

Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

Contract No.DC/2006/11

Drainage Improvement in Southern Lantau

July 2009

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EXECUTIVE SUMMARY

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

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

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

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

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

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

There was no complaint, notification of any summons and successful prosecutions against the project received during the reporting period. A yellow form regarding improper site practices and direct discharge of site wastewater was issued by EPD to the contractor on 15 July 2009. ET has been informed by the contractor on 23 July 2009 for the incident and carried out investigation for the corrective actions taken.

Key construction activity in the coming month will be construction of box culvert at PNH, haul access and gabion walls at TTT River and retaining walls, gabion blocks as well as box culvert at LTT River. It is expected that noise, air and water quality impacts will be resulted from the works. With reference to the EM&A manual and mitigation measure report, mitigation measures are proposed to be taken, if necessary.

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

1. Introduction

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

2. Project Information

2.1 Construction program

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

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

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

2.2 Project Organization

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

The environmental management structure and is shown in Fig 2.2.1.

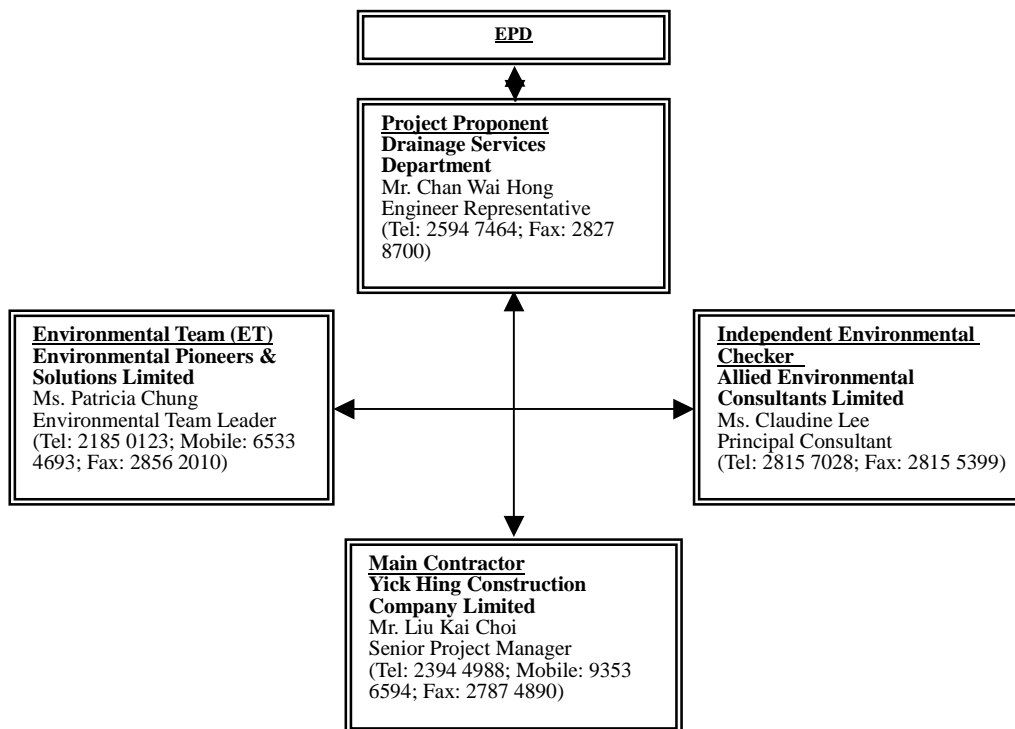


Figure. 2.2.1 Environmental Management structure for the project

2.3 Key Personal Contact information chart

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

3. Construction Stage

3.1 Construction Activities in the reporting month

Major activities in the reporting month included the followings:

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

3.2 Construction Activities for the coming month

Key Construction works in the coming month will include:

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

3.3 Environmental Status

Appendix A shows the drawing of the project area.

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

4. Noise Monitoring

4.1 Monitoring Parameters and Methodology

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

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

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

4.2 Monitoring Equipment

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

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

Table 4.2.1 Equipment List for Noise Monitoring

Equipment	Manufacturer & Model No.	Precision Grade	Qty
Integrated sound level meter	ACO Japan, model 6224	IEC 651 Type 1 IEC 804 Type 1	1
Windscreen	Microtech gefell model W2	N/A	1
Acoustical calibrator	Castle GA 607	IEC 942 Type 1	1
Wind speed indicator	Kestrel K1000	N/A	1
Remarks: Calibration details for the sound level meter is given in Appendix C for reference			

4.3 Monitoring Locations

According to the Baseline Monitoring Report issued in May 2008 for the captioned project, four locations were 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.

