Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

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

October 2010

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EXECUTIVE SUMMARY

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

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

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

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

Furthermore, impact monitoring for water quality was conducted. Total 22 non-compliance events of water quality criteria were recorded in this reporting period. No particular observation of defective site activities were found causing water contamination and such conditions were believed to be mainly attributed by natural fluctuation.

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

There was no complaint, notification of any summons and successful prosecutions against the project received during the reporting period.

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

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

1. Introduction

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

2. Project Information

2.1 Construction program

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

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

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

2.2 Project organization

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

The environmental management structure and is shown in Fig 2.2.1.

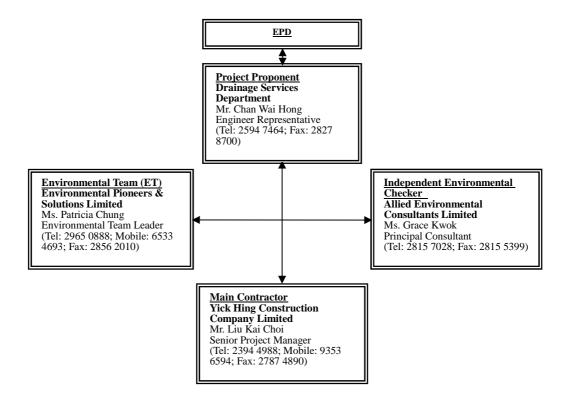


Figure. 2.2.1 Environmental Management structure for the project

2.3 Key personal contact information chart

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

3. Construction Stage

3.1 Construction activities in the reporting month

Major activities in the reporting month included the followings:

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

3.2 Construction activities for the coming month

Proposed key construction works in the coming month will include:

- 1. Construction of inlet of LTT bypass channel.
- 2. Construction of gabion wall at PNH River, fish ladder section.
- 3. Construction of surface channel at PNH, fish ladder section.
- 4. Construction of gabion wall at TTT River bottleneck A.
- 5. Landscaping works.

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

Tuble 112.11 Equipment East for I tolke Wolfmen									
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 GA607	IEC 942 Type 1	1						
Wind speed indicator	Kestrel K1000	N/A	1						
Remarks: Calibration	details for the sound level me	ter is given in Append	lix C for						

Table 4.2.1 Equipment List for Noise Monitoring

reference

4.3 Monitoring Locations

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

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

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

Table 4.3.1 Noise Monitoring Locations during Construction Phase

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

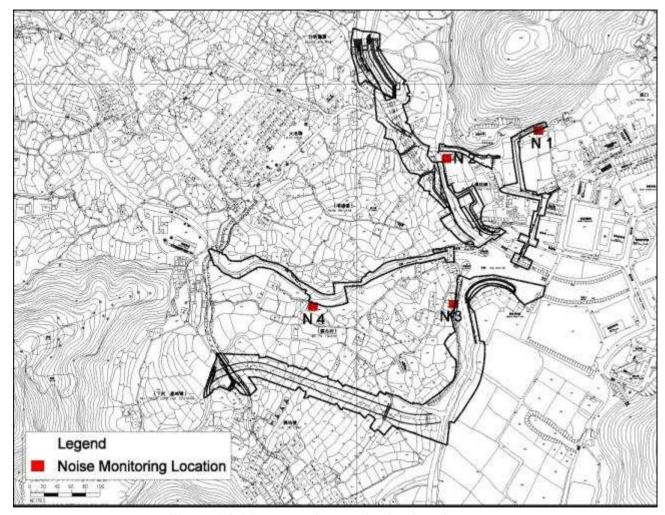


Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 4.4.1. The results, ranged between 46.2 dB(A) and 60.7 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	$L_{eq 30 mins}$	4-Oct-10	15:50	60.7	75	N	Cloudy					
N1	L _{eq 30mins}	11-Oct-10	12:15	51.5	75	N	Cloudy					
N1	L _{eq 30mins}	18-Oct-10	14:35	52.3	75	N	Sunny					
N1	L _{eq 30mins}	25-Oct-10	12:45	54.7	75	N	Sunny					
N2	L _{eq 30mins}	4-Oct-10	15:16	46.2	75	N	Cloudy					
N2	L _{eq 30mins}	11-Oct-10	11:40	50.9	75	N	Cloudy					
N2	L _{eq 30mins}	18-Oct-10	14:00	49.3	75	N	Sunny					
N2	L _{eq 30mins}	25-Oct-10	12:10	44.7	75	N	Sunny					
N3*	L _{eq 30mins}	4-Oct-10	14:45	53.5	75	N	Cloudy					
N3*	L _{eq 30mins}	11-Oct-10	13:25	47.4	75	N	Cloudy					
N3*	L _{eq 30mins}	18-Oct-10	13:25	56.6	75	N	Sunny					
N3*	L _{eq 30mins}	25-Oct-10	11:35	50.5	75	N	Sunny					
N4	L _{eq 30mins}	4-Oct-10	14:10	50.3	75	N	Cloudy					
N4	L _{eq 30mins}	11-Oct-10	12:50	50.3	75	N	Cloudy					
N4	L _{eq 30mins}	18-Oct-10	12:50	48.9	75	N	Sunny					
N4	L _{eq 30mins}	25-Oct-10	10:55	56.3	75	N	Sunny					

Remarks: Raw datasheet for noise monitoring are attached in Appendix E for reference.

Remark*: The equivalent noise level of N3 is corrected by +3 dB from the raw data result due to the fact that free field measurement was carried out in the location.

4.5 Action and Limit level for Construction noise

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

There was no exceedance recorded in the reporting month.

Table 4.5.1 Action and Limit Levels for Construction noise								
Time Period Action Level Limit Level								
0700 – 1900 hours on normal weekdays	When one documented complaint is received	75dB(A)						

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

Table 4.5.2 Event / Action Plan for Construction Noise

EVENT	ACTION													
	ET	IC(E)	ER	Contractor										
Action Level	 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.	 Confirm receipt of notification of failure in writing; Notify Contractor; Require Contractor to propose remedial measures for the analysed noise problem; Ensure remedial measures properly implemented; 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.

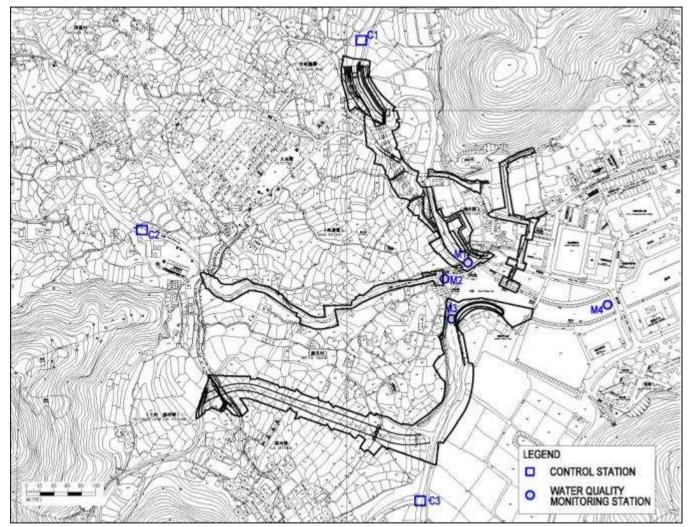


Figure 5.3.1 Water Quality Monitoring Locations

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

Total 22 non-compliance events of water quality limits (Turbidity and Suspended Solids) were recorded in this reporting month according to the established level. ET has arranged site investigations for the exceedance events. No particular observations of defective site activities were found causing the exceedance and such conditions were believed to be attributed by natural fluctuation.

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

Table 5.5.1 Water quality monitoring results in October 2010

		M1			M2			М3			M4		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	
Turbidity (NTU)	0.0	7.1	1.0	0.0	0.0	0.0	0.0	12.5	2.8	0.0	10.3	1.9	
DO (mg/l)	8.5	10.2	9.0	8.2	9.7	8.8	6.1	10.1	8.5	6.6	10.4	8.6	
Suspended Solid (mg/l)	1.3	5.5	3.1	1.0	3.1	1.8	1.2	8.5	4.7	2.9	11.0	4.6	

		C1		C2			C3		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	0.0	1.4	0.3	0.0	1.8	0.4	2.4	13.8	6.8
DO (mg/l)	8.1	9.9	8.8	8.1	9.7	8.7	7.4	8.8	7.9
Suspended Solid (mg/l)	1.0	3.9	1.8	1.0	2.9	1.5	4.6	12.8	7.2

^{*} 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						
rarameters	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level					
Turbidity (NTU)	15.2	16.9	5.3	6.5	16.8	26.0	16.2	18.0					
DO (mg/L)	5.7	4.0	6.2	4.0	5.9	4.0	5.9	4.0					
SS (mg/L)	12.2	12.8	3.1	4.2	12.4	17.7	13.9	15.2					

Remarks:

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

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

Table 5.6.3 Event and action Plan for Water Quality

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

5.7 Water Quality Mitigation Measures

Construction Run-off and Drainage

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

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

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

5.8 Water Monitoring Schedule for the Next reporting period

Water monitoring scheduled for the next reporting period are 2, 3, 5, 8, 10, 11, 17, 18, 19, 22, 24, 26 and 29 November 2010.

6. Ecology Monitoring

6.1 Ecological Monitoring Parameters

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

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

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

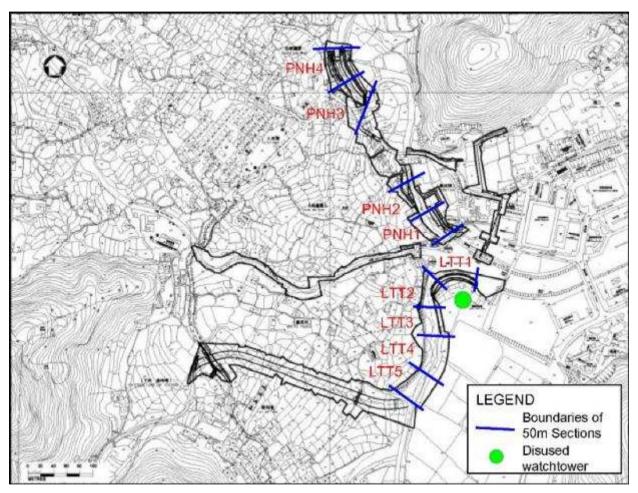


Figure 6.1 Ecological Monitoring Locations

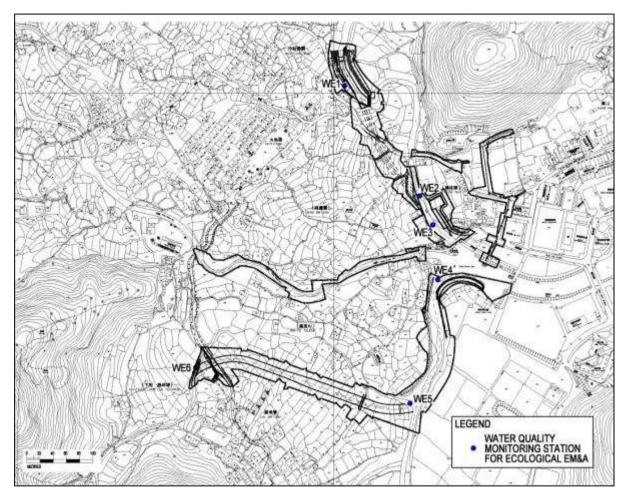


Figure 6.2 Ecological Water Quality monitoring locations

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

Vegetation

Surveys were conducted on 27 October 2010. During the current monitoring session, new rock gabion wall was under construction. Stream bank and stream bed of PNH3 was completely cleared. Stream bank of PNH4 was mostly cleared and the old weir and associated vegeation was removed as part of the site clearance works under the project.

During the current monitoring session, construction work is almost completed along PNH N section. The walk through survey recorded a total of 27 species, including 13 trees, 5 herb and 3 grass species (Appendix D1) on PNH N section. 19 of the species recorded are natives, while 8 were exotics. Remnants of vegetation including native trees (e.g. *Macaranga tanarius*) and grasses species (e.g. *Microstegium ciliatum*) were still seen along the east stream bank. No species of conservation interest was recorded. No quantitative surveys were carried out on both PNH3 and PNH4 due to vegetation clearance and construction works on stream banks as part of the site clearance works under the project.

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

Terrestrial Fauna

Surveys were conducted on 29 October 2010.

Three 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			2		CW
	sinensis					
Yellow-browed	Phylloscopus				1	CW
	borealis					
Japanese	Zosterops japonica				6	CW
White-eye						

CW = common and widespread

Two species dragonfly was recorded in the proposed work area of the Pak Ngan Heung River (Table 6.5.3) in September 2010. Both are common in Hong Kong.

Table 6.5.3 Dragonfly in Pak Ngan Heung River

Common names	Latin names	PNH 1	PNH 2	PNH 3	PNH 4	Commonness & distribution
Green Skimmer	Orthetrum sabina				2	С
Wandering Glider	Pantala flavescens	12			25	A

A = abundant

Aquatic fauna and fish

The major construction works for the fish ladder inside PNH3 have been finished, and the flow in this section was restored. Therefore the PNH 3 was covered by the present monitoring again. 7 species of fish and 2 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. Predaceous Chub was recorded in the recently finished fish ladder and

it demonstrated that the design of the fish ladder could provide habitat for stream fish.

Table 6.5.4 Aquatic Invertebrates and fish in Pak Ngan Heung

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

^{+ =} 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 27 October 2010. During the current survey, construction of concrete channel bank and rock gabions are completed. Some renmants of vegetation and mangroves remained at both LLT1 and LLT2 respectively.

The walk through survey recorded a total of 20 species, including 7 tree, 4 herb and and 7 grass species (Appendix D3). 13 species recorded are natives, while 7 were exotics. No quantitative survey was carried out due to vegetation clearance on stream banks as part of the site clearance works under the project.

Terrestrial Fauna

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

Surveys were conducted on 29 October 2010.

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

Table 6.5.6 Avifauna in Luk Tei Tong River

Common names	Latin names	LTT	LTT	LTT	LTT	LTT	Commonness
		1	2	3	4	5	& distribution
Little Egret	Egretta garzetta	2					CW
Common Sandpiper	Actitis hypoleucos	2					CW
Chinese Bulbul	Pycnonotus sinensis				2	4	CW
Rufous-backed	Lanius schach			1			CW
Shrike							

CW = common and widespread,

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

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				2		C
Wandering Glider	Pantala flavescens	19			12	16	A

A = abundant, C = common

Aquatic invertebrates and fish

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

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

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

^{+ =} 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 29 October 2010.

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

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

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

Ecological Water Quality Monitoring (EWQM)

EWQM was conducted on 6 October 2010. Monitoring results are summarized in Table 6.9. Detailed on-site measurements and laboratory report are presented in Appendix D4 and D5.

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

To review the results in Table 6.9 in general, the measured results of Suspended Solids and Turbidity measured at WE5 and WE6 at LTT River were higher than the results taken at baseline monitoring shown in Table 6.10. Such condition was believed to be caused by construction of inlet of LTT bypass channel and contractor was advised to implement corrective actions as soon as possible.

Table 6.9 Summarized Ecological water quality monitoring results (6 October 2010)

Parameters	Limit of detection	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1	2.65	3.90	4.85	5.50	17.50	57.70
Nitrogen (Ammonia) (mg/l)	0.01	0.06	0.06	0.38	0.19	0.55	0.04
Nitrogen (Nitrate) (mg/l)	0.01	0.18	0.24	0.22	0.24	0.20	0.15
Phosphorous (mg/l)	0.01	0.04	0.04	0.06	0.06	0.10	0.06
BOD₅ (mg/l)	1	1.00	1.00	1.00	1.00	1.00	1.00
DO (mg/l)	0.01	8.79	7.89	8.52	6.08	7.49	8.75
Turbidity (NTU)	0.1	0.05	0.00	0.00	0.00	14.50	64.10
Temperature (oC)	0.1	24.0	24.4	24.8	26.0	26.0	24.8
рН	0.01	8.3	7.5	7.7	7.3	6.7	7.0
Salinity (ppt)	0.1	0.6	0.1	4.7	14.6	3.1	0.0
Conductivity (ms/m)	0.1	100.0	34.0	628.0	24000.0	576.0	4.1
Water Flow (m/s)	N/A	0.100	0.1	0.1	0.1	0.1	0.1

Table 6.10 Baseline Results of Ecological water quality monitoring

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

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

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

There was no recorded event in the reporting month.

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

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

6.7 Ecological monitoring Schedule

The next ecological surveys are scheduled on 19 and 30 November 2010, while ecological water quality monitoring is scheduled on 5 November 2010.

7. Action taken in Event of Exceedence

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

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

Total 22 non-compliance events of water quality limits (Turbidity and Suspended Solids) were recorded in this reporting month according to the established level. ET has arranged site investigations for the exceedance events. No particular observations of defective site activities were found causing the exceedance and such conditions were believed to be attributed by natural fluctuation.

