide into the wetland.

Meanwhile river water would be pumped into the mangrove areas from the river at high tide. The tidal effects on the mangroves shall be maintained at all times throughout the remaining part of the river works.

A monitoring for the mangrove area was conducted, weekly for one month starting form 27 May 2009 after installation of the twin pipes. Thereafter, the monitoring will be monthly till the completion of gabion wall construction and the original water inlet is reinstated (tentatively by the end of August 2009).

The objectives of the ecological monitoring are to:

- to document the completion installation and proper operation of the temporary twin 400mm pipes
- to document the general health condition of the mangrove community at Luk Tei Tong
- to evaluate reinstatement of the natural tidal flow

#### Method

Field survey was conducted on 24 July 2009. This is the first monthly monitoring for the concerned mangrove area.

The survey was conducted during low tide period (around 4pm). Photos of the construction site, including the twin inlet pipes and the mangrove communities were taken for documentation. The condition of the pipe was checked, and the health condition of the mangroves were observed and recorded.

#### Results

The installed inlet pipes were general in fair condition. It was noted that sand bags and part of the bund supporting the end of inlet pipe at Luk Tei Tong River disappeared and probably washed away by recent rainstorms. One pipe outlet was covered by the plastic sheet previously covering the bund (**Photo 1**). During the survey the water level was below the pipe openings, and therefore no water flow between the mangroves and was observed.

The mangrove communities were more exposed during the current survey. Most of the dominant mangrove or mangrove associated species, including *Phragmites australis*, *Aegiceras corniculatum* and *Acrostichum aureum* were in fair conditions (**Photos 2**). The latter two species had somewhat more yellowing and dry leaves (**Photos 3 and 4**), but no signs of mortality were observed. Mortality of a dominant mangrove associate, *Acanthus ilicifolius*, was prominent especially at the patch near the margin of the northern pond (**Photo 5**), while survival of other *Acanthus* stands appeared to be stabilized (**Photo 6**). A few individuals of another less dominant species, *Kandelia obovata*, also had fallen leaves and appeared dead. Mangrove fauna including mangrove crabs and fishes were observed, and they appeared active during the survey period.

#### **Conclusions and Recommendations**

The temporary bunds on the Long Tei River side should be repaired and stabilized in order to support the inlet pipes.

It is anticipated that the gabion installation of this section of Luk Tei Tong River will be completed soon. It is recommended that the new box culvert should be reinstated to its original level. With all temporary bunds removed and the stream bed reinstated to its original condition, it is expected that original tidal exchange pattern could be restored.

The majority of the mangrove plants inside the concerned area were still in good conditions, but partial mortality of a dominant mangrove associate, *Acanthus ilicifolius*, was observed. With the reinstatement of the box culvert, it is expected that these mangrove associate plants would recover gradually after.

The next monthly mangrove monitoring would be conducted in August 2009.