Table 4.3.1 Noise Monitoring Locations during Construction Phase

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)

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

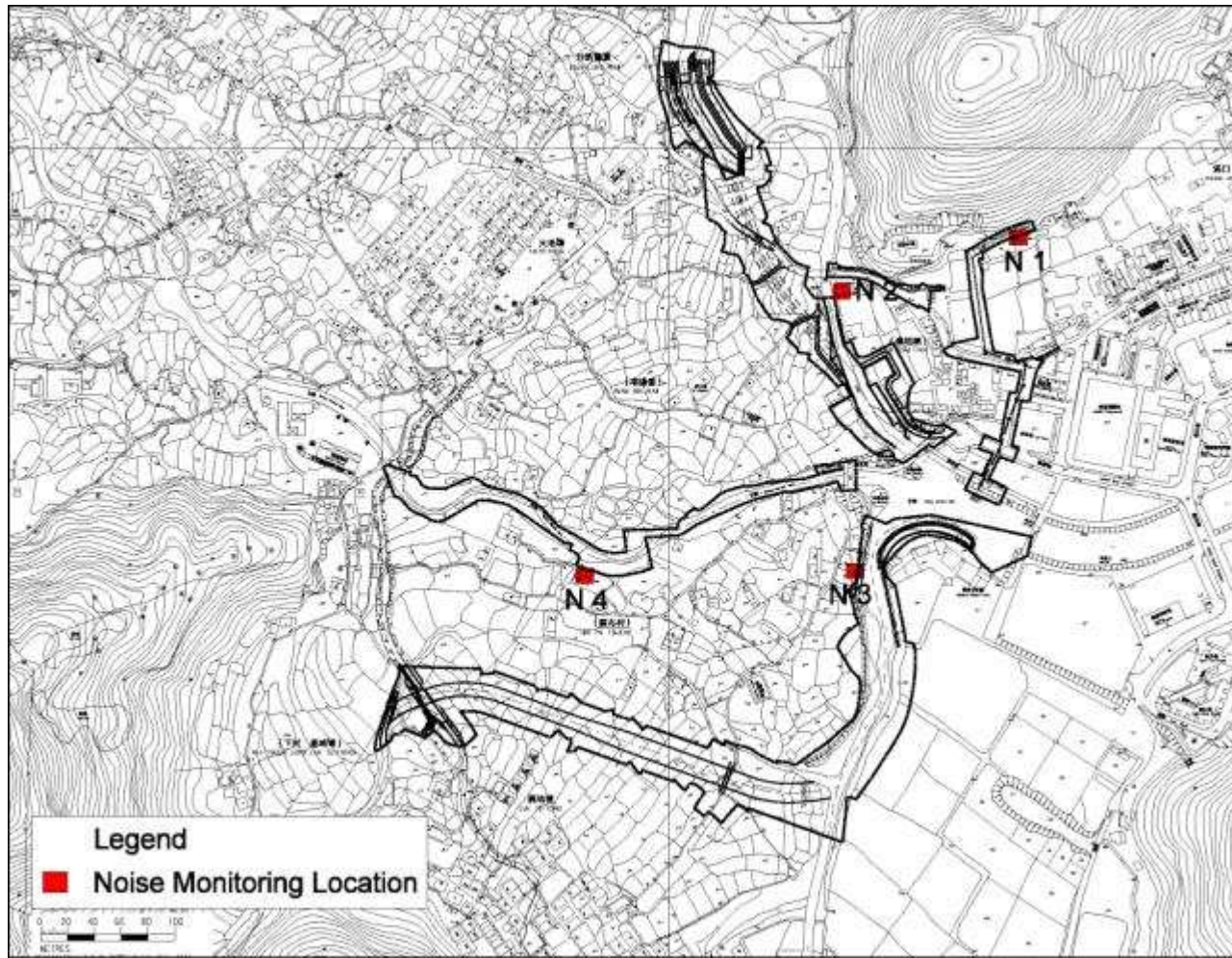


Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 4.4.1. The results, ranged between 48.8 dB (A) and 63.7 dB (A), were within the limit levels and therefore, no exceedance was found.