8. Construction waste disposal

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

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

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

Table 8.1 Summary of Construction Waste Disposal

į										
	Amount of Construction Waste disposed									
Month	Inert Waste	Non-inert Waste	Chemical Waste							
	(to Public Fill)	(to Landfill)	(to treatment plant)							
1 st to 31 st Oct 10	70.70 (ton)	0	Nil							
Total	32080.86 (ton)	212.93 (ton)	0							

9. Status of Permits and Licenses obtained

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

Table 9.1 Status of Permits and Licenses Obtained

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

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

10. Complaint Log

There was no formal complaint received during the reporting month.

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

11. Site Environmental Audits

Site Inspection

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

Within the reporting month, site inspections were conducted on 7, 18, 21 and 28 October 2010.

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

	Table 11.1 Summary of site inspection							
Date	Observations	Advice from ET	Action taken	Closing Date				
31 Aug 10,	Accumulation of stagnant	Contractor was advised to remove	Stagnant water was removed	7 Oct 10				
9 & 28 Sept 10	water was observed at the	grey water accumulated in the wheel	prior to the inspection on 7 Oct					
	wheel washing bay at PNH	washing bay regularly as to prevent						
	fish ladder site	mosquito breeding						
Sept, 7, 18, 21	Issue of follow up actions in	Contractor was reminded to	Still outstanding. To be	Ongoing				
& 28 Oct 10	removing abandoned site	implement necessary rectification as	followed during the next					
	materials and wastes within	soon as possible	reporting period					
	site area was still outstanding							
Sept 10	Open stockpiles of C&D	Contractor should prevent excessive	The concerned stockpiles were	7 Oct 10				
	wastes and earth materials	storage of earth materials on site	removed prior to the inspection					
	were observed at PNH fish	otherwise tarpaulin coverings should	on 7 Oct 10					
	ladder site	be provided to prevent erosion and						
		runoff						
18 Oct 10	Soil debris was deposited to	Contractor was advised to provide	Follow up action was taken as	21 Oct 10				
	the public access nearby	water sprayer for vehicle washing	advised prior to the inspection					
	entrance to LTT inlet A		on 21 Oct					
21 Oct 10	Open stockpile of earth	Contractor was advised to provide	Follow up action was taken as	28 Oct 10				
	material was observed at PNH	tarpaulin covering as to avoid	advised prior to the inspection					
	fish ladder site	erosion and dust generation	on 28 Oct					
28 Oct 10	River water of LTT River	Contractor was recommended to	To be followed during the next	Ongoing				
	(section nearby LTT bypass	trace the source causing condition	reporting period					
	inlet A) was observed to be	observed and implement corrective						
	muddy during inspection	whenever necessary						

11.2 Compliance with legal and Contractual requirement

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

11.3 Environmental Complaint and follow up actions

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

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

12. Future key issues

Construction of inlet of LTT bypass, gabion wall and surface channel for PNH fish ladder and landscaping works will be major construction activities to be carried out in the upcoming month. It is expected that several impacts on environmental aspects will be generated on-site. With reference to the EM&A manual, mitigation measure report as well as the environmental permit, proper mitigation measures are proposed to be taken, if necessary.

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

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

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

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

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

13. Conclusions

In this reporting month, major site activities included construction of inlet of LTT bypass, construction of gabion wall and surface channel at section of PNH fish ladder and provision of granite facing for concrete structure.

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Project Proponent, Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties and IEC were carried out on 28 October 2010.

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

For water quality monitoring, total 22 non-compliance events of water quality limits (Turbidity and Suspended Solids) were recorded in this reporting month according to the established level. ET has arranged site investigations for the exceedance events. No particular observations of defective site activities were found causing the exceedance and such conditions were believed to be attributed by natural fluctuation.

During ecological monitoring survey, no White-shouldered Starling was recorded breeding in the watch tower. Drainage improvement near the watchtower on inter-tidal areas at downstream of Luk Tei Tong River (LTT1) was mostly completed. The absence of nesting of White-shouldered Starling in the watch tower did not seem to be related to construction works in Luk Tei Tong River. A bird species nests in village houses should be to certain extent disturbance tolerant.

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

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

Site water control was the major concern in this reporting month. Therefore, ET recommended the contractor to implement sufficient and effective

mitigation measures to minimize water quality impact from site works. Proper de-silting facilities should be provided for site water treatment. To prevent surface run-off and soil erosion from site activities, earth bunds with complete coverage of geo-textile materials should be formed at river-based and/or riverside project sites. Contractor should be cautious on change of river water quality, immediate corrective action was required once muddy effluent discharge, or disturbance of sediment was found from site works.

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

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

Appendix A

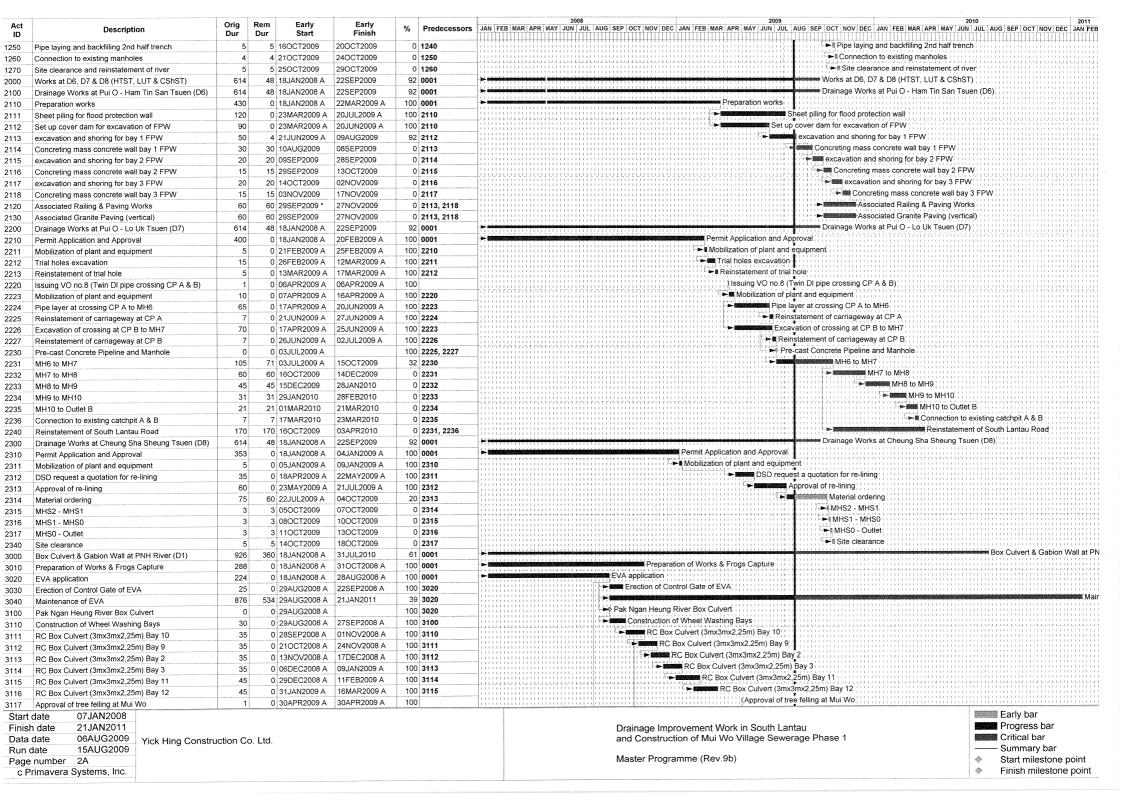
Construction
Programmer and
Location plan

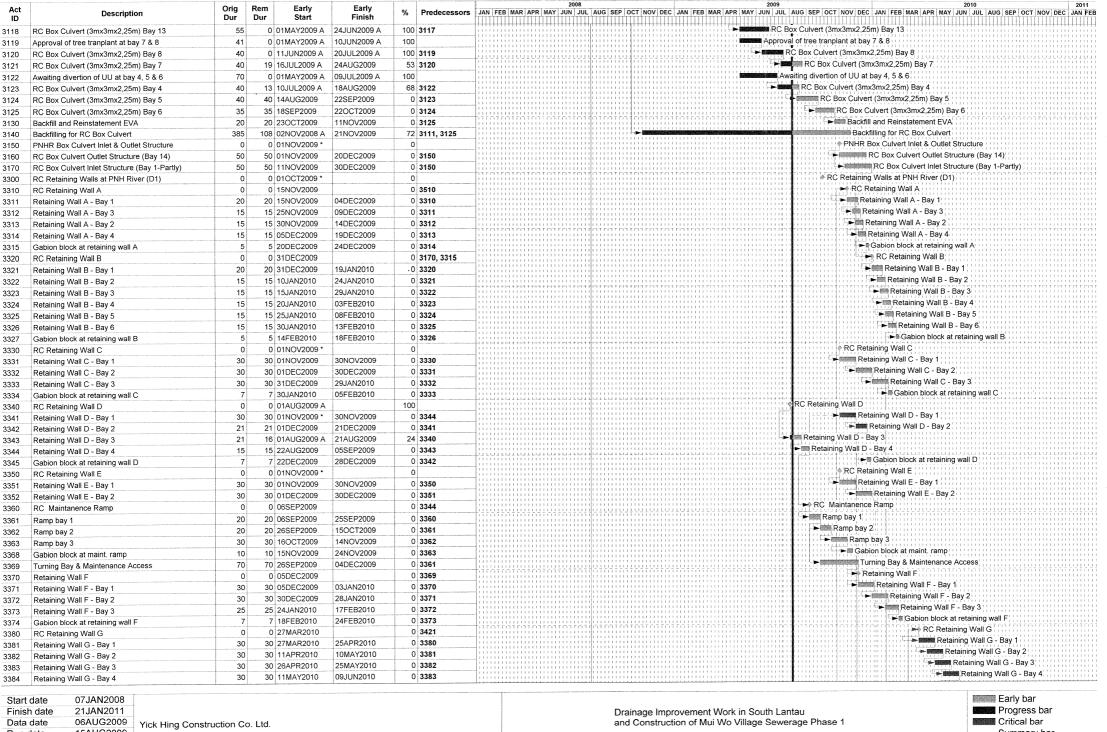
Act ID	Description	Orig Dur	Rem Dur	Early	Early Finish	% Predecessors	2008 2010 2011 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB
0000	DRAINAGE IMPROVEMENT WORK IN S LANTAU	534 *		Start 06AUG2009	21JAN2011	0	The second of th
0000	Section Commencement	11		07JAN2008 A	17JAN2011	100	DRA
0010	Preliminaries	534 *		06AUG2009	21JAN2011	0	And the state of t
0020	Engineer's Accommodation	80		07JAN2008 A	26MAR2008 A	100	Preli President Engineer's Accommodation
0030	Contactor's Accommodation	55		07JAN2008 A	01MAR2008 A	100	
0040	Engineer's Accommodation (Secondary)	40		07JAN2008 A	15FEB2008 A	100	Engineer's Accommodation (Secondary):
0050	Record Survey & Site Investigation	180		07JAN2008 A	04JUL2008 A	100	Record Survey & Site Investigation
0060	Recruitment of Environment Team	80	0	07JAN2008 A	26MAR2008 A	100	Recr. itment of Environment Team
0070	Establish Base line monitoring for EP	30	0	27MAR2008 A	25APR2008 A	100 0060	Fixed Establish Base line monitoring for EP
0800	Monitoring for Environmental Permit	1001	534	26APR2008 A	21JAN2011	47 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 արտանակարացությունը արտանակարացության անանանակարան անձանանան անձանակարացության արտանակարացության ա
	Excavation 2nd half trench at TTT river	20	20	26SEP2009	15OCT2009	0 1230	Excavation 2nd half trench at TTT river
Start							Early bar
Finish	0041100000						Drainage Improvement Work in South Lantau Progress bar
Data d Run d	Tick tillig Collstia	ction Co.	Ltd.				and Construction of Mui Wo Village Sewerage Phase 1
	number 1A						Master Programme / Pay 9h) —— Summary bar

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Master Programme (Rev.9b)

Summary bar
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 Finish milestone point

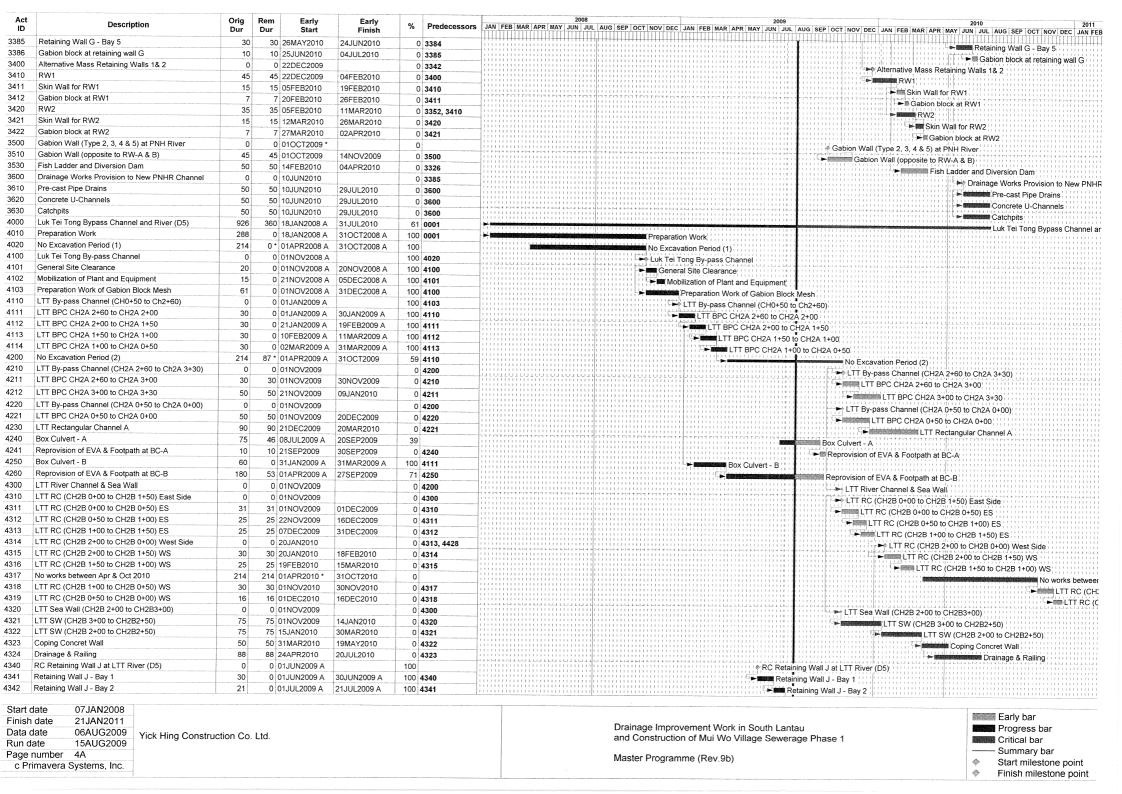


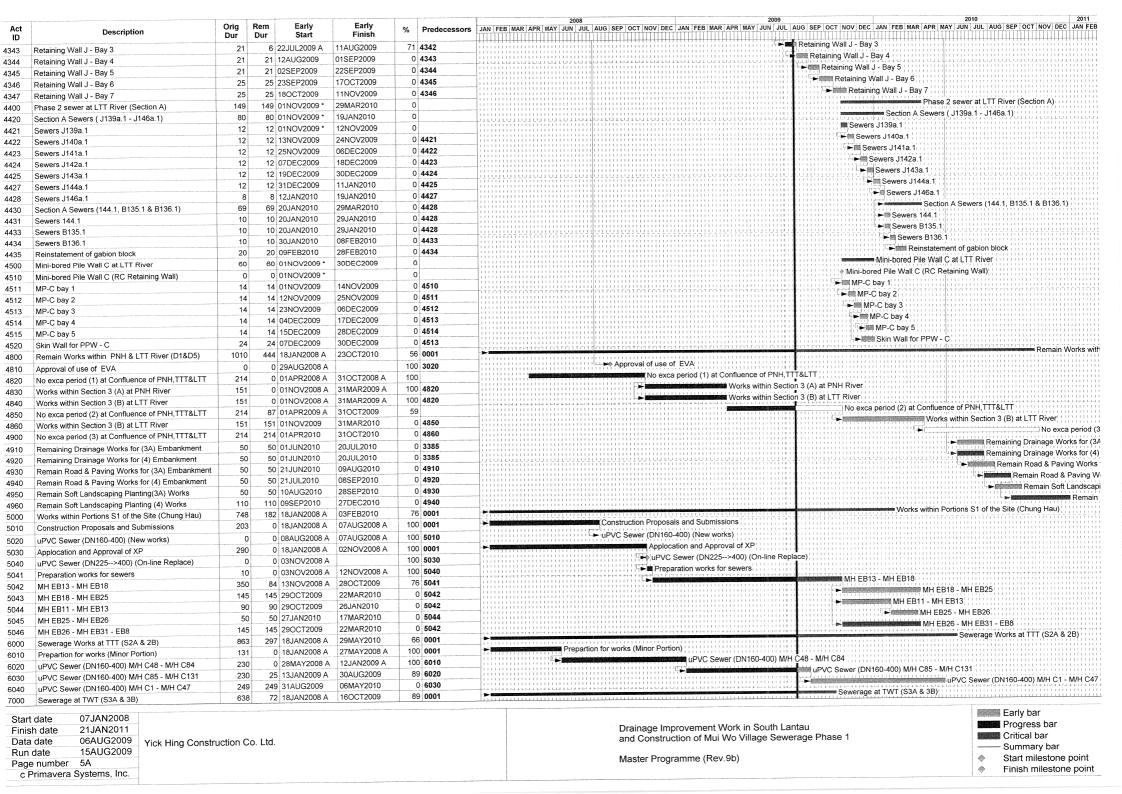


15AUG2009 Run date Page number c Primavera Systems, Inc.