Table 4.4.1 Noise monitoring results

Table 4.4.1 Noise Monitoring Results for the reporting month							
Location	Parameter	Date	Time	L _{Aeq} dB(A)	Limit dB(A)	Exceedance	Weather
N1	L _{eq} 30mins	6/07/09	15:08	48.8	75	N	Sunny
N1	L _{eq} 30mins	13/07/09	14:45	49.6	75	N	Sunny
N1	L _{eq} 30mins	20/07/09	15:03	50.4	75	N	Sunny
N1	L _{eq} 30mins	27/07/09	14:45	50.4	75	N	Cloudy
N2	L _{eq} 30mins	6/07/09	13:20	53.9	75	N	Sunny
N2	L _{eq} 30mins	13/07/09	14:10	53.7	75	N	Sunny
N2	L _{eq} 30mins	20/07/09	14:25	60.2	75	N	Sunny
N2	L _{eq} 30mins	27/07/09	14:10	60.0	75	N	Cloudy
N3*	L _{eq} 30mins	6/07/09	13:55	62.8	75	N	Sunny
N3*	L _{eq} 30mins	13/07/09	13:35	55.5	75	N	Sunny
N3*	L _{eq} 30mins	20/07/09	13:15	63.7	75	N	Sunny
N3*	L _{eq} 30mins	27/07/09	13:00	57.8	75	N	Cloudy
N4	L _{eq} 30mins	6/07/09	14:30	57.5	75	N	Sunny
N4	L _{eq} 30mins	13/07/09	13:00	60.1	75	N	Sunny
N4	L _{eq} 30mins	20/07/09	13:50	58.6	75	N	Sunny
N4	L _{eq} 30mins	27/07/09	13:35	62.2	75	N	Cloudy

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

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

4.5 Action and Limit level for Construction noise

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

There was no recorded exceedance in the reporting month.

Table 4.5.1 Action and Limit Levels for Construction noise		
Time Period	Action Level	Limit Level
0700 – 1900 hours on normal weekdays	When one documented complaint is received	75dB(A)
Remarks: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.		

Table 4.5.2 Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IC(E)	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IC(E) and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IC(E), ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IC(E); 2. Implement Noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to 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 ER until the exceedance is abated

4.6 Noise Mitigation Measures

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

- Use of quiet powered mechanical equipment (PME)
- Implementation of the following good site practices:
 - Only well-maintained and regularly serviced plant should be operated on site;
 - Silencers or mufflers on construction equipment;
 - Mobile plant, if any, should be sited as far from noise sensitive receivers as possible; and
 - Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.

5. Water Monitoring

5.1 Water Quality Monitoring Parameters and methodology

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

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

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

5.2 Monitoring Equipment

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

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

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

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

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

5.3 Monitoring Locations

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

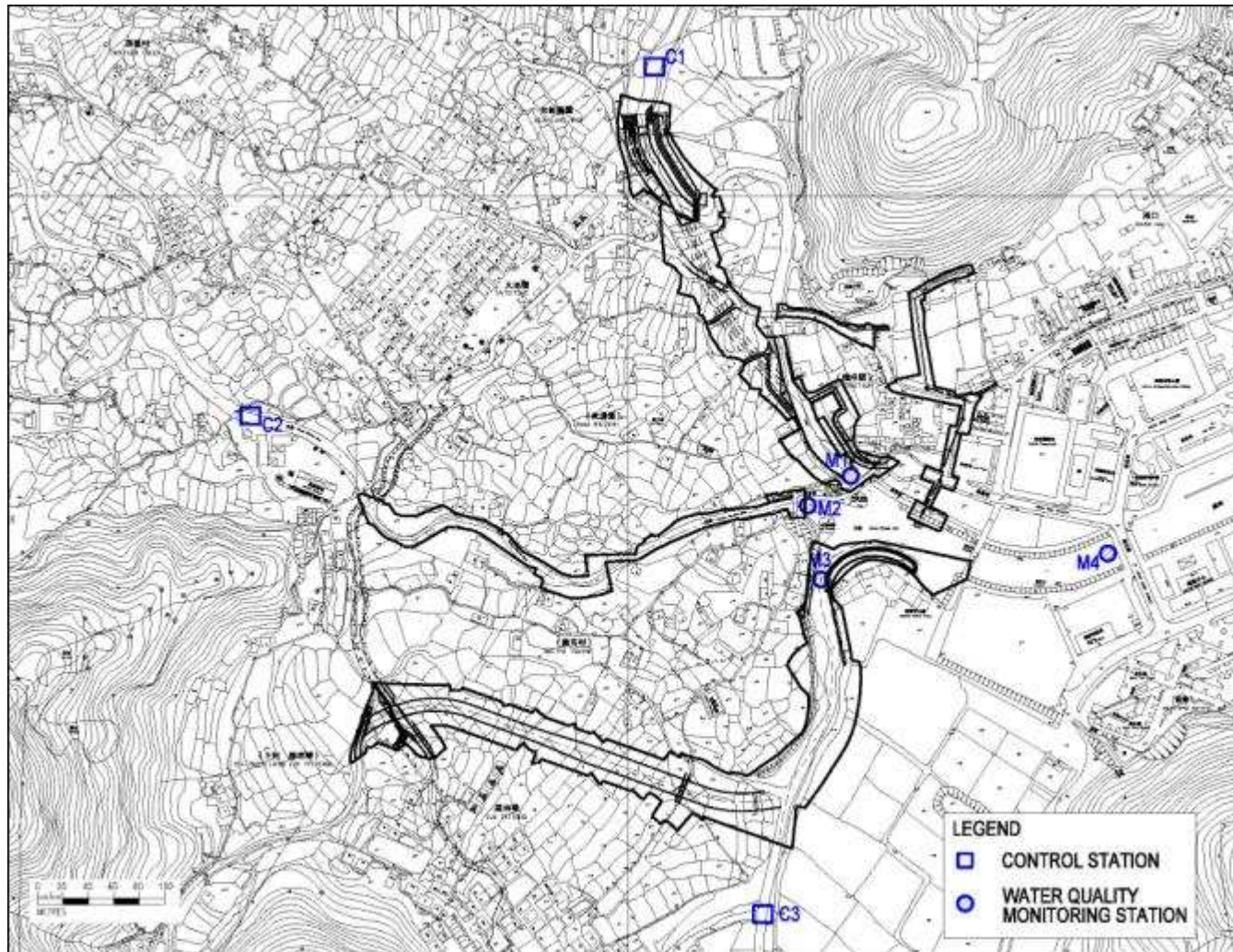


Figure 5.3.1 Water Quality Monitoring Locations

5.4 Monitoring Frequency

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

5.5 Monitoring Results and Interpretation

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

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

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

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

Table 5.5.1 Water quality monitoring results in July 2009

	M1			M2			M3			M4		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	1.1	35.7	8.0	0.0	186.5	13.1	3.7	66.0	12.7	0.0	14.2	5.8
DO (mg/l)	7.3	8.2	7.8	7.0	9.5	7.7	4.8	8.3	7.0	6.8	8.8	7.7
Suspended Solid (mg/l)	2.5	16.0	5.5	1.2	125.6	10.4	9.4	44.8	13.4	5.2	11.3	7.0

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

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

5.6 Action and limit level for Water Quality

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

Table 5.6.1 Water quality criteria for monitoring

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

Table 5.6.2 Action and Limit Levels established according to baseline data

Parameters	Monitoring locations							
	M1		M2		M3		M4	
	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

EVENT	ACTION			
	ET	IC(E)	ER	Contractor
Action Level being exceed by one sampling day	<ol style="list-style-type: none"> 1. Repeat in <i>situ</i> measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and 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 IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures.
Action level being exceed by more than two consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in <i>situ</i> measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; 6. Ensure mitigation measures are implemented; prepare to increase the monitoring frequency to daily 7. Repeat measurement on next day of exceedance 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and 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 IC(E) and propose mitigation measures to IC(E) and ER within three working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in <i>situ</i> measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals in mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and 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 IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures.