Master Programme (Rev.9b)

 Summary bar Start milestone point Finish milestone point





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	/rintrint
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	111111111
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	rentent Hiller
9000	Preservation & Protection of Exist Trees	534 *	534 * 0	6AUG2009	21JAN2011	0 0001				Pres
9010	Preparton for works	100	0 0	7JAN2008 A	15APR2008 A	100	Preparton for works			. 1 1 1 1 1 1 1 1 1 1
9020	Protection & Transplanting Works	1011	534 1	6APR2008 A	21JAN2011	47 9010				Proti

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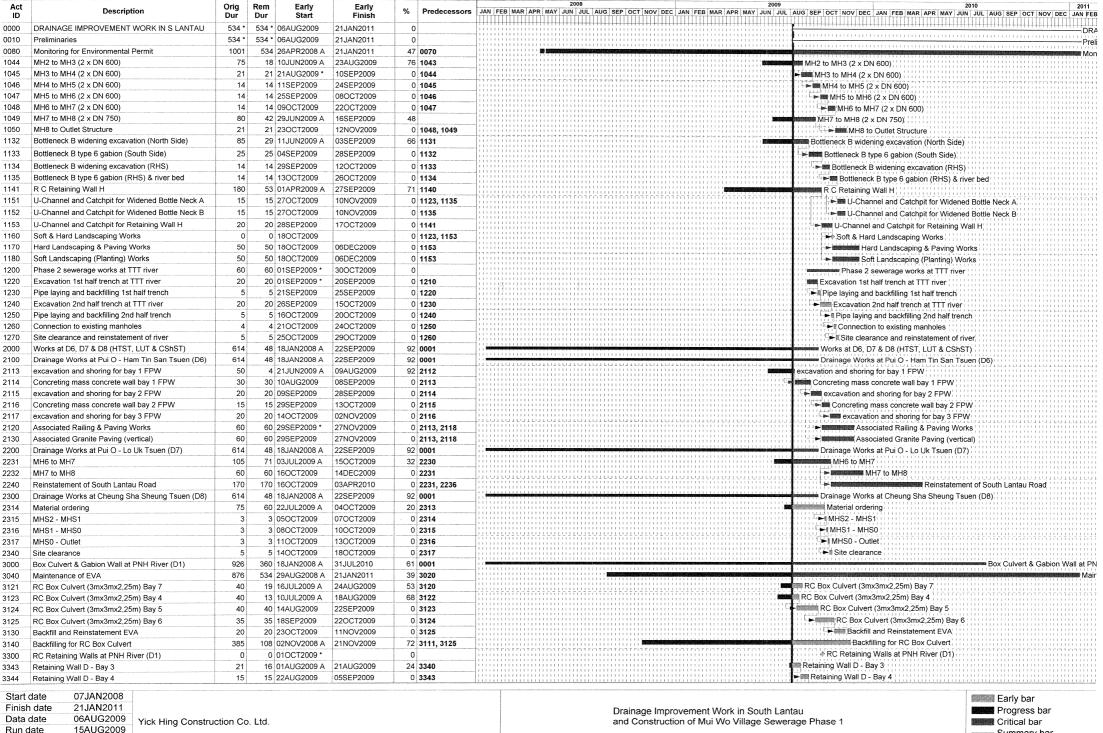
Yick Hing Construction Co. Ltd.

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

Master Programme (Rev.9b)



Start milestone point Finish milestone point



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

3-Month Rolling Programme (Rev.9b)

Summary bar

Start milestone point Finish milestone point

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

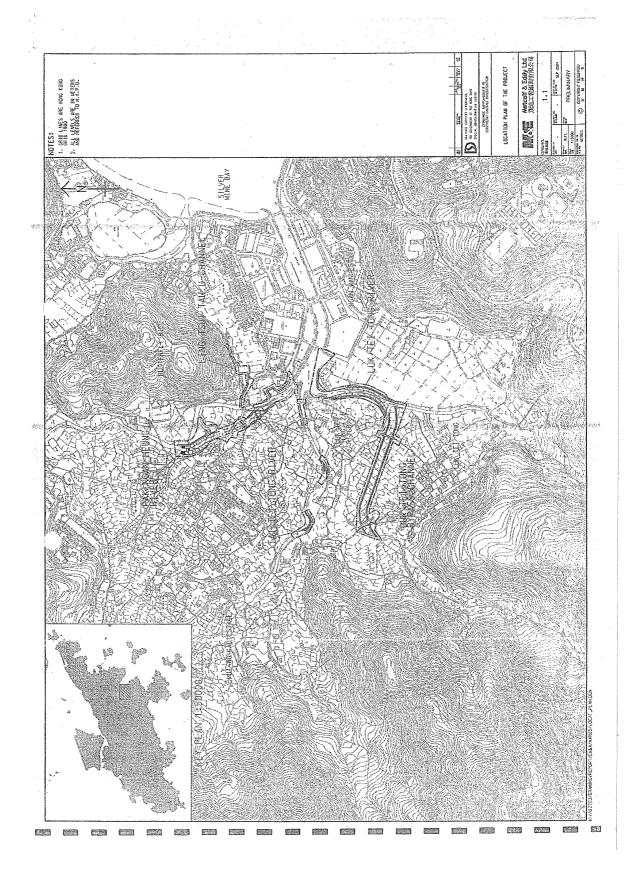
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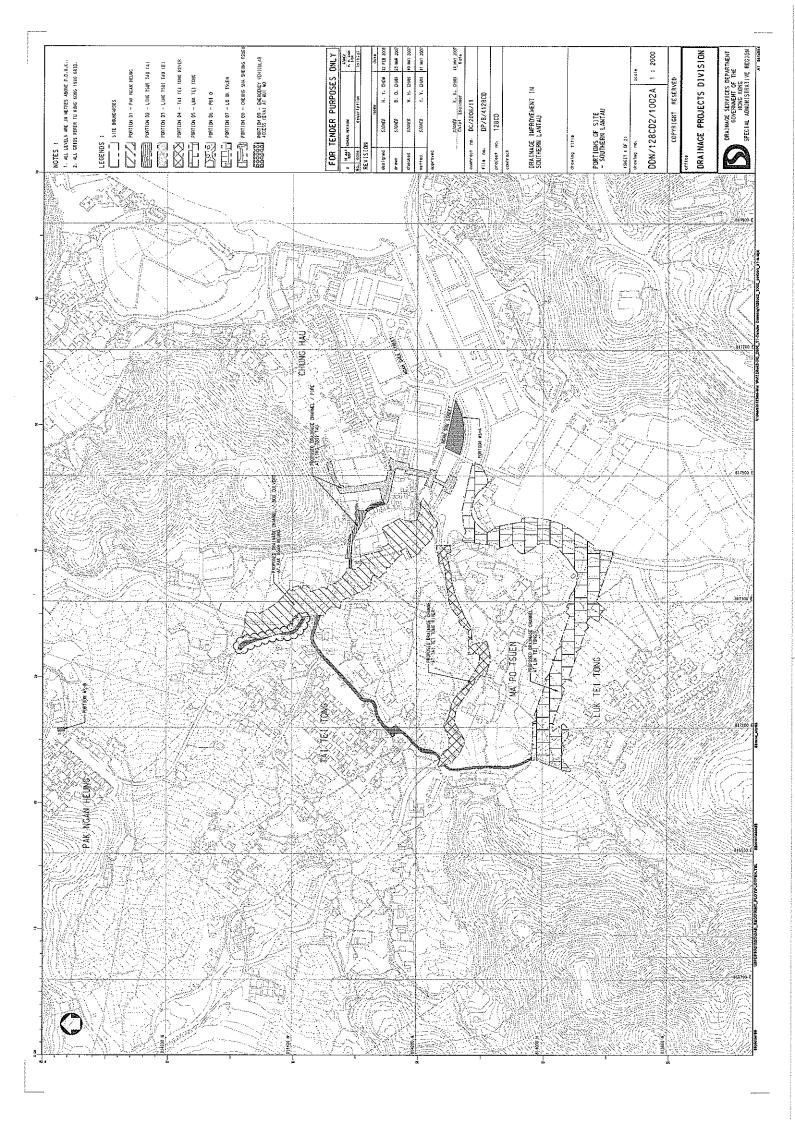
Yick Hing Construction Co. Ltd.

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

3-Month Rolling Programme (Rev.9b)

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





Appendix B Key Personal Contact information chart

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

Appendix C

Calibration Certificates for Measuring Equipments

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

検査成績書 INSPECTION CERTIFICATE

本体製造番号

Serial No. of body: ____

マイクロホン製造番号^{*} Serial No. of Microphone: 100104

39967

Ver:1.6E-09-11

年月日:

平成22年1月7日

Date:

January 7, 2010

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

株式会社 アコー ACO CO., LTD.

1. 検査年月日 Inspection Date

平成22年1月7日

January 7, 2010

2. 検査条件 Inspection Condition

1) 温度

Temperature

20 °C

2) 湿度

Humidity

44 %

3) 気圧

Barometric pressure :

987 hPa

3. 検査項目及び結果 Inspection Results

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

RANGE: 20-100dB 70dB 入力基準 ±0.5dB以下

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

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

2) 安定性特性検査

Stability Caracteristic

RANGE: 20-100dB 1分後基準 ±0.5dB以下

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

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

3) 目盛誤差特性検査 The Scale Error

RANGE: 20-110dB 65dB入力基準

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

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

4) 動特性検査 Dynamic Characteristic

RANGE: 20-100dB 100dB、1kHz 入力基準

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

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

5) 周波数特性検査 Frequency Response

RANGE: 20-100dB 95dB入力基準(マイクを含む)

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

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

6) 実効値指示誤差検査 Effective Value Error

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

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

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

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

7) 自己雑音特性検査 Self-noise

RANGE: 20-80dB (マイクを含む)

RANGE: 20-80dB (Including Microphone value)

(dB) 判定 Passed		Pass		20.0	
自己雑音 Self-noise		16.4	23.6	26.0	
(dE	3)	Below 18	Below 29	Below 32	
規格 Sta	規格 Standard		29以下	32以下	
(Including Micr	ophone value)	A特性		FLAT(Z)特性	
RANGE:	20-80dB	۸ N++ N+cF	○ #+ ¥#	737 4 m/m) 44 44	



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 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@cluismec.com Website: www.cioismec.com

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



CERTIFICATE OF CALIBRATION

Certificate No.:

10CA0306 01

Page:

of

2

Item tested

Description: Manufacturer: Acoustical Calibrator (Class 1)

Type/Model No.: Serial/Equipment No.: Castle GA607 039543

Adaptors used:

_

Item submitted by

Curstomer:

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

Address of Customer:

6 Ko Shan Road, Ground FL., Hung Hom, Kowloon, Hong Kong

Request No.: Date of request: RS/10/023-PO 06-Mar-2010

Date of test:

06-Mar-2010

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	23-Jun-2010	SCL
Preamplifier	B&K 2673	2239857	15-Dec-2010	CEPREI
Measuring amplifier	B&K 2610	2346941	11-Dec-2010	CEPREI
Signal generator	DS 360	61227	22-Jun-2010	CEPREI
Digital multi-meter	34401A	US36087050	03-Dec-2010	CIGISMEC
Audio analyzer	8903B	GB41300350	07-Dec-2010	CEPREI
Universal counter	53132A	MY40003662	23-Jun-2010	CEPREI

Ambient conditions

Temperature: Relative humidity:

Air pressure:

22 ± 1 °C 60 ± 5 % 1005 ± 5 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:

09-Mar-2010

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.

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



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 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

(Continuation Page)

Certificate No.:

10CA0306 01

Page:

2

2

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)

of

Frequency Shown	Output Sound Pressure Level Setting	Measured Output Sound Pressure Level	Estimated Uncertainty
Hz	dB	dB	₫₿
1000	94.00	94.30	0.10

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 = 0.007 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 = 1.8%

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 06-Mar-2010 Checked by:

Date:

09-Mar-2010

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



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

Calibration Reference No. : GCE/CAL/2010/MW/WQM/C1					
Client: ENVIRONMENTAL PIO	NEER AND SOL	UTION LIMITED			
Equipment No. : WQC-24	Location :	Mui Wo Site			
Manufacturer :DKK-TOA	Serial No.:	640274			
Calibration Date: 11 to 15-09-2010	Due Date :	10-12-2010			

Criterion: (Repeatabilty, Linearity)

: Both within ± 0.05 pH

Dissolved oxygen

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

Turbidity

: Repeatability: within ±3%FS

Temperature

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

Electric Conductivity (Salinity converted from EC):

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

Concentration of KCl Standard Solution (M)	Reference conductivity value at 25.0 °C	Indicated value by meter	Linearity (R ²)	
0	0.0 mS/m*	0.0 mS/m	1.0000	
0.001	14.7 mS/m	15.1 mS/m	1.0000	
0.005	71.8 mS/m	72.4 mS/m	Acceptance Criterion	
0.01	0.141 S/m	0.145 S/m	$R^2 > 0.995$	
0.05	0.667 S/m	0.671 S/m	Within ± 1% F.S. against	
0.1	1.29 S/m	1.30 S/m	calibration standard value 71.8 mS/m, 0.667	
0.5	5.87 S/m	5.88 S/m	S/m and 5.87 S/m.	
-	1 st time	0.00, 5.88 S/m		
Repeatability	2 nd time	0.00 , 5.88 S/m	Within \pm 1% F.S.	
	3 rd time	0.00 , 5.88 S/m	against average value	
	0.00 , 5.87 S/m	Ave.: 0.00, 5.88		

^{*} $1 \text{ S/m} = 10^4 \, \mu\text{mhos/cm} = 10^3 \, \text{mS/m}$

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



Dissolved Oxygen:

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

DO value evaluated by Iodometric Method (mg/L)		Indicated value by meter (mg/L)	Linearity (R ²)
	0.00	0.00	0.0000
	3.20	3.26	0.9999
	5.70	5.77	Acceptance Criterion
	8.50	8.55	$R^2 > 0.995$
	10.45	10.39	Within ± 0.1 mg/L
	13.20	13.12	against standard value
D (199)	1 st time	0.00, 8.57	
Repeatability	2 nd time	0.00, 8.55	Within $\pm 0.1 \text{ mg/L}$
	3 rd time	0.00, 8.53	against average value
	0.00,8.50	Ave.: 0.00, 8.55	- vardo

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)

pH buffer for Meter Calibration (20°C)	Input value (pH buffer)	Indicated pH value by meter	Linearity
	(20°C)	(20°C)	(R ²)
pH = 4.00	1.67	1.64	0.9999
pH = 6.88	4.00	4.01	Acceptance Criterion
pH = 7.00	6.88	6.85	
pH = 9.22	7.00	7.03	1
pH = 10.00	7.43	7.45	$R^2 > 0.995$
	9.22	9.19	Within ± 0.05 pH against standard value
	10.00	9.97	agamst standard value
	12.64	12.60	
	1 st time	4.01 , 9.96	
Repeatability	2 nd time	4.01, 9.97	Within ± 0.05 pH
	3 rd time	4.02, 9.98	against average value
	pH 4.00, 10.00	Ave.: 4.01, 9.97	

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



Temperature:

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

Setting Temperature	Indicated va	Linearity	
(°C)		°C)	(R^2)
5.0	4	.7	` <u> </u>
15.0	14	4.7	0.9999
25.0	24	4.7	Acceptance Criterion
35.0	34	4.8	$R^2 > 0.995$
45.0	45.2		Within ± 0.5 °C against
55.0	55.4		standard value
	1 st time	14.7, 45.3	
Repeatability	2 nd time	14.7, 45.2	Within ± 0.25°C
	3 rd time	14.6, 45.2	against average value
	15.0,45.0	Ave.: 14.7, 45.2	