5.7 Water Quality Mitigation Measures

Construction Run-off and Drainage

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

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

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

5.8 Water Monitoring Schedule for the Next reporting period

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

6. Ecology Monitoring

6.1 Ecological Monitoring Parameters

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

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

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

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

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

6.2 Monitoring Equipment and Methodology

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

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

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

Suspended solid was determined by the water samples collected from the

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

6.3 Monitoring Locations

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

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

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

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

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

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

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

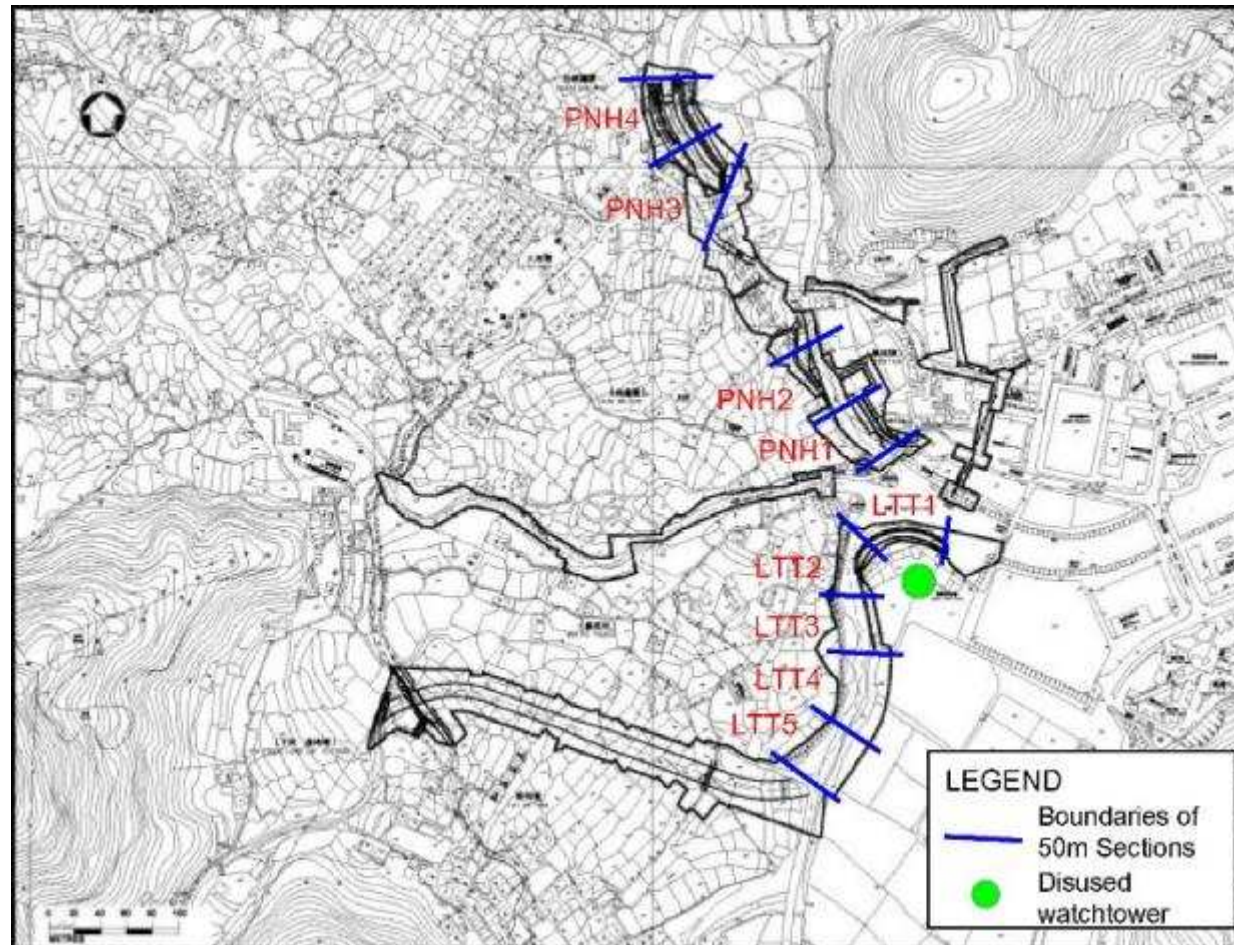


Figure 6.1 Ecological Monitoring Locations

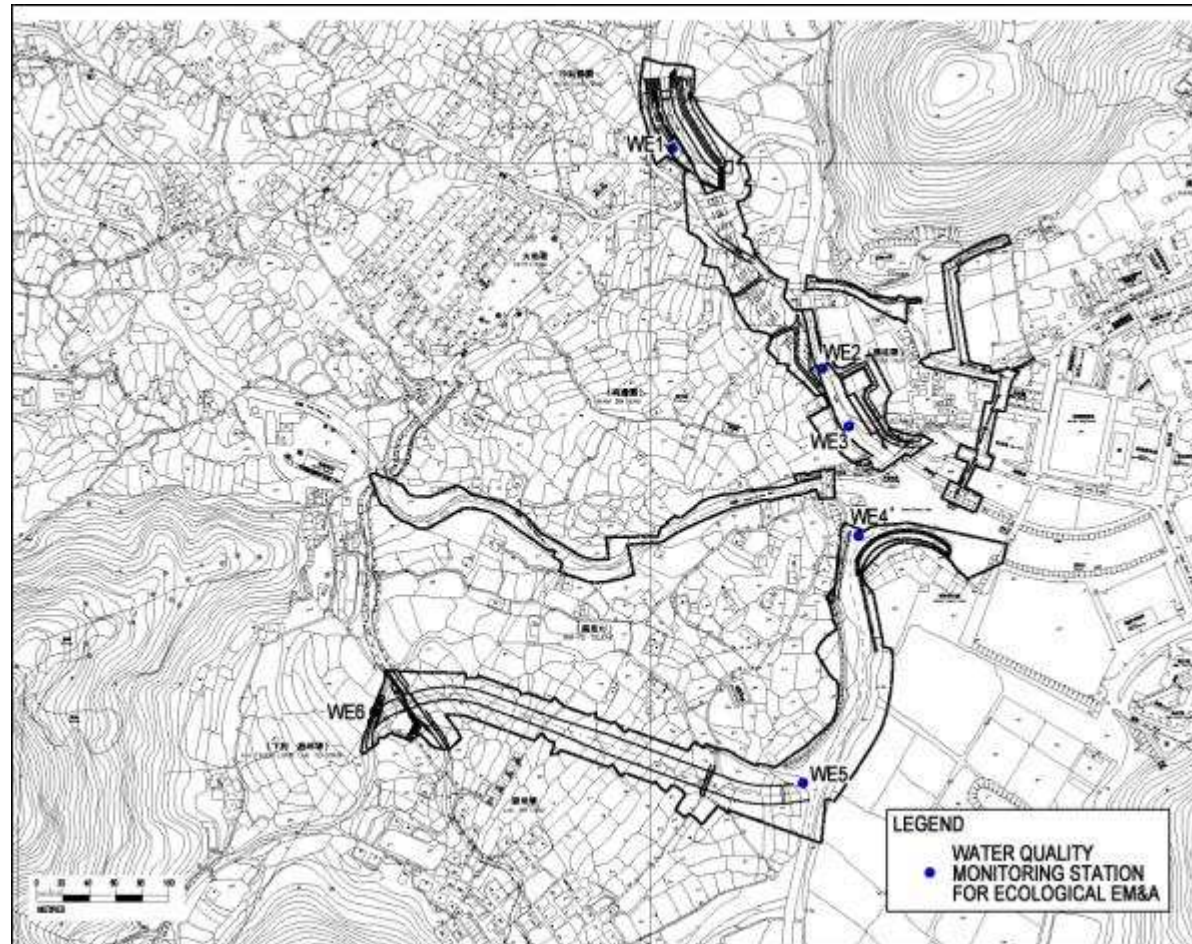


Figure 6.2 Ecological Water Quality monitoring locations

6.4 Monitoring Frequency

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

6.5 Monitoring results

Pak Ngan Heung Stream N and S sections

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

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

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

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

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

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

Terrestrial Fauna

Surveys were conducted on 3 July 2009.

A total of five species of birds were recorded in the proposed work area of the Pak Ngan Heung River (Table 6.5.2). All are common in Hong Kong.

Table 6.5.2 Avifauna in Pak Ngan Heung

Common names	Latin names	PNH 1	PNH 2	PNH 3	PNH 4	Commonness & distribution
Chinese Bulbul	<i>Pycnonotus sinensis</i>	4				CW
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>			3		CW
Magpie Robin	<i>Copsychus saularis</i>	2		1		CW
Common Tailorbird	<i>Orthotomus sutorius</i>	2				CW
Masked Laughingthrush	<i>Garrulax perspicillatus</i>	1				CW

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

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

Table 6.5.3 Dragonfly in Pak Ngan Heung River