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	1.0000		
20.0	19	Acceptance Criterion		
100.0	98	$R^2 > 0.995$		
400.0	39	Within ± 3% F.S. against		
800.0	79	span calibration value		
	1 st time	0.0, 796.2	100.0 and 400.0 NTU	
Repeatability	2 nd time	0.0,795.5	Within ± 3% F.S. against	
	3 rd time	$3^{\rm rd}$ time 0.0, 795.9		
	0.0,800.0	Ave.: 0.0, 795.9	average value	

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

Comments: Pass, (comply with the crite	eria)	
Tested by: Ho Tin Kau	Certified by	: Gu Chin Chemist
Checked by: Gu Chin	Date	:15-9-2010

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

			Relative	Occurrence	
Species	Habit	Native	Abundance	PNH3	PNH4
Acacia confusa	tree	no	occasional		+
Achyranthes aspera	herb	yes	scarce		+
Alangium chinensis	tree	yes	scarce		+
Alocasia macrorrhiza	herb	yes	occasional		+
Annoa squamosa	tree	no	scarce		+
Bidens pilosa	herb	no	occasional		+
Bridelia tomentosa	tree	yes	scarce		+
Celtis sinensis	tree	yes	scarce		+
Dimocarpus longan	tree	no	occasional		+
Ficus microcarpa	tree	yes	scarce		+
Ficus superba	tree	yes	occasional		+
Hedychium coronarium	herb	no	occasional		+
Litsea glutinosa	tree	yes	scarce		+
Lygodium japonicum	fern	yes	scarce		+
Macaranga tanarius	tree	yes	occasional		+
Microcos paniculata	tree	yes	scarce		+
Microstegium ciliatum	grass	yes	common		+
Mikania micrantha	climber	no	occasional		+
Phyllanthus urinaria	shrub	yes	scarce		+
Syzygium jambos	tree	no	scarce		+
Smilax lanceifolia	climber	yes	scarce		+
Lophatherum gracile	grass	yes	scarce		+
Panicum maximum	grass	no	scarce		+
Pteris vittata	fern	yes	scarce		+
Pueraria phaseloides	climber	yes	scarce		+
Sida rhombifolia	herb	yes	scarce		+
Sterculia lanceolata	tree	yes	scarce		+

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

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

Appendix D3 Plant species recorded at Luk Tei Tong River

			Relative	Occurrence				
Species	Habit	Native	Abundance	LLT1	LLT2	LLT3	LLT4	LLT5
Acanthus ilicifolius	shrub	yes	scarce		+			
Achyranthes aspera	herb	yes	scarce		+			
Apluda mutica	grass	yes	scarce		+			
Bidens pilosa	herb	no	scarce	+				
Celtis sinensis	tree	yes	scarce	+				
Crotalaria pallida	herb	yes	scarce		+			
Cyperus sp.	sedge	yes	scarce		+			
Dactyloctenium aegyptium	grass	yes	scarce		+			
Eupatorium catarium	herb	no	scarce		+			
Ficus microcarpa	tree	yes	scarce	+				
Ficus superba	tree	yes	scarce	+				
Hibiscus tiliaceus	tree	yes	scarce	+	+			
Kandelia obovata	tree	yes	occasional		+			
Leucaena leucocephala	tree	no	scarce	+				
Macaranga	ticc	110	scarce	'				
tanarius	tree	yes	scarce	+				
Mikania micrantha	climber	no	scarce	+				
Mimosa pudica	herb	no	scarce		+			
Neyraudia					-			
reynaudiana	grass	yes	scarce		+			
Panicum maximum	grass	no	scarce	+	+			
Panicum repens	grass	yes	scarce		+			
Rhynchelytrum								
repens	grass	no	scarce	+				
Saccharum								
arundinaceum	grass	yes	scarce	+				

Appendix D4

Ecological Water Monitoring Results (on-site measurements)

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

Date of Sampling: 6/10/2010 Weather Condition: Cloudy

Date of Camping.						iditioii.												
Monitoring Location		WE1			WE2			WE3			WE4			WE5			WE6	
Time (hhmm)		1110			1140			1045			1055			1230			1210	
Tide Mode		ebb			ebb			ebb			ebb			ebb			ebb	
River Condition		Normal			Normal			Normal			Normal			Normal			Muddy	
Water Depth (m)		< 1.0			< 1.0			< 1.0			< 1.0			< 1.0			< 1.0	
pH value		8.32		7.46		7.46 7.70			7.33		6.73		7.03					
Temperature (oC)		24.0			24.4			24.8			26.0			26.0		24.8		
Salinity (ppt)		0.6		0.1			4.7		14.6		3.1		0.0					
Conductivity (ms/m)		100.0		34.0		628.0		24000.0		576.0		4.1						
Water flow (m/s)		0.100			0.100			0.100			0.100			0.100			0.100	
Turbidity (NTU)	0.0	0.1	Average 0.05	0.0	0.0	Average 0.00	0.0	0.0	Average 0.00	0.0	0.0	Average 0.0	14.4	14.6	Average	64.2	64.0	Average 64.1
DO (mg/l)	8.78	8.80	Average 8.79	7.88	7.89	Average 7.89	8.51	8.52	Average 8.52	6.07	6.08	Average 6.08	7.48	7.50	Average 7.49	8.73	8.76	Average 8.75
DO Saturation (%)	104	104	Average	98	98	Average 98	103	103	Average	75	75	Average 75	94	94	Average 94	105	105	Average

Name

Prepared By: Jimmy Cheng

Date 6/10/2010 Muddy water was observed at location WE6 due to the

remark or observation: construction work between WE5 and WE6.

Appendix D5

Ecological Water Monitoring Results (lab report)



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC101000151 Date of Issue : 19-10-2010 Client* : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 06-10-2010 W O No.* Sample Type* : River Water Date Completed: 07-10-2010 GCE Serial No. : WQM102010 GCE Reg. No. : GCE 081096 : CH 08258 Test Unit No. **Test Method** Units **Analysis Description 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 < 1.0 497 495 0.4 26.1

			Acce	ptance Criteria	< 2.5 mg	g/L 475 ≤ C	ontrol Lin	nit ≤ 514	≤ ±5%	21 ≤ R ≤ 29
	Sam	ple ID	WE1	WE1 Duplicate	WE2	WE2 Duplicate	WE3	WE3 Duplicate		
TEST RESULTS		npling e/Time	06 Oct	2010 / 11:10	06 Oct	2010 / 11:40	06 Oct	2010 / 10:4!	5	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.8	2.5	3.8	4.0	4.8	4.9		
	Sam	ple ID	WE4	WE4 Duplicate	WE5	WE5 Duplicate	WE6	WE6 Duplicate		
TEST RESULTS		npling e/Time	06 Oct	2010 / 10:55	06 Oct	2010 / 12:30	06 Oct	2010 / 12:10	0	*
	LOD	Units								
Suspended Solids (SS)	1	mg/L	5.5	5.5	16.4	18.6	56.4	59.0		

*: Information provided by client

Note:	Thic laborators	v hae no roenoneihility	una complina and all	the test regulte relate only	y to the sample tested as received.
14016 .	TITIS IGNOTATORY	y mas no responsibility	OH Sampling and all	THE FEST LESCRIPS LEIGHE OFFI	y to the sample tested as received.

Location M1 & WE3 and Location M3 & WE4 are the same location. ---- End -----Approved Signatory Tested By K.L FONG GU CHIN Name **GU CHIN** Post Checked By : Chemist

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No.	: GCC101000614		Page 1 of 1 Date of Issue : 04-11-2010			
		Centre Building, 20 Lee Chung Stre				
Project*	DSD Contract No. DC/26 : Mui Wo Village Sewerag		Southern Lantau & Construction of			
Test Location		et, Hung Hom, Kowloon.	Date Started : 06-10-2010			
W.O. No.*	:	Contract No.* :	Date Completed : 22-10-2010			
GCE Serial No.	: WQM102010	Sampling Date* : 06-10-2010				
GCE Reg. No.	: GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE1			
Descripption	: River Water					
		TEST REFERENCE				
DESCRIPTION		(In-House Method based on)	TEST RESULT			
Appearance		APHA 20ed 2110				
Odour		APHA 20ed 2150 B	Odour Characteristics :			
		AI IIA 2000 2100 B	Threshold Odour Number (TON) :			
pH Value at temp	perature [] °C	APHA 20ed 4500-H ⁺ B				
Colour	тси	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B	-			
Conductivity at 2	.5°C μS/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH ₃ D	0.06			
Nitrogen (Ammor	nia) mg/L	APHA 20ed 4500-NH ₃ E				
		APHA 18ed 4500-NH ₃ C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO ₃ . E	0.18			
Phosphorus	mg/L	APHA 20ed 4500-P D	0.04			
Biochemical Oxyg	gen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	<1			
Chemical Oxyger	Demand (COD) mg/L	APHA 20ed 5220 D				
Total Suspended	Solid mg/L	APHA 20ed 2540 D				
*: Information p	·	lity on sampling and all the test re	sults relate only to the sample tested as received.			
	imple received on 06 Oct 2 imple Location WE1.	End				
		Elia •	1.1			
Tested By :	T.W. Lam, K.L. I	Fong Certified	By : Gu Chin			

Post

Chemist

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

Gu Chin

Checked By : __



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC101000	0622			Date of Issue	Page 1 of 1 : 04-11-2010	
	Environmental Pioneers & Solutions Limited 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan				: 08-09-2008	
DSD Contrac	ot No. DC/20	06/11 - Drainage Improvement in	Southern L	antau & Constructi	on of	
Project* : Mui Wo Villa	ige Sewerage	Phase 1				
Test Location : G/F, 20 Pa	k Kung Stree	et, Hung Hom, Kowloon.		Date Started	: 06-10-2010	
W.O. No.* :		Contract No.* :		Date Completed	: 22-10-2010	
GCE Serial No. : WQM10201	0	Sampling Date* : 06-10-2010	0/11:10	Sample Type*	: River Water	
GCE Reg. No. : GCE 081096	3	Test Unit No. : CH 08258		Sample I.D.*	: WE1 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 : 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		0.0	05	
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		0.1	8	
Phosphorus	mg/L	APHA 20ed 4500-P D		0.0)4	
Biochemical Oxygen Demand (B	BOD ₅) mg/L	APHA 20ed 5210 B		< '	1	
Chemical Oxygen Demand (COI	D) mg/L	APHA 20ed 5220 D				
Total Suspended Solid	mg/L	APHA 20ed 2540 D				
*: Information provided by clie Note: This laboratory has r Sample received	no responsibil	ity on sampling and all the test re	sults relate	only to the sample	tested as received.	
REMARKS : Sample Location						
Tested By : T.W	'. Lam, K.L. F	End ong Certified	Ву		/ <u></u>	
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Form No. : EWA-D2/R (19-1-2009)

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TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC101000630		Page 1 of 1 Date of Issue : 04-11-2010		
Client* : Environmental Pioneers 8 Client Address* : 8/F, Chaiwan Industrial C		Order Received : 08-09-2008		
	006/11 - Drainage Improvement in			
Project* : Mui Wo Village Sewerag	e Phase 1			
Test Location : G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 06-10-2010		
W.O. No.* : <u></u>	Contract No.* :	Date Completed : 22-10-2010		
GCE Serial No. : WQM102010	Sampling Date* : 06-10-2010	/ 11:40 Sample Type* : River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE2		
Descripption : River Water	meneromagni aporti de a consultario i raj i maj dell'articologica.			
DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110			
Odour	APHA 20ed 2150 B	Odour Characteristics :		
Ododi	AFRA 2000 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			
The second process of the second control of	APHA 20ed 4500-NH ₃ D	0.06		
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	0.23		
Phosphorus mg/L	APHA 20ed 4500-P D	0.04		
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	<1		
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D			
Total Suspended Solid mg/L	APHA 20ed 2540 D			
* : Information provided by client		J.,		
·	lity on sampling and all the test res	ults relate only to the sample tested as received.		
Sample received on 06 Oct 2	2010.			
REMARKS: Sample Location WE2.	End			
	CIIU	1 -1		
Tested By : T.W. Lam, K.L. F	ong Certified B	Gu Chin		
	emen	: Gu Chili		

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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

		Date	of Issue	: 04-11-2010
Client* : Environmental Pioneer	: Environmental Pioneers & Solutions Limited			: 08-09-2008
Client Address* : 8/F, Chaiwan Industria	Centre Building, 20 Lee Chung Stre	et, Chaiwan, HK.		
	2006/11 - Drainage Improvement in	Southern Lantau	& Constructio	n of
Project* : Mui Wo Village Sewer				
	reet, Hung Hom, Kowloon.			: 06-10-2010
W.O. No.* :	Contract No.* :		·	: 22-10-2010
GCE Serial No. : WQM102010	Sampling Date* : 06-10-2010			River Water
GCE Reg. No. : GCE 081096 Descripption : River Water	Test Unit No. : CH 08258	Sam	ple I.D.*	: WE2 Duplicate
DESCRIPTION	TEST REFERENCE (In-House Method based on)		TEST RES	SULT
Appearance	APHA 20ed 2110			
	4504 00 10450 5	Odour Characte	ristics :	
Odour	APHA 20ed 2150 B	Threshold Odou	r Number (TO	N):
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B			
Colour TC	J APHA 20ed 2120 B			
Turbidity NT	J 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		0.06	3
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		0.24	1
Phosphorus mg/	L APHA 20ed 4500-P D		0.04	+
Biochemical Oxygen Demand (BOD ₅) mg/	L APHA 20ed 5210 B		< 1	
Chemical Oxygen Demand (COD) mg/	L APHA 20ed 5220 D		:-	
Total Suspended Solid mg/	L APHA 20ed 2540 D			
* : Information provided by client Note : This laboratory has no respons Sample received on 06 Oct REMARKS : Sample Location WE2.	bility on sampling and all the test res	ults relate only to	o the sample t	ested as received.
Oumpie Location WLZ.	End			
Tested By : T.W. Lam, K.L Checked By : Gu Chin	. Fong Certified B Name Post	Зу : :	Gu Chin Chemist	

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC10100065	6			Date of Issue	Page 1 of 1 : 04-11-2010	
Client * : Environmental I Client Address* : 8/F, Chaiwan Ir		Solutions Limited Centre Building, 20 Lee Chung Stre	eet, Chaiwar	Order Received	: 08-09-2008	
DSD Contract N Project* : Mui Wo Village		06/11 - Drainage Improvement in Phase 1		antau & Construct	ion of	
Test Location : G/F, 20 Pak	Kung Stree	et, Hung Hom, Kowloon.		Date Started	: 06-10-2010	
W.O. No.* :		Contract No.* :		Date Completed	: 22-10-2010	
GCE Serial No. : WQM102010		Sampling Date* : 06-10-2010) / 10:45	Sample Type*	: River Water	
GCE Reg. No. : GCE 081096		Test Unit No. : CH 08258		Sample I.D.*	: <u>WE3</u>	
Descripption : River Water						
DESCRIPTION		TEST REFERENCE (In-House Method based on)		TEST R	ESULT	
Appearance		APHA 20ed 2110				
Odour		APHA 20ed 2150 B	Odour Characteristics :			
			Threshold	Odour Number (T	ON) :	
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		0.5	38	
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.:	21	
Phosphorus	mg/L	APHA 20ed 4500-P D		0.0	06	
Biochemical Oxygen Demand (BOD) ₅) mg/L	APHA 20ed 5210 B		<	1	
Chemical Oxygen Demand (COD)	mg/L	APHA 20ed 5220 D				
Total Suspended Solid	mg/L	APHA 20ed 2540 D	-			
* : Information provided by client Note: This laboratory has no r Sample received on REMARKS: Sample Location Wiles	06 Oct 20	ity on sampling and all the test re:	sults relate c	only to the sample	tested as received.	
		End				
Tested By : T.W. Le	am, K.L. F	ong Certified	Ву	:	in	

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: Chemist

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

Gu Chin

Checked By : ___



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No.	: GCC101000664		Page 1 of 1 Date of Issue : 04-11-2010			
		Centre Building, 20 Lee Chung Stre	Order Received : 08-09-2008 et, Chaiwan, HK. Southern Lantau & Construction of			
Project*	: Mui Wo Village Sewerag	- ·	Southern Lantag & Construction of			
Test Location	: G/F, 20 Pak Kung Stre	et, Hung Hom, Kowloon.	Date Started : 06-10-2010			
W.O. No.*	:	Contract No.* :	Date Completed : 22-10-2010			
GCE Serial No.	: WQM102010	Sampling Date* : 06-10-2010) / 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 DECEDENCE	1			
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 temp	perature [] °C	APHA 20ed 4500-H ⁺ B				
Colour	TCU	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B				
Conductivity at 2		APHA 20ed 2510 B				
	<u> </u>	APHA 20ed 2520 B				
Salinity	g/L		0.29			
		APHA 20ed 4500-NH ₃ D	0.38			
Nitrogen (Ammor	nia) mg/L	APHA 20ed 4500-NH ₃ E				
		APHA 18ed 4500-NH ₃ C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO ₃ E	0.22			
Phosphorus	mg/L	APHA 20ed 4500-P D	0.06			
Biochemical Oxyg	gen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	<1			
Chemical Oxygen	Demand (COD) mg/L	APHA 20ed 5220 D				
Total Suspended	Solid mg/L	APHA 20ed 2540 D				
Sa		010.	sults relate only to the sample tested as received.			
		End	<i>r</i> . <i>f</i>			
Tested By :	T.W. Lam, K.L. f	Fong Certified	By : Gu Chin			

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC101000672		Page 1 of 1 Date of Issue : 04-11-2010
Client * : Environmental Pioneers & Client Address* : 8/F, Chaiwan Industrial C		Order Received : 08-09-2008
	006/11 - Drainage Improvement in	Southern Lantau & Construction of
Test Location : G/F, 20 Pak Kung Stre		Date Started : 06-10-2010
W.O. No.* :	Contract No.* :	Date Completed : 22-10-2010
GCE Serial No. : WQM102010	Sampling Date* : 06-10-2010	0 / 10:55 Sample Type* : River Water
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE4
Descripption : River Water		
	7507 055505105	
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	0.18
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	0.24
Phosphorus mg/L	APHA 20ed 4500-P D	0.06
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	1
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	
Total Suspended Solid mg/L	APHA 20ed 2540 D	
* : Information provided by client		
Note: This laboratory has no responsible Sample received on 06 Oct 2 REMARKS: Sample Location WE4.		sults relate only to the sample tested as received.
Tested By : T.W. Lam, K.L.	Fong Certified	By : 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 Report No. : GCC101000680 Date of Issue : 04-11-2010 Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 06-10-2010 Test Location W.O. No.* Date Completed : 22-10-2010 Contract No.* GCE Serial No. : WQM102010 Sampling Date* : 06-10-2010 / 10:55 Sample Type* : River Water : WE4 Duplicate GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* Descripption : River Water **TEST REFERENCE** DESCRIPTION TEST RESULT (In-House Method based on) APHA 20ed 2110 Appearance Odour Characteristics: --Odour APHA 20ed 2150 B Threshold Odour Number (TON): pH Value at temperature (] °C APHA 20ed 4500-H+ B Colour TCU APHA 20ed 2120 B NTU APHA 20ed 2130 B Turbidity APHA 20ed 2510 B Conductivity at 25°C μS/cm APHA 20ed 2520 B Salinity g/L 0.19 APHA 20ed 4500-NH₃ D APHA 20ed 4500-NH₃ E Nitrogen (Ammonia) mg/L APHA 18ed 4500-NH₃ C 0.24 Nitrogen (Nitrate) mg/L APHA 20ed 4500-NO₃ E 0.06 Phosphorus APHA 20ed 4500-P D mg/L APHA 20ed 5210 B 1 Biochemical Oxygen Demand (BOD₅) mg/L APHA 20ed 5220 D Chemical Oxygen Demand (COD) 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 06 Oct 2010. REMARKS: Sample Location WE4. ---- End ----Certified By Tested By T.W. Lam, K.L. Fong Gu Chin

Name

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

Gu Chin

Checked By :



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. ;	GCC101000698	••••		Date of Issue	Page 1 of 1 : 04-11-2010	
	Environmental Pioneers &	& Solutions Limited Centre Building, 20 Lee Chung Stre	 eet, Chaiwar	Order Received	: 08-09-2008	
Project* :	DSD Contract No. DC/20 Mui Wo Village Sewerag	006/11 - Drainage Improvement in e Phase 1	Southern La	entau & Construct	ion of	
Test Location :	G/F, 20 Pak Kung Stree	et, Hung Hom, Kowloon.		Date Started	: 06-10-2010	
W.O. No.* :		Contract No.* :		Date Completed	: 22-10-2010	
GCE Serial No. :	WQM102010	Sampling Date* : 06-10-2010	0 / 12:30	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 RI	ESULT	
Appearance		APHA 20ed 2110				
		APHA 20ed 2150 B	Odour Cha	Odour Characteristics :		
Odour		AFRA 2000 2150 B	Threshold	Odour Number (T	ON):	
pH Value at temp	erature [] °C	APHA 20ed 4500-H ⁺ B				
Colour	TCU	APHA 20ed 2120 B				
Turbidity	NTU	APHA 20ed 2130 B		-		
Conductivity at 2!	5°C μS/cm	APHA 20ed 2510 B				
Salinity	g/L	APHA 20ed 2520 B				
		APHA 20ed 4500-NH ₃ D		0.0	56	
Nitrogen (Ammon	ia) mg/L	APHA 20ed 4500-NH ₃ E				
		APHA 18ed 4500-NH ₃ C				
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO ₃ - E		0.2	20	
Phosphorus	mg/L	APHA 20ed 4500-P D		0.1	10	
Biochemical Oxyg	en Demand (BOD ₅) mg/L	APHA 20ed 5210 B		<	1	
Chemical Oxygen	Demand (COD) mg/L	APHA 20ed 5220 D				
Total Suspended :	Solid mg/L	APHA 20ed 2540 D				
	boratory has no responsibil	lity on sampling and all the test re	sults relate o	only to the sample	tested as received.	
	mple received on 06 Oct 2 mple Location WE5.	010.				
mainming. 3di	inplo Eduction 44ED.	End				
Tested By : _	T.W. Lam, K.L. F	ong Certified	Ву	: Gu Chi	n e	

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC101000703		Page 1 of 1 Date of Issue : 04-11-2010			
Client* : Environmental Pioneers	& Solutions Limited	Order Received : 08-09-2008			
Client Address* : 8/F, Chaiwan Industrial					
DSD Contract No. DC/2 Project* : Mui Wo Village Sewera	2006/11 - Drainage Improvement in : ne Phase 1	Southern Lantau & Construction of			
	eet, Hung Hom, Kowloon.	Date Started : 06-10-2010			
W.O. No.* :	Contract No.* :	Date Completed : 22-10-2010			
GCE Serial No. : WQM102010	Sampling Date* : 06-10-2010	-			
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				
Odour	APHA 20ed 2150 B	Odour Characteristics :			
	AFTIA 2060 2130 B	Threshold Odour Number (TON):			
pH Value at temperature [] °C	APHA 20ed 4500-H * B				
Colour TCU	APHA 20ed 2120 B				
Turbidity NTL	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	0.54			
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	0.20			
Phosphorus mg/l	APHA 20ed 4500-P D	0.10			
Biochemical Oxygen Demand (BOD ₅) mg/l	APHA 20ed 5210 B	<1			
Chemical Oxygen Demand (COD) mg/l	APHA 20ed 5220 D				
Total Suspended Solid mg/l	APHA 20ed 2540 D	-			
* : Information provided by client					
Sample received on 06 Oct		ults relate only to the sample tested as received.			
REMARKS: Sample Location WE5.	End				
T ID TW	Page 1	1.15			
Tested By : T.W. Lam, K.L.	Fong Certified I Name	: Gu Chin			

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No.	: GCC101000711				Date of Issue	Page 1 of 1 : 04-11-2010
Client*	: Environmental Pioneers &	Solutions Limited			Order Received	: 08-09-2008
Client Address*	: 8/F, Chaiwan Industrial C		•			
Project*	DSD Contract No. DC/20 : Mui Wo Village Sewerage	•	nprovement in S	Southern La	antau & Construct	ion of
Test Location	: G/F, 20 Pak Kung Stree	et, Hung Hom, Kow	loon.		Date Started	: 06-10-2010
W.O. No.*	:	Contract No.*	:		Date Completed	: 22-10-2010
GCE Serial No.	: <u>WQM102010</u>	Sampling Date*	: 06-10-2010	/ 12:10	Sample Type*	: River Water
GCE Reg. No.	: GCE 081096	Test Unit No.	: CH 08258		Sample I.D.*	: WE6
Descripption	: River Water					
DESCRIPTION		TEST REFE			TEST R	ESULT
Appearance		APHA 20e	1 2110			
Odour		APHA 20ed 2150 B		Odour Characteristics : Threshold Odour Number (TON) :		
all Value at town	perature [] °C	APHA 20ed 4	E00 H ⁺ B	Triceshold		-
pH Value at temp	TCU	APHA 20ed 4				
Turbidity	NTU	APHA 20ed	•			
Conductivity at 2		APHA 20ed				
Salinity	g/L	APHA 20ed				
	<u> </u>	APHA 20ed 4!	500-NH ₃ D		0.	04
Nitrogen (Ammor	nia) mg/L	APHA 20ed 4500-NH ₃ E				
-		APHA 18ed 4500-NH ₃ C		-		
Nitrogen (Nitrate)) mg/L	APHA 20ed 45	500-NO ₃ * E		0.	14
Phosphorus	mg/L	APHA 20ed	4500-P D		0.	06
Biochemical Oxy	gen Demand (BOD ₅) mg/L	APHA 20ed	5210 B		<	1
Chemical Oxyger	n Demand (COD) mg/L	APHA 20ed	5220 D		••	
Total Suspended	Solid mg/L	APHA 20ed	2540 D			
	rovided by client aboratory has no responsibi ample received on 06 Oct 2		all the test res	ults relate	only to the sample	e tested as received.
REMARKS: Sa	ample Location WE6.		 End			
			ENU		,	. [
Tested By :	T.W. Lam, K.L. F	ong	Certified E	Зу	Gu Ch	in

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC101000729		Page 1 of 1 Date of Issue : 04-11-2010		
Client* : Environmental Pionee Client Address* : 8/F, Chaiwan Industri	Order Received : 08-09-2008			
	/2006/11 - Drainage Improvement in			
Project* : Mui Wo Village Sewe	rage Phase 1			
Test Location :G/F, 20 Pak Kung S	treet, Hung Hom, Kowloon.	Date Started : 06-10-2010		
W.O. No.* : <u></u>	Contract No.* :	Date Completed : 22-10-2010		
GCE Serial No. : WQM102010	Sampling Date* : 06-10-2010	0 / 12:10 Sample Type* : River Water		
GCE Reg. No. : GCE 081096	Test Unit No. : CH 08258	Sample I.D.* : WE6 Duplicate		
Descripption : River Water				
DESCRIPTION	TEST REFERENCE	TECT DECIME		
DESCRIPTION	(In-House Method based on)	TEST RESULT		
Appearance	APHA 20ed 2110	<u>-</u>		
Od	ADUA 20-1 2450 B	Odour Characteristics :		
Odour	APHA 20ed 2150 B	Threshold Odour Number (TON) :		
pH Value at temperature [] °	C APHA 20ed 4500-H ⁺ B			
Colour TO	CU APHA 20ed 2120 B			
Turbidity N	U APHA 20ed 2130 B			
Conductivity at 25°C μS/c	m APHA 20ed 2510 B			
Salinity	/L APHA 20ed 2520 B	-		
	APHA 20ed 4500-NH ₃ D	0.04		
Nitrogen (Ammonia) mg	APHA 20ed 4500-NH ₃ E			
	APHA 18ed 4500-NH ₃ C			
Nitrogen (Nitrate) mg	/L APHA 20ed 4500-NO ₃ -E	0.15		
Phosphorus mg	/L APHA 20ed 4500-P D	0.06		
Biochemical Oxygen Demand (BOD ₅) mg	/L APHA 20ed 5210 B	<1		
Chemical Oxygen Demand (COD) mg	/L APHA 20ed 5220 D			
Total Suspended Solid mg	/L APHA 20ed 2540 D			
* : Information provided by client				
·	sibility on sampling and all the test re-	sults relate only to the sample tested as received.		
Sample received on 06 Oc REMARKS: Sample Location WE6.				
	End			
Tested By : T.W. Lam, K.	Fong Certified	Ву :		
	Name	Gu Chin		

Post

Chemist

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

Gu Chin

Checked By : ___

Appendix E



Monitoring Location		N1	N2		
Description of Location			Façade	Façade	
Date of Monitoring			4/10/	/2010	
Measurement Start Time	е	(hhmm)	15:50	15:16	
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)	0.2	0.2	
	L90	(dB(A))	44.8	41.6	
Measurement Results	L10	(dB(A))	61.2	48.3	
	Leq	(dB(A))	60.7	46.2	
Weather condition:			Cloudy		
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	Public noise Traffic noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	4	4/10/2010



Monitoring Location		N3	N4		
Description of Location			Freefield	Facede	
Date of Monitoring			4/10/	/2010	
Measurement Start Time	е	(hhmm)	14:45	14:10	
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)	0.2	0.2	
	L90	(dB(A))	44.7	48.0	
Measurement Results	L10	(dB(A))	54.8	51.8	
	Leq	(dB(A))	53.5	50.3	
Weather condition:			Cloudy		
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.	
Other Noise Source(s) During Monitoring			Public noise Traffic noise	1. Public noise	
Remarks			_		

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	Y	4/10/2010



Monitoring Location		N1	N2		
Description of Location			Façade	Façade	
Date of Monitoring			11/10)/2010	
Measurement Start Time	е	(hhmm)	12:15	11:40	
Measurement Time Len	gth	(mins.)	30 1	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	ication		Castle Gro	up, GA607	
Wind Speed	(r	m/s)	0.4	0.4	
	L90	(dB(A))	41.7	42.1	
Measurement Results	L10	(dB(A))	53.4	53.3	
	Leq	(dB(A))	51.5	50.9	
Weather condition:			Cloudy		
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	Public noise Traffic noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
Prepared by:	Jimmy Cheng	<u> </u>	11/10/2010



Monitoring Location		N3	N4		
Description of Location			Freefield	Facede	
Date of Monitoring			11/10)/2010	
Measurement Start Time	е	(hhmm)	13:25	12:50	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224	
Calibrator Model/ Identif	ication		Castle Gro	up, GA607	
Wind Speed	(r	n/s)	0.3	0.3	
	L90	(dB(A))	41.1	46.1	
Measurement Results	L10	(dB(A))	48.8	51.3	
	Leq	(dB(A))	47.4	50.3	
Weather condition:			Cloudy		
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.	
Other Noise Source(s) During Monitoring			Public noise Traffic noise	1. Public noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	11/10/2010
	·		



Monitoring Location		N1	N2		
Description of Location			Façade	Façade	
Date of Monitoring	Date of Monitoring)/2010	
Measurement Start Time	е	(hhmm)	14:35	14:00	
Measurement Time Len	gth	(mins.)	30 r	mins	
Noise Meter Model/ Ider	ntification	on	ACO Japan,	, model 6224	
Calibrator Model/ Identif	ication		Castle Gro	oup, GA607	
Wind Speed	(1	m/s)	0.4	0.5	
	L90	(dB(A))	41.7	37.6	
Measurement Results	L10	(dB(A))	54.4	53.1	
	Leq	(dB(A))	52.3	49.3	
Weather condition:			Sunny		
Major Construction Noise Sourse(s) During Monitoring			No construction works are being carried out during measurement.	No construction works are being carried out during measurement.	
Other Noise Source(s) During Monitoring			1. Public noise 2. Traffic noise	Public noise Traffic noise	
Remarks					

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	4	18/10/2010



Monitoring Location			N3	N4			
Description of Location			Freefield	Facede			
Date of Monitoring			18/10/2010				
Measurement Start Time	е	(hhmm)	13:25	12:50			
Measurement Time Len	gth	(mins.)	30 1	mins			
Noise Meter Model/ Ide	ntificatio	on	ACO Japan,	model 6224			
Calibrator Model/ Identif	fication		Castle Gro	up, GA607			
Wind Speed	1)	m/s)	0.4	0.4			
	L90	(dB(A))	49.4	45.6			
Measurement Results	L10	(dB(A))	58.5	50.5			
	Leq	(dB(A))	56.6	48.9			
Weather condition:			Sunny				
Major Construction Nois Monitoring	se Sour	se(s) During	1. Excavator noise	No construction works are being carried out during measurement.			
Other Noise Source(s) [Ouring I	Monitoring	Public noise Traffic noise	1. Public noise			
Remarks							