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

A = abundant, UC = uncommon

Aquatic fauna and fish

9 species of fish and 3 crustacean were recorded in the 4 sections at PNH. All are common and widespread in Hong Kong. Though Predaceous Chub was observed, the another one fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata*, was not recorded in PNH during the present monthly monitoring survey.

Table 6.5.4 Aquatic Invertebrates and fish in Pak Ngan Heung

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

+ = Occasional, less than 5 individuals were found; ++ = Common, 5 – 20 individuals were found; +++ = Abundant, more than 20 individuals were found.

Luk Tei Tong Stream Section

Vegetation

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

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

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

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

Species	Relative % cover
	LLT2
<i>Acanthus ilicifolius</i>	2.43
<i>Celtis sinensis</i>	9.33
<i>Excoecaria agallocha</i>	7.20
<i>Fimbristylis sp.</i>	8.64
<i>Kandelia obovata</i>	7.58
<i>Premna serratifolia</i>	4.55
<i>Terminalia catappa</i>	35.63
<i>Wollastonia biflora</i>	24.64
	100.0

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

Terrestrial Fauna

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

Surveys were conducted on 3 July 2009.

A total of 13 species of birds were recorded in these sections (Table 6.5.6). All these species are common and widely distributed in Hong Kong.

Table 6.5.6 Avifauna in Luk Tei Tong River

Common names	Latin names	LTT	LTT	LTT	LTT	LTT	Commonness & distribution
		1	2	3	4	5	
Grey Heron	<i>Ardea cinerea</i>		1				CL
Spotted Dove	<i>Streptopelia chinensis</i>	2	5				CW
White Wagtail	<i>Motacilla alba</i>				2		CW
Barn Swallow	<i>Hirundo rustica</i>					3	CW

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

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

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

Table 6.5.7 Dragonfly in Luk Tei Tong River

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

A = abundant, C = common

Aquatic invertebrates and fish

5 species of fish, 2 species of crustacean and 3 species of mollusks were recorded in the 5 sections at LTT. All are common and widespread in Hong Kong. The two fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata* and Predaceous Chub *Parazacco spilurus* were not recorded in LTT during the present monitoring as well as the baseline

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

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

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

+ = Occasional, less than 5 individuals were found; ++ = Common, 5 – 20 individuals were found; +++ = Abundant, more than 20 individuals were found.