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	18/10/2010



Monitoring Location			N1	N2			
Description of Location			Façade	Façade			
Date of Monitoring			25/10)/2010			
Measurement Start Time	е	(hhmm)	12:45	12:10			
Measurement Time Len	gth	(mins.)	30 r	mins			
Noise Meter Model/ Ider	ntificatio	on	ACO Japan,	model 6224			
Calibrator Model/ Identif	ication		Castle Gro	up, GA607			
Wind Speed	(r	n/s)	0.3	0.3			
	L90	(dB(A))	41.1	34.1			
Measurement Results	L10	(dB(A))	57.4	46.8			
	Leq	(dB(A))	54.7	44.7			
Weather condition:			Sunny				
Major Construction Nois Monitoring	se Sour	se(s) During	Truck noise Excavators noise	No construction works are being carried out during measurement.			
Other Noise Source(s) [Ouring I	Monitoring	Public noise Traffic noise	Public noise Traffic noise			
Remarks			_				

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	25/10/2010
	· · · · · ·		



Monitoring Location			N3	N4			
Description of Location			Freefield	Facede			
Date of Monitoring			25/10/2010				
Measurement Start Time	е	(hhmm)	11:35	10:55			
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)	n/s)	0.4	0.3			
	L90	(dB(A))	39.4	44.0			
Measurement Results	L10	(dB(A))	51.4	54.6			
	Leq	(dB(A))	50.5	56.3			
Weather condition:			Sunny				
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	1. Public noise			
Remarks							

	Name & Designation	<u>Signature</u>	<u>Date:</u>
		1	
Prepared by:	Jimmy Cheng	<u> </u>	25/10/2010
	•		

Appendix F1

Water Quality
Monitoring Data Sheet

Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	4/10/20	10	,	Cloud	ly	-													1		
Monitoring Location		M1		M2			M3 M4			C1			C2			СЗ					
Time (hhmm)		1055			1100			1110			1050			1130		1140			1150		
Tide Mode		mid-ebb	0	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			1.2		<1				< 1		<1		
pH value		8.26			8.90			7.80			7.81			7.12			6.98			6.60	
Temperature (oC)		23.7			24.2			23.2		25.5		23.2		23.8			24.4				
Salinity (ppt)		0.1			0.6			6.0		7.1			0.0		0.0			0.1			
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	0.9	0.9	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	2.4	2.4	Average
DO (mg/l)	9.38	9.38	0.0 Average	9.42	9.40	0.0 Average	9.24	9.20	0.9	8.85	8.87	0.0 Average	9.11	9.11	0.0 Average	9.07	9.09	0.0 Average	7.48	8.21	2.4 Average
			9.38			9.41			9.22			8.86			9.11			9.08			7.85
DO Saturation (%)	112	112	Average	113	113	Average	108	108	Average	109	109	Average	107	107	Average	108	108	Average	90	90	Average
			112			113			108			109			107			108			90

	Name
Prepared By:	Jimmy Cheng

Signature	
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Date 4/10/2010

Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	6/10/20	10		Cloud	ly																	
Monitoring Location		М1			M2			М3			M4			C 1			C2			C 3		
Time (hhmm)		1045			1050		1055				1040			1110		1155			1220			
Tide Mode		mid-ebb)		mid-ebb	1		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			1.3		<1				< 1		< 1			
pH value		7.70			7.70			7.33			7.35		8.32			7.18			6.71			
Temperature (oC)		24.8			25.2			26.0			25.1		24.0			24.7			26.3			
Salinity (ppt)		4.7			3.8			14.6			10.8			0.6		0.0			2.1			
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	9.4	9.4	Average	
DO (mg/l)	8.51	8.52	0.0 Average	8.45	8.43	0.0 Average	6.07	6.08	0.0 Average	6.61	6.62	0.0 Average	8.78	8.80	0.0 Average	8.74	8.76	0.0 Average	7.67	8.21	9.4 Average	
			8.52			8.44			6.08			6.62			8.79			8.75			7.94	
DO Saturation (%)	103	103	Average	102	102	Average	75	75	Average	81	81	Average	104	104	Average	105	105	Average	95	95	Average	
			103			102			75			81			104			105			95	

	Name
Prepared By:	Jimmy Cheng

Signature	
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<i>(/</i>	

Date

6/10/2010 remark or observation:

Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	8/10/20	10		Cloud	ly																
Monitoring Location		M1			M2			М3			M4			C1			C2			C3	
Time (hhmm)		1200			1205			1215			1225			1130			1140			1150	
Tide Mode		mid-ebb)		mid-ebb			mid-ebb)		mid-ebb	1		mid-ebb)		mid-ebb)		mid-ebb)
River Condition		normal			normal			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			1.4			< 1			< 1			< 1	
pH value		6.97			7.04			7.35			7.57			7.58			6.96			6.66	
Temperature (oC)		24.9			24.9			25.8			25.9			23.2			23.6			24.2	
Salinity (ppt)		1.9			8.4			14.3			7.9			0.1			0.0			1.5	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	6.0	6.0	Average 6.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	8.9	8.9	Average 8.9
DO (mg/l)	8.47	8.49	Average 8.48	8.33	8.37	Average 8.35	7.67	7.67	Average 7.67	8.09	8.06	Average 8.08	8.82	8.80	Average 8.81	8.80	8.74	Average	6.69	8.21	Average 7.45
DO Saturation (%)	102	102	Average	101	101	Average	95	94	Average 95	100	100	Average 100	104	104	Average	104	104	Average	80	80	Average 80

	Name
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<i>(/</i>	

Date 8/10/2010

observation:

remark or

Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	11/10/2	010		Cloud	ly																
Monitoring Location		M1			M2			М3			M4			C1			C2			C3	
Time (hhmm)		1455			1500			1505			1450			1515			1530			1540	
Tide Mode		mid-ebb)		mid-ebb			mid-ebb)		mid-ebb	1		mid-ebb)		mid-ebb)		mid-ebb)
River Condition		normal			normal			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			1.4			< 1			< 1			< 1	
pH value		8.04			7.58			7.05			7.69			7.94			7.45			6.74	
Temperature (oC)		26.2			26.2			27.4			26.8			26.4			25.8			26.2	
Salinity (ppt)		0.3			0.2			4.9			3.5			0.2			0.0			0.3	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	2.9	2.9	Average 2.9	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	1.6	1.7	Average	6.7	6.7	Average 6.7
DO (mg/l)	8.58	8.59	Average 8.59	8.17	8.19	Average 8.18	8.43	8.40	Average 8.42	8.80	8.84	Average 8.82	8.09	8.07	Average 8.08	8.39	8.36	Average 8.38	6.77	8.21	Average 7.49
DO Saturation (%)	106	106	Average	102	102	Average	107	107	Average	111	111	Average	101	101	Average	104	104	Average	84	84	Average 84

	Name
Prepared By:	Jimmy Cheng

Signature	
	

Date

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DSEIVAUOTI	rvation:			

Date of Sampling:	12/10/2	010		Sunny	/																
Monitoring Location		M1			M2			М3			M4			C1			C2			СЗ	
Time (hhmm)		1555			1600			1610			1550			1640			1630			1620	
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			1.2			< 1			< 1			< 1		
pH value		8.09			7.66			6.27			7.53			6.91			7.23			6.95	
Temperature (oC)		26.5			27.0			26.3			28.4			27.4			26.6			26.8	
Salinity (ppt)		0.4		0.1				7.7			3.3			0.0			0.0			0.0	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	2.5	2.5	Average 2.5
DO (mg/l)	8.50	8.52	Average 8.51	8.37	8.39	Average 8.38	6.41	6.37	Average 6.39	8.40	8.46	Average 8.43	8.05	8.05	Average 8.05	8.11	8.11	Average 8.11	7.29	8.21	Average 7.75
DO Saturation (%)	107	107	Average	106	106	Average	80	80	Average 80	108	108	Average	102	102	Average	101	101	Average	91	91	Average 91

Name
Prepared By: Jimmy Cheng



Date

Date of Sampling:	13/10/2	010		Sunny	У																
Monitoring Location		M1			M2			М3			M4			C 1			C2			СЗ	
Time (hhmm)		1515			1520			1525			1505			1400			1410			1420	
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			1.3			< 1			< 1			< 1	
pH value		7.75			7.24			6.69			6.83			6.88			6.55			6.54	
Temperature (oC)		27.5			28.1			29.2			28.5			25.2			26.0			25.0	
Salinity (ppt)		0.3			0.1			3.7			3.9			0.0			0.0			0.2	
Turbidity (NTU)	2.9	2.9	Average 2.9	0.0	0.0	Average	12.5	12.5	Average	0.4	0.4	Average 0.4	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	8.7	8.7	Average 8.7
DO (mg/l)	8.67	8.67	Average	8.26	8.28	Average 8.27	9.08	9.09	Average 9.09	8.38	8.37	Average 8.38	8.57	8.59	Average 8.58	8.35	8.39	Average 8.37	6.52	8.21	Average 7.37
DO Saturation (%)	110	110	Average	106	106	Average	119	119	Average	108	108	Average	104	104	Average	104	104	Average	79	79	Average 79

Name
Prepared By: Jimmy Cheng



Date 13/10/2010

Date of Sampling:	18/10/2	010		Sunny	/																
Monitoring Location		M1			M2			М3			М4			C1			C2			СЗ	
Time (hhmm)		1005			1010			1020			1000			1030			1040			1050	
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		6.88			6.78			7.09			7.38			7.63			7.16			6.68	
Temperature (oC)		22.9			23.0			23.4			21.6			23.2			23.2			24.6	
Salinity (ppt)		0.5			1.9			11.9			10.8			0.0			0.0			0.5	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	9.2	9.2	Average 9.2
DO (mg/l)	9.07	9.09	Average 9.08	8.97	8.91	Average	8.85	8.81	Average 8.83	8.90	8.86	Average	8.72	8.72	Average 8.72	8.73	8.73	Average 8.73	6.62	8.21	Average 7.42
DO Saturation (%)	106	106	Average	104	104	Average	104	104	Average	102	102	Average	102	102	Average	102	102	Average	87	87	Average 87

Name
Prepared By: Jimmy Cheng



Date 18/10/2010

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Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	20/10/2	010	,	Cloud	ly																
Monitoring Location		М1			M2			М3			М4			C1			C2			С3	
Time (hhmm)		1050			1100			1110			1040			1120			1130			1140	
Tide Mode		mid-ebb	0		mid-ebb			mid-ebb)												
River Condition		normal			normal			normal			normal			normal			normal			normal	
Water Depth (m)		<1			< 1			< 1			1.4			< 1			< 1			< 1	
pH value		8.00			7.95			9.65			7.78			8.60			7.72			7.04	
Temperature (oC)		25.6			25.0			25.9			25.3			24.1			24.5			26.3	
Salinity (ppt)		13.2			7.8			15.2			14.6			0.4			0.0			1.0	
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	0.4	0.4	Average	0.0	0.0	Average	1.4	1.4	Average	0.0	0.0	Average	13.8	13.8	Average
			0.0			0.0			0.4			0.0			1.4			0.0			13.8
DO (mg/l)	8.90	8.92	Average	8.77	8.73	Average	7.84	7.86	Average	7.92	7.91	Average	8.83	8.85	Average	8.67	8.71	Average	8.27	8.21	Average
			8.91			8.75			7.85			7.92			8.84			8.69			8.24
DO Saturation (%)	109	109	Average	106	108	Average	97	97	Average	97	97	Average	105	105	Average	104	104	Average	102	102	Average
			109			107			97			97			105			104			102

	Name
Prepared By:	Jimmy Cheng

Signature

Date 20/10/2010

Date of Sampling: 23/10/2010 Sunny Monitoring М2 М4 C2 Location M1 М3 C1 C3 1200 1205 1210 1150 1235 1225 1215 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 1.4 <1 < 1 < 1 < 1 < 1 < 1 Water Depth (m) 8.18 7.78 7.53 7.61 7.21 7.66 8.11 pH value 22.7 25.6 24.1 24.1 25.0 25.0 24.1 Temperature (oC) 2.8 5.3 15.9 18.7 0.0 0.1 1.7 Salinity (ppt) Average Average Average Average Average 10.3 0.9 Turbidity (NTU) 7.1 0.0 0.0 1.5 10.2 0.9 1.8 7.1 0.0 1.5 10.3 0.9 1.8 5.4 Average Average Average DO (mg/l) 9.27 9.29 8.69 8.64 8.01 8.86 8.83 8.52 8.54 8.21 8.68 8.69 8.08 8.89 9.28 8.69 8.67 8.05 8.85 8.53 8.55 Average Average Average Average Average Average Average DO Saturation (%) 111 104 104 105 105 98 98 103 103 102 102 109 109 111 104 105 98 103 102 109

Name
Prepared By: Jimmy Cheng



Date 23/10/2010

Date of Sampling:	25/10/2	010		Sunny	/	_															
Monitoring Location	M1			M2			М3			M4			C1			C2			C 3		
Time (hhmm)	1350			1355			1405			1340			1515			1525			1535		
Tide Mode	mid-ebb			mid-ebb																	
River Condition	normal			normal		normal															
Water Depth (m)	<1			<1			<1			1.2			< 1			<1			< 1		
pH value	8.50			7.73			7.05			7.47			8.10			7.40			6.88		
Temperature (oC)	25.4			25.4			27.6			27.1			24.5			24.8		25.3			
Salinity (ppt)	0.4			0.5			4.8			7.7			0.2		0.0			0.3			
Turbidity (NTU)	0.2	0.2	Average	0.0	0.0	Average	3.1	3.2	Average 3.2	9.5	9.5	Average 9.5	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	8.4	8.4	Average
DO (mg/l)	9.45	9.40	Average 9.43	9.06	9.07	Average 9.07	9.86	9.84	Average 9.85	9.72	9.73	Average 9.73	8.28	8.26	Average 8.27	8.64	8.65	Average 8.65	6.68	8.21	Average 7.45
DO Saturation (%)	116	116	Average	111	111	Average	125	125	Average	123	123	Average	105	105	Average	104	104	Average	83	83	Average 83

	Name
Prepared By:	Jimmy Cheng



Date

25/10/2010 rema observa

remark or	
. o.i.i.a.iii oi	
observation:_	
bosci valioni.	

Date of Sampling:	27/10/2	010		Sunny	y																
Monitoring Location	M1			M2			М3			M4			C1			C2			С3		
Time (hhmm)	1450			1500			1510			1445			1345			1400			1410		
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			1.3			< 1			<1			<1		
pH value	8.30			7.67			7.41			7.18			6.85			6.74			6.59		
Temperature (oC)	22.6			23.3			24.1			24.7			20.9			22.7		24.2			
Salinity (ppt)	0.8			3.5			14.2			15.6			0.0		0.0			1.3			
Turbidity (NTU)	0.0	0.0	Average 0.0	0.0	0.0	Average	4.3	4.3	Average 4.3	2.3	2.3	Average 2.3	0.8	0.8	Average 0.8	0.8	0.8	Average 0.8	3.1	3.1	Average 3.1
DO (mg/l)	10.16	10.14	Average	9.68	9.64	Average 9.66	9.96	9.90	Average 9.93	10.44	10.40	Average	9.84	9.86	Average 9.85	9.76	9.70	Average 9.73	9.47	8.21	Average 8.84
DO Saturation (%)	119	119	Average	114	114	Average	120	120	Average	126	126	Average 126	111	111	Average 111	113	113	Average	113	113	Average

	Name
Prepared By:	Jimmy Cheng

Signature	
	

Date

27/10/2010 remark or observation:

Environmental Pioneers & Solutions Limited Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling:	29/10/2	010		Sunny	1								ı			ı			ı		
Monitoring Location		M1			М2			М3			M4			C 1			C2			С3	
Time (hhmm)		1530			1535		1545			1520		1355			1410			1425			
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			1.3		<1			< 1		< 1			
pH value		8.17			8.16			8.15			7.50			7.72			7.21			6.79	
Temperature (oC)		22.6			22.3		24.0			24.0				19.8		21.7				24.4	
Salinity (ppt)		8.2			2.7			18.4			16.7			0.0			0.0			1.8	
Turbidity (NTU)	1.4	1.4	Average	0.0	0.0	Average	2.3	2.3	Average	0.9	0.9	Average	0.0	0.0	Average	0.0	0.0	Average	3.2	3.2	Average
			1.4			0.0			2.3			0.9			0.0			0.0			3.2
DO (mg/l)	9.36	9.38	Average	8.90	8.94	Average	10.10	10.10	Average	8.58	8.60	Average	9.20	9.24	Average	8.77	8.76	Average	9.34	8.21	Average
			9.37			8.92			10.10			8.59			9.22			8.77			8.78
DO Saturation (%)	108	108	Average	102	102	Average	120	120	Average	102	102	Average	101	101	Average	100	100	Average	112	112	Average
			108			102			120			102			101			100			112