Disused Watchtowers

Surveys were conducted on 3 July 2009.

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

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

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

Ecological Water Quality Monitoring (EWQM)

EWQM was conducted on 03 July 2009. Monitoring results are summarized in Table 6.9. Detailed on-site measurements and laboratory report are presented in Appendix D4 and D5.

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

To review the results in Table 6.9 in general, the measured results were found similar with past months.

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

Parameters	Limit of detection	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1	1.25	2.20	8.35	16.70	7.30	1.00
Nitrogen (Ammonia) (mg/l)	0.01	0.03	0.15	0.17	0.27	0.87	0.03
Nitrogen (Nitrate) (mg/l)	0.01	0.09	0.14	0.14	0.36	0.07	0.10
Phosphorous (mg/l)	0.01	0.04	0.07	0.10	0.15	0.30	0.02
BOD ₅ (mg/l)	1	2.00	2.00	2.00	2.00	3.00	2.00
DO (mg/l)	0.01	7.58	8.04	7.93	7.01	7.38	7.12
Turbidity (NTU)	0.1	0.00	0.00	17.20	17.90	3.50	0.00
Temperature (oC)	0.1	27.6	27.8	27.5	28.6	29.1	27.5
pH	0.01	6.74	7.79	7.47	6.75	6.63	6.30
Salinity (ppt)	0.1	0	0.1	0.1	4.2	0.2	0
Conductivity (ms/m)	0.1	7.4	24.1	29.0	742.0	58.5	5.2
Water Flow (m/s)	N/A	0.02	0.05	0.1	0.04	0.04	0.02

Table 6.10 Baseline Results of Ecological water quality monitoring

Parameters	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1.0	2.0	3.0	3.0	<1	<1
Nitrogen (Ammonia) (mg/l)	0.07	0.12	0.11	0.23	0.03	0.02
Nitrogen (Nitrate) (mg/l)	0.12	0.13	0.13	0.31	0.04	0.05
Phosphorous (mg/l)	0.04	0.06	0.06	0.09	0.06	0.05
BOD ₅ (mg/l)	<2	<2	<2	<2	<2	<2
DO (mg/l)	6.58	6.82	6.37	7.61	6.87	5.70
Turbidity (NTU)	4.44	5.12	5.93	6.96	4.65	2.73
PH	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 disturbance to breeding White-shouldered Starlings	1. Increase frequency of monitoring to twice weekly	1. Check all construction actions and working methods
	2. Notify Site Engineer	2. Submit proposals for remedial action to prevent abandonment of the breeding site.
	3. Review construction activities of previous week.	3. Implement remedial action.
	4. Identify any changes in construction activities in previous week	4. Liaise with ET regarding effectiveness of remedial actions.
	5. Discuss remedial actions with Site Engineer	

6.7 Ecological monitoring Schedule

The next ecological surveys are scheduled on 11th, 14th and 26th August, while ecological water quality monitoring is scheduled on 5th August.

7. Action taken in Event of Exceedence

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

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

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

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

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

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

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

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

Table 7.1 Summary of Non-compliance for Water Quality

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

10/07/09	M1 M3	Turbidity, S.S.	Limit Level Action Level, Limit Level	M1 & M3 – No particular observations
13/07/09	M1 M2 M3	Turbidity S.S. Turbidity, S.S.	Limit Level Limit Level Limit Level	M1, M2 & M3 – No particular observations
14/07/09	M1 M2 M3	Turbidity, S.S.	Limit level	M1, M2 & M3 – No particular observations
15/07/09	M1 M2 M3	Turbidity, S.S. Turbidity, S.S. Turbidity	Limit Level	M1 & M3 – No particular observations M2 - Channel clearance activities carried out by the other project at upper stream area, and site water discharge from retaining wall H
16/07/09	M2	Turbidity, S.S.	Limit Level	Channel clearance activities carried out by the other project at upper stream area
20/07/09	M1 M3	Turbidity, S.S.	Limit Level	M1 – No particular observations M3 - Disturbance due to adverse rainy weather
22/07/09	M1 M2 M3	Turbidity, S.S.	Limit Level	M1 & M3 – No particular observations M2 - Haul access formation between Bottleneck A and B of TTT River
23/07/09	M2	Turbidity, S.S.	Limit Level	Haul access formation between Bottleneck A and B of TTT River
24/07/09	M1 M2 M3	Turbidity, S.S. S.S. Turbidity, S.S.	Limit level	M1, M2 & M3 – No particular observations
27/07/09	M1 M2 M3	Turbidity, S.S. S.S. Turbidity, S.S.	Limit Level	M1, M2 & M3 – No particular observations
28/07/09	M1 M2 M3	Turbidity, S.S.	Limit Level	M1 & M3 – No particular observations M2 - Haul access formation between Bottleneck A and B of TTT River
29/07/09	M2	S.S.	Limit Level	M2 – No particular observations
31/07/09	M1 M3	S.S.	Limit Level	M1 & M3 – No particular observations