	Name
Prepared By:	Jimmy Cheng



Date 29/10/2010

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.	: GCC1	1010001:			Date of Issue		; 19-1	0-2010								
Client*	: Enviro	onmental	Pioneers	& Solu	tions Lim	ited			(Date Received	t	: 08-0	9-2008			
Client Address*	: <u>8/F, 0</u>	Chaiwan I	ndustrial	Centre	Building,	20 Lee (Chui	ng Street, Cl	haiwan,	нк.						
	DSD	Contract	No. DC/2	2006/1	l - Draina	ige Impro	vem	ent in South	nern Lan	tau & Constri	uctio	n of				
Project*	: Mui V	Vo Village	Sewera	ge Phas	e 1											
Test Location	: <u>G/F</u>	, 20 Pak	Kung Str	eet, Hu	ng Hom,	Kowloon				Date Started		: 04-1	0-2010			
W.O. No.*	:			Sa	mple Typ	e* : <u>R</u>	iver	Water		Date Completed : 05-10-2010						
GCE Serial No.	: WQM	1102010		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096	1	Test Unit No.		: <u>CH (</u>	8258			
Analysis Descrip	Quality	ality Control Results														
			Method Blank		QC 500 m	g/L Q	C Duplicate	RF	PD%	Spike 25 mg/L						
Suspended Solid	uspended Solids (SS) APHA 20ed 2540 D				mg/L	< 1.0)	495		497	-(0.4	27.4			
	Acceptance				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	ite					
TEST RESULTS	1	npling e/Time	04 Oc1	t 2010	/ 11:30	04 Oct	201	10 / 11:40	04 Oc	t 2010 / 11:	50					
	LOD	Units														
Suspended Solids (SS)	1	mg/L	1.5	,	.9	<1.0		<1.0	6.0	6.0						
	Sam	ple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	М3	M3 Duplica	ate	M4	M4 Duplicate			
TEST RESULTS		npling e/Time	04 Oct	t 2010	/ 10:55	04 Oct	201	10 / 11:00	04 Oct 2010 / 11:		10 04 0		t 2010 / 10:50			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	2.6	2	2.2	2.0		2.1	4.3	4.4		3.6	3.5			
* : Information p	rovided	by client		'												
Note: This I	aborator	y has no	responsit	oility on	sampling	g and all t	he t	test results r	elate on	ly to the sam	ple 1	tested a	as received.			
Remarks :																
_			,			End		4.11								
Tested By :		K.L. FO	ONG				Ар	proved Sign	atory :		./ &	1/				
			· ·	· ·								CHIN				
Checked By :		GU CH	IIN				Po	et		Chem	ist					

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



Page 1 of 1

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC101000143 Date of Issue : 19-10-2010 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** : 06-10-2010 W.O. No.* Sample Type* : River Water Date Completed: 07-10-2010 GCE Serial No. : WQM102010 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 **Test Method** Units Analysis Description **Quality Control Results** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank Suspended Solids (SS) APHA 20ed 2540 D < 1.0 497 495 0.4 26.1 mg/L Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514 ≤ ±5% $21 \le R \le 29$ C1 Duplicate C3 Sample ID C₁ C2 C2 Duplicate C3 Duplicate **TEST RESULTS** Sampling 06 Oct 2010 / 11:10 06 Oct 2010 / 11:55 06 Oct 2010 / 12:20 Date/Time LOD Units Suspended 1 mg/L 2.2 2.0 1.2 1.3 8.5 8.4 Solids (SS) Sample ID M1 Duplicate M2 M2 Duplicate M3 Duplicate М4 M4 Duplicate **TEST RESULTS** Sampling 06 Oct 2010 / 10:45 06 Oct 2010 / 10:50 06 Oct 2010 / 10:55 06 Oct 2010 / 10:40 Date/Time LOD Suspended 1 3.6 3.6 1.8 2.2 4.9 4.0 3.5 3.1 mg/L Solids (SS) *: Information provided by client Note: This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Location M1 & WE3 and Location M3 & WE4 are the same location. Remarks: ---- End ----Tested By : K.L. FONG Approved Signatory **GU CHIN** Name Checked By : GU CHIN Post Chemist

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

: GCC101000135

Report No.



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Date of Issue : 19-10-2010

Client*	: Environmental Pioneers & Solutions Limited Date Received : 08-09-2008											9-2008	
Client Address*	: <u>8/F, C</u>	Chaiwan I	ndustrial	Centre	Building	20 Lee (Chur	ng Street, Cl	haiwan,	нк.			
	DSD (Contract	No. DC/2	006/11	- Draina	ige Impro	vem	ent in South	nern Lar	ntau & Constr	uctio	on of	
Project*	: Mui V	Vo Village	Sewera	ge Phas	e 1								
Test Location	: <u>G/F</u>	, 20 Pak	Kung Str	eet, Hui	ng Hom,	Kowloon				Date Started		: 08-1	0-2010
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	iver	Water		Date Complet	ted	: 08-1	0-2010
GCE Serial No.	: WQM	102010		_ GC	E Reg. N	lo. : <u>G</u>	CE (081096		Test Unit No.		: <u>CH (</u>	08258
Analysis Descrip	tion	To	est Meth	od	Units				Quality	Control Resu	ılts		
						Metho Blank		QC 500 m	g/L C	C Duplicate	RI	PD%	Spike 25 mg/L
Suspended Solid	s (SS)	APHA	\ 20ed 2	540 D	mg/L	< 1.0)	497		497	(0.0	26.8
			Acc	eptance	Criteria	<2.5 m	g/L	475 ≤ C	ontrol L	imit ≤ 514	≤	±5%	21 ≤ R ≤ 29
	Sam	ple ID	C1	C1 D	uplicate	C2	C	2 Duplicate	C3	C3 Duplic	ate		
TEST RESULTS		npling e/Time	08 Oct	2010	11:30	08 Oct	201	10 / 11:40	08 0	ct 2010 / 11:	50		
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.7	4	.0	<1.0		<1.0	6.6	7.2			
	Sam	iple ID	M1	M1 D	uplicate	M2	M	2 Duplicate	М3	M3 Duplic	ate	М4	M4 Duplicate
TEST RESULTS		npling e/Time	08 Oct	2010	/ 12:00	08 Oct	201	10 / 12:05	08 0	ct 2010 / 12:	15	08 Oc	et 2010 / 12:25
	LOD	Units											
Suspended Solids (SS)	1	mg/L	3.3	3	3.6	3.2		2.9	4.7	4.8		2.7	3.4
			responsit	oility on	sampling	g and all t	the t	test results r	relate o	nly to the san	nple	tested	as received.
Remarks :						End							
						ENG							
										,	,	r F	

Tested By K.L. FONG Approved Signatory : **GU CHIN** Name Checked By : ___ **GU CHIN** Post Chemist

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 : GCC101000169 Report No. Date of Issue : 19-10-2010 : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 11-10-2010 W.O. No.* Sample Type* : River Water Date Completed: 12-10-2010 GCE Serial No. : WQM102010 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 **Test Method Analysis Description** 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< 1.0 496 498 -0.4 25.4 Acceptance Criteria < 2.5 mg/L475 ≤ Control Limit ≤ 514 ≤ ±5% $21 \le R \le 29$ C1 C1 Duplicate Sample ID C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 11 Oct 2010 / 15:15 11 Oct 2010 / 15:30 11 Oct 2010 / 15:40 Date/Time LOD Units Suspended 1.5 2.0 2.3 mg/L 2.7 5.6 6.0 Solids (SS) Sample ID M1 Duplicate M2 M2 Duplicate M3 Duplicate M4 Duplicate **TEST RESULTS** Sampling 11 Oct 2010 / 14:55 11 Oct 2010 / 15:00 11 Oct 2010 / 15:05 11 Oct 2010 / 14:50 Date/Time LOD Units Suspended 2.8 2.3 1 mg/L 1.5 1.5 4.6 4.3 2.8 3.0 Solids (SS) *: Information provided by client Note: This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Remarks: ---- End -----Tested By K.L. FONG Approved Signatory Name **GU CHIN** Checked By : GU CHIN Post Chemist

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC	1010001	77 	********						Date of Issue		: 19-1	0-2010			
Client*	: Envir	onmental	Pioneers	& Solu	tions Lim	ited				Date Receive	d	: 08-0	9-2008			
Client Address*	: 8/F,	Chaiwan I	ndustrial	Centre	Building,	. 20 Lee (Chung	g Street, Cl	haiwan,	HK.						
	DSD	Contract	No. DC/2	2006/11	- Draina	ige Impro	veme	nt in South	nern Lar	ntau & Constr	uctio	n of				
Project*	: <u>Mui \</u>	Wo Village	Sewera	ge Phas	e 1											
Test Location	:G/F	, 20 Pak	Kung Str	eet, Hu	ng Hom,	Kowloon				Date Started	: <u>12-10-2010</u>					
W.O. No.*	:			Sar	nple Typ	e* : <u>R</u>	liver V	Vater		Date Completed : 13-10-2010						
GCE Serial No.	: <u>WQN</u>	/102010		_ GC	E Reg. N	lo. : <u>G</u>	CE 0	81096		Test Unit No.		: <u>CH (</u>	08258			
Analysis Descrip	tion	т.	est Meth	od	Units				Quality	Control Resu	lts					
			***			Method Blank		QC 500 mg/L		QC Duplicate		PD%	Spike 25 mg/L			
Suspended Solid	Suspended Solids (SS) APHA 20ed			540 D	mg/L	< 1.0	o	496		495	0.2		27.7			
Acc			Acce	eptance	Criteria	<2.5 m	ıg/L	475 ≤ Control		imit ≤ 514	≤ =	±5%	21 ≤ R ≤ 29			
	San	nple ID	C1	C1 D	uplicate	C2	C2	Duplicate	С3	C3 Duplica	ate					
TEST RESULTS	Sampling Date/Time		12 Oct 2010 /		/ 16:40	12 Oct	2010) / 16:30	12 Oc	et 2010 / 16:	20					
	LOD	Units														
Suspended Solids (SS)	1	mg/L	2.3	1	.9	1.9		1.5	5.4	5.0						
	San	nple ID	M1	M1 D	uplicate	M2	M2	Duplicate	МЗ	M3 Duplica	ate	M4	M4 Duplicate			
TEST RESULTS		mpling e/Time	12 Oct	2010	15:55	12 Oct	2010) / 16:00	12 Oc	ct 2010 / 16:10		12 Oc	t 2010 / 15:50			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	1.8	2	!. 4	<1.0		<1.0	1.3	1.1		3.3	2.8			
* : Information p	rovided	by client														
Note: This la	aboratoi	v has no i	responsib	ility on	sampline	and all t	the te	st results r	elate or	nly to the sam	ple t	ested a	is received.			
		,	,	., .		,				.,						
Remarks :																
nemarks :	<u>.</u>					End										
										/	. ,	. <u>F</u>				
Tested By :		K.L. FC	NG				Approved Signatory		atory	: :		() L				
Checked By	ed By : GU CHIN						Name :				GU CHIN Chemist					

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC101000185 Date of Issue : 19-10-2010 Client* : Environmental Pioneers & Solutions Limited **Date Received** : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 13-10-2010 W.O. No.* Sample Type* : River Water Date Completed: 14-10-2010 GCE Serial No. : WQM102010 : GCE 081096 GCE Reg. No. Test Unit No. : CH 08258 **Analysis Description Test Method** Units **Quality Control Results** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 498 497 0.2 26.9 Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514 21 ≤ R ≤ 29 ≤ ±5% Sample ID C1C1 Duplicate C2 C2 Duplicate C3 C3 Duplicate **TEST RESULTS** Sampling 13 Oct 2010 / 14:00 13 Oct 2010 / 14:00 13 Oct 2010 / 14:00 Date/Time LOD Units Suspended 1 mg/L < 1.0 < 1.0 1.5 1.2 4.8 5.4 Solids (SS) Sample ID M1 M1 Duplicate M2 M2 Duplicate М3 M3 Duplicate M4 M4 Duplicate **TEST RESULTS** Sampling 13 Oct 2010 / 15:15 13 Oct 2010 / 15:20 13 Oct 2010 / 15:25 13 Oct 2010 / 15:05 Date/Time LOD Units Suspended 2.7 3.7 1 mg/L 3.0 1.4 1.6 8.2 8.8 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

Post

GU CHÍN

Chemist

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

Checked By :



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC101000737 : 01-11-2010 Date of Issue Client* : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Test Location** Date Started : 18-10-2010 W.O. No.* Sample Type* : River Water Date Completed: 19-10-2010 : WQM102010 GCE Serial No. GCE Reg. No. : GCE 081096 : CH 08258 Test Unit No. Analysis Description **Test Method** Units **Quality Control Results** Method RPD% QC 500 mg/L QC Duplicate Spike 25 mg/L Blank 496 26.6 Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 495 0.2 Acceptance Criteria < 2.5 mg/L ·475 ≤ Control Limit ≤ 514 $21 \le R \le 29$ ≤ ±5% C1 Duplicate C3 C3 Duplicate Sample ID C1 C2 C2 Duplicate **TEST RESULTS** Sampling 18 Oct 2010 / 10:30 18 Oct 2010 / 10:40 18 Oct 2010 / 10:50 Date/Time LOD Units Suspended 1 mg/L 2.4 2.6 1.6 1.8 13.0 12.6 Solids (SS) Sample ID M2 Duplicate М3 M3 Duplicate M4 Duplicate M1 M1 Duplicate M2 M4 TEST RESULTS Sampling 18 Oct 2010 / 10:05 18 Oct 2010 / 10:20 18 Oct 2010 / 10:00 18 Oct 2010 / 10:10 Date/Time LOD Units Suspended 2.6 5.3 5.5 2.9 3.2 1 mg/L 2.1 1.4 1.6 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 -----Approved Signatory Tested By K.L. FONG Name **GU CHÍN**

Post

Chemist

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

Checked By :



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC101000745 Date of Issue : 01-11-2010 : Environmental Pioneers & Solutions Limited Date Received : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 20-10-2010 **Test Location** W.O. No.* Sample Type* Date Completed: 20-10-2010 : River Water GCE Serial No. : WQM102010 GCE Reg. No. : GCE 081096 : CH 08258 Test Unit No. **Test Method** Units **Quality Control Results Analysis Description** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank 496 Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 496 0.0 26.6 < 2.5 mg/L 475 ≤ Control Limit ≤ 514 $21 \le R \le 29$ Acceptance Criteria ≤ ±5% C1 Duplicate C_2 C2 Duplicate C3 C3 Duplicate Sample ID C₁ **TEST RESULTS** Sampling 20 Oct 2010 / 11:20 20 Oct 2010 / 11:30 20 Oct 2010 / 11:40 Date/Time LOD Units Suspended 1.6 1.4 1.2 1.1 10.3 10.4 mg/L Solids (SS) Sample ID M1 M1 Duplicate M2 M2 Duplicate МЗ M3 Duplicate M4 M4 Duplicate **TEST RESULTS** Sampling 20 Oct 2010 / 10:50 20 Oct 2010 / 11:00 20 Oct 2010 / 11:10 20 Oct 2010 / 10:40 Date/Time LOD Units Suspended mg/L 2.3 2.0 3.7 3.8 3.8 3.8 1 3.0 2.3 Solids (SS) *: Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Remarks: ---- End -----Approved Signatory Tested By K.L. FONG Name **GU CHIN**

Post

Chemist

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

Checked By :



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC101000753									ate of Issue		: 01-1	1-2010			
Client* Client Address*		nmental					`bue	ug Straat Ch		ate Received	d	: 08-0	9-2008			
Chefft Address										tau & Constr	uctio	on of				
Project*		/o Village				gp.										
Test Location	: G/F,	20 Pak l	Cung Stre	et, Hur	ng Hom,	Kowloon.			Date Started : 23-10-2010							
W.O. No.*	:		- Alle State of the Control of the C	Sar	nple Typ	e* : Ri	ver	Water		Date Completed : 23-10-2010						
GCE Serial No.	; WQM	102010		GC	E Reg. N	o. : <u>G</u>	CE (081096	1	est Unit No.		: <u>CH (</u>	08258			
Analysis Descript	tion	т	est Metho	od	Units	****			Quality	Control Resu	lts					
						Method Blank		QC 500 mg	g/L Q	Duplicate	RPD%		Spike 25 mg/L			
Suspended Solids	spended Solids (SS) APHA 20ed 2540 D			40 D	mg/L	< 1.0	١	496		496		0.0	27.5			
	Acceptance				Criteria	<2.5 m	g/L	475 ≤ Co	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		npling r/Time	23 Oct 2010 / 12:3!			23 Oct	23 Oct 2010 / 12:25 23			t 2010 / 12 :	15					
	LOD	Units										:				
Suspended Solids (SS)	1	mg/L	<1.0	<	1.0	<1.0		<1.0	4.7	4.4						
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	мз	M3 Duplic	ate	M4	M4 Duplicate			
TEST RESULTS		npling e/Time	23 Oct	2010	/ 12:00	23 Oct	201	10 / 12:05	23 Oc	23 Oct 2010 / 12:		23 00	et 2010 / 11:50			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	5.3	Ę	5.7	2.3		2.2	4.1	4.8		10.9	11.1			
* : Information p	rovided	by client														
Note: This la	aborator	y has no	responsib	ility on	sampling	g and all t	he t	test results r	elate on	ly to the san	nple	tested	as received.			
Remarks :																
						End										
Tested By :		K.L. FO	ONG				Аp	proved Sign	atory			1/				
							Name -			: GU CHIN						
Checked By :	: GU CHIN						Post : Chemist									

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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1 Report No. : GCC101000761 : 01-11-2010 Date of Issue Date Received Client* : Environmental Pioneers & Solutions Limited Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 25-10-2010 W.O. No.* Sample Type* : River Water Date Completed : 26-10-2010 GCE Serial No. : WQM102010 : GCE 081096 GCE Reg. No. Test Unit No. : CH 08258 **Test Method** Units **Quality Control Results Analysis Description** Method QC 500 mg/L QC Duplicate RPD% Spike 25 mg/L Blank Suspended Solids (SS) APHA 20ed 2540 D mg/L < 1.0 496 495 0.2 27.5 Acceptance Criteria < 2.5 mg/L 475 ≤ Control Limit ≤ 514 $21 \le R \le 29$ ≤ ±5% Sample ID C1 C1 Duplicate C2 C2 Duplicate C3C3 Duplicate **TEST RESULTS** Sampling 25 Oct 2010 / 15:15 25 Oct 2010 / 15:25 25 Oct 2010 / 15:35 Date/Time LOD Units Suspended 7.9 1 mg/L < 1.0 < 1.0 < 1.0 < 1.0 8.1 Solids (SS) M4 Duplicate Sample ID M1 M1 Duplicate M2 M2 Duplicate М3 M3 Duplicate M4 **TEST RESULTS** Sampling 25 Oct 2010 / 13:40 25 Oct 2010 / 13:50 25 Oct 2010 / 13:55 25 Oct 2010 / 14:05 Date/Time LOD Units Suspended 3.1 4.5 1.4 1.6 3.5 2.8 9.2 8.5 1 mg/L Solids (SS) *: Information provided by client This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received. Note: Remarks: ---- End -----

Approved Signatory :

GU CHIN

Chemist

Name

Post

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

Tested By

Checked By :

K.L. FONG



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No.	: GCC1	010007	79							Date of Issue		: 01-1	1-2010			
Client*	: Enviro	nmental	Pioneers	& Solu	tions Lim	nited			[Date Receive	d	: 08-0	9-2008			
Client Address*	: 8/F, C	haiwan l	Industrial	Centre	Building	. 20 Lee (Chui	ng Street, Cl	haiwan,	HK.						
	DSD (Contract	No. DC/2	2006/11	I - Draina	age Impro	vem	ent in South	nern Lan	tau & Constr	ucti	on of				
Project*	: <u>Mui V</u>	vo Village	e Sewera	ge Phas	se 1											
Test Location	:G/F.	20 Pak	Kung Str	eet, Hu	ng Hom,	Kowloon				Date Started : 27-10-2010						
W.O. No.*	:			Sar	mple Typ	e* : <u>R</u>	iver	Water		Date Complet	ted	: 28-1	0-2010			
GCE Serial No.	: WQM	102010		_ GC	E Reg. N	lo. : <u>G</u>	CE	081096		lest Unit No.		: <u>CH C</u>)8258			
Analysis Descrip	tion	Т	est Meth	od	Units				Quality	Control Resu	ılts					
						Method Blank		QC 500 m	g/L Q	C Duplicate	R	PD%	Spike 25 mg/L			
Suspended Solids (SS) APHA 20ed 2			540 D	mg/L	< 1.0)	495		492		0.6	25.7				
			Acce	eptance	Criteria	<2.5 m	g/L	475 ≤ Control I		_imit ≤ 514 ≤		±5%	21 ≤ R ≤ 29			
	Sam	ple ID	C1	C1 D	uplicate	C2	C:	2 Duplicate	СЗ	C3 Duplica	ate					
TEST RESULTS	Sampling Date/Time		27 Oct 2010 /		/ 13:45	27 Oct	201	10 / 14:00	27 Oc	t 2010 / 14:	10					
	LOD	Units			,											
Suspended Solids (SS)	1	mg/L	2.0	2	2.3	3.0		2.8	6.0	5.6						
	Sam	ple ID	M1	M1 D	uplicate	M2	M:	2 Duplicate	МЗ	M3 Duplic	ate	M4	M4 Duplicate			
TEST RESULTS	1	pling /Time	27 Oct	2010	/ 14:50	27 Oct	201	10 / 15:00	27 Oc	27 Oct 2010 / 15:		27 Oc	t 2010 / 14:45			
	LOD	Units														
Suspended Solids (SS)	1	mg/L	1.2	1	.4	<1.0		<1.0	4.8	4.4		5.8	6.4			
* : Information p	rovided l	by client														
Note: This is	aboratory	/ has no	responsib	ility on	sampling	g and all t	he t	est results r	elate on	ly to the sam	ple :	tested a	as received.			
Remarks :																
						End										
Tested By :		K.L. FO	ONG				Ар	proved Sign	atory ;		<u>]]</u> .	(
							Name			: GU CHIN						
Checked By		GUICH	IIM				Pos	et .	,	Chem	nist					



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TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC101000787(A) Date of Issue : 01-11-2010 Client* : Environmental Pioneers & Solutions Limited **Date Received** : 08-09-2008 Client Address*: 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK. DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Project* : Mui Wo Village Sewerage Phase 1 **Test Location** : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. **Date Started** : 29-10-2010 W.O. No.* Sample Type* : River Water Date Completed: 30-10-2010 GCE Serial No. : WQM102010 : GCE 081096 GCE Reg. No. Test Unit No. : CH 08258

Analysis Descrip	т	Test Method			Quality Control Results										
	V					Method Blank	1	QC 500 m	g/L Q	C Duplicate	R	אס%	Spike 25 mg/L		
Suspended Solid	s (SS)	APHA	4 20ed 2!	540 D	mg/L	< 1.0		495		500		1.0	26.6		
			Acce	eptance	Criteria	<2.5 mg	/L	475 ≤ C	ontrol Li	mit ≤ 514	S :	±5%	21 ≤ R ≤ 29		
,	Sarr	ple ID	C1	C1 D	uplicate	C2	C2	Duplicate	С3	C3 Duplic	ate				
TEST RESULTS	Sampling Date/Time		29 Oct 2010 / 13:55			29 Oct 2	2010	0 / 14:10	29 Oc	t 2010 / 14:	25				
	LOD	Units													
Suspended Solids (SS)	i	mg/L	1.1	1	.0	<1.0		<1.0	6.9	7.6					
-	Sam	pie ID	M1	M1 D	uplicate	M2	М2	Duplicate	мз	M3 Duplic	ate	М4	M4 Duplicate		
TEST RESULTS	Sampling Date/Time 29 Oct 2010 / 15		15:30	29 Oct 2	2010) / 15:35	29 Oc	t 2010 / 15:	45	29 Oc	t 2010 / 15:20				
	LOD	Units													
Suspended Solids (SS)	1	mg/L	4.5	4	₁ 1	2.2		1.5	7.1	7.5		3.3	2.9		

^{*:} 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

Approved Signatory

Name

Post

GU CHIN

Chemist

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

K.L. FONG

GU CHIN

Tested By

Checked By ; _

Appendix G

Monitoring Schedule
for October 2010

Environmental Pioneers and Solutions Limited

DC/2006/11 - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

Master Schedule of EM&A works in October 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10/3	10/4	10/5	10/6	10/7	10/8	10/9
	WQM at: 9:11		WQM, EWQM at: 10:59		WQM at: 12:33	
	Noise monitoring					
10/10	10/11	10/12	10/13	10/14	10/15	10/16
	WQM, EWQM at: 14:46		WQM at: 15:57			
	Noise monitoring					
10/17	10/18	10/19	10/20	10/21	10/22	10/23
	WQM at: 9:02		WQM at: 10:48			WQM at: 11:15
	Noise monitoring					
10/24	10/25	10/26	10/27	10/28	10/29	10/30
	WQM at: 13:22		WQM at: 14:28		WQM at: 16:19	
	Noise monitoring					
10/31					10/1	10/2

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

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

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

Appendix H Implementation Status of environmental protection / mitigation measures

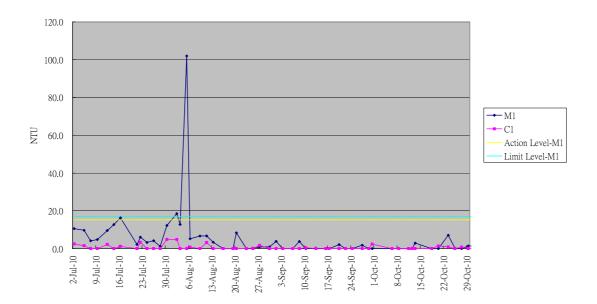
Environmental	Protection / Mitigation Measures	Implementation	Follow-up
Aspect		status	action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Implemented	-
	Use of frequent watering for particular dusty static construction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

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

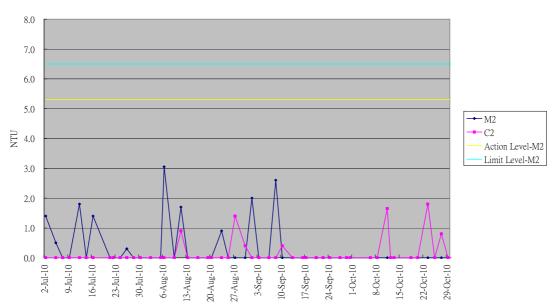
Appendix I

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

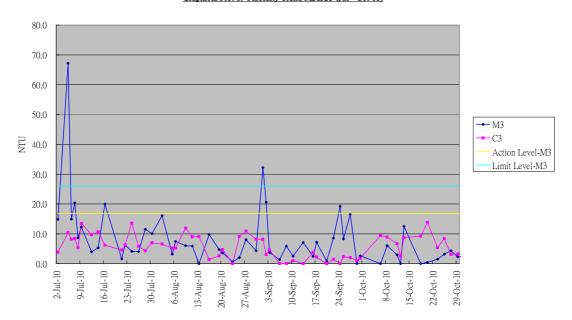
Graphical Plot of Turbidity Trend M1&C1(Jul - Oct 10)



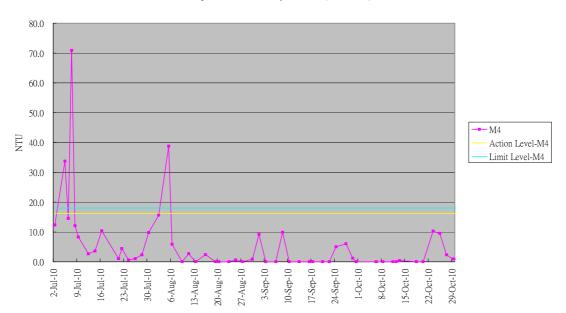
Graphical Plot of Turbidity Trend M2&C2 (Jul - Oct 10)



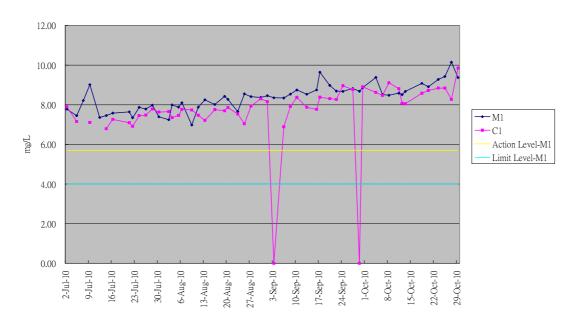
Graphical Plot of Turbidity Trend M3&C3 (Jul - Oct 10)



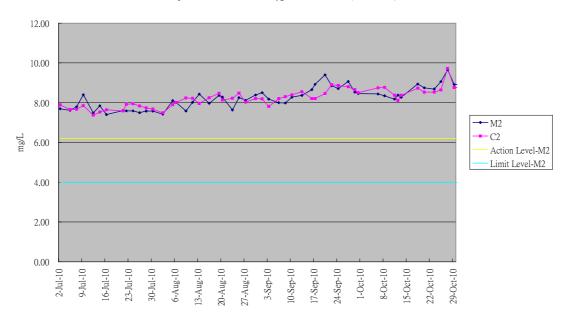
Graphical Plot of Turbidity Trend M4 (Jul - Oct 10)



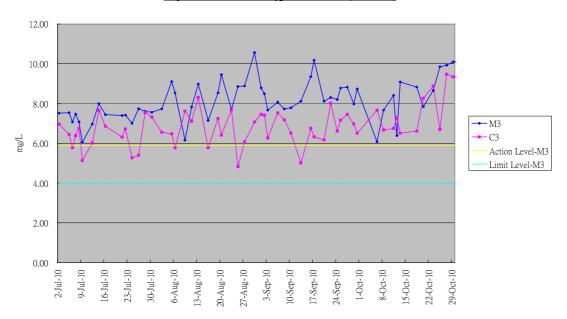
Graphical Plot of Dissolved Oxygen Trend M1&C1 (Jul - Oct 10)



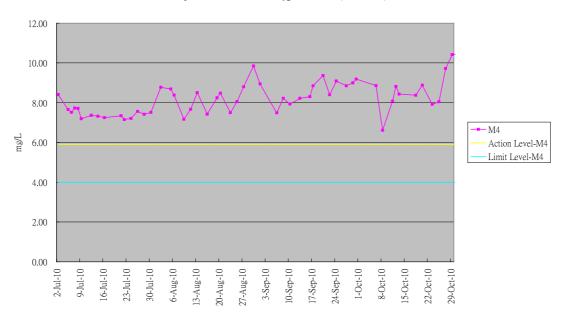
Graphical Plot of Dissolved Oxygen Trend M2&C2 (Jul - Oct 10)



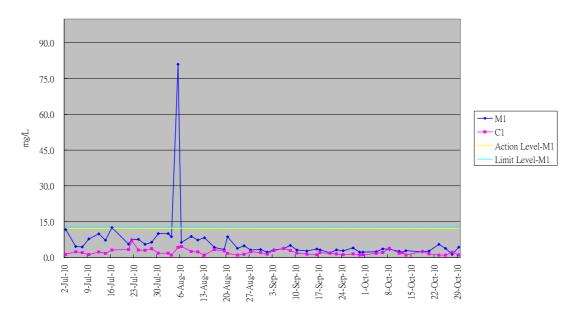
Graphical Plot of Dissolved Oxygen Trend M3&C3 (Jul - Oct 10)



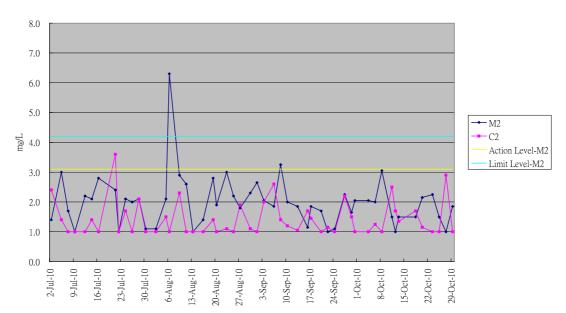
Graphical Plot of Dissolved Oxygen Trend M4 (Jul - Oct 10)



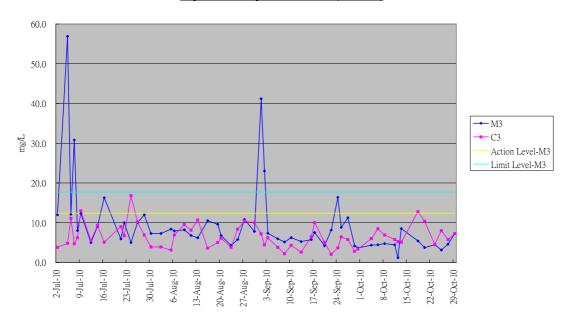
Graphical Plot of Suspended Soild M1&C1 (Jul - Oct 10)



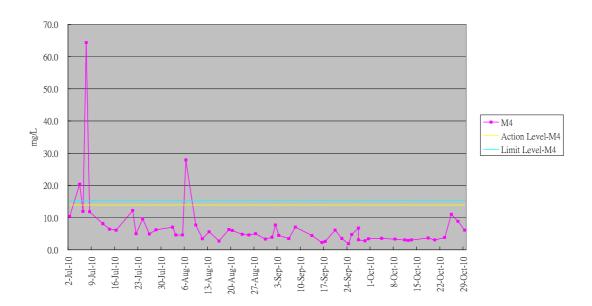
Graphical Plot of Suspended Soild M2&C2 (Jul - Oct 10)



Graphical Plot of Suspended Soild M3&C3 (Jul - Oct 10)



Graphical Plot of Suspended Soild M4 (Jul - Oct 10)



Appendix J

Graphical plot of noise monitoring results