8. Construction waste disposal

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

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

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

Table 8.1 Summary of Construction Waste Disposal

Month	Amount of Construction Waste disposed		
	Inert Waste (to Public Fill)	Non-inert Waste (to Landfill)	Chemical Waste (to treatment plant)
1 st July 09 to 31 st July 09	4191.30 (ton)	Nil	Nil
Total (from June 08 to July 09)	17589.96 (ton)	65.23 (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 2008	--	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.

	Noise	Water	Ecology	Cultural	Others
July 2009	0	0	0	0	0
Total	0	0	0	0	0

11. Site Environmental Audits

11.1 Site Inspection

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

Within the reporting month, site inspections were conducted on 2, 10, 16, 22 and 27 July 2009.

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

Table 11.1 Summary of site inspection

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

Table 11.1 Summary of site inspection

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

Table 11.1 Summary of site inspection

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

11.2 Compliance with legal and Contractual requirement

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

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

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

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

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

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

11.3 Environmental Complaint and follow up actions

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

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

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

12. Future key issues

Key construction activity in the coming month will include construction of retaining walls at PNH River and TTT River, gabion wall at LTT River, as well as box culvert at PNH River and LTT. It is expected that several impacts on environmental aspects will be generated on-site. With reference to the EM&A manual, mitigation measure report as well as the environmental permit, proper mitigation measures are proposed to be taken, if necessary.

Contractor was seriously advised to provide proper measures to mitigate water quality impacts to the river channels due to construction works. River based construction activities should be carried out in enclosed as well as dry condition to prevent discharge of site water to the stream; containment measures such as bunds and barriers should be provided as to restrict the carrying out of construction works within enclosed dry area of the river. Surface or earth bunds should be covered with tarpaulin to prevent soil erosion.

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

Contractor was reminded that all vehicles should be washed before leaving

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

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

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

13. Conclusions

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

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

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

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

During ecological monitoring survey, no White-shouldered Starling was recorded breeding in the watch tower. There was no sign of disturbance from the Project to the watch tower. The breeding season of White-shouldered Starling in this year has begun. However, the absence of nesting of White-shouldered Starling in the watch tower did not seem to be related to construction works in Luk Tei Tong River. A bird species nests in village house should be to certain extent disturbance tolerant.

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

Also, there were not any notifications of summons recorded during the reporting period. Furthermore, there were not any formal prosecution and complaints recorded. However, a yellow form regarding improper site practices and direct discharge of site wastewater was issued by EPD to the contractor on 15 July 2009. ET has been informed by the contractor on 23 July 2009 for the incident and carried out investigation for the corrective actions taken.

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

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

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

Appendix A

Construction

Programmer and







Location plan

Act ID	Description	Orig Dur	Rem Dur	Early Start	Early Finish	%	Predecessors	2008												2009												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										
7010	Preparation for works (Minor Portion)	131	0	18JAN2008 A	27MAY2008 A	100	0001	Preparation for works (Minor Portion)																																															
7020	Non-working Period at TWT Beach (1)	196	0	01APR2008 A	13OCT2008 A	100		Non-working Period at TWT Beach (1)																																															
7030	uPVC Sewer (DN160-400) M/H A16 - M/H A34	465	30	28MAY2008 A	04SEP2009	94	7010	uPVC Sewer (DN160-400) M/H A16 - M/H A34																																															
7040	uPVC Sewer (DN160-400) M/H A15 - M/H A13	50	0	14OCT2008 A	02DEC2008 A	100	7020	uPVC Sewer (DN160-400) M/H A15 - M/H A13																																															
7050	uPVC Sewer (DN160-400) M/H A11 - M/H A7	50	0	03DEC2008 A	21JAN2009 A	100	7040	uPVC Sewer (DN160-400) M/H A11 - M/H A7																																															
7060	uPVC Sewer (DN160-400) M/H A1 - M/H A3	65	0	22JAN2009 A	27MAR2009 A	100	7050	uPVC Sewer (DN160-400) M/H A1 - M/H A3																																															
8000	Sewerage works at PNH (S4)	772	206	18JAN2008 A	27FEB2010	73	0001	Sewerage works at PNH (S4)																																															
8010	Preparation of works	168	0	07JAN2008 A	22JUN2008 A	100		Preparation of works																																															
8020	uPVC Sewer (DN160-400) M/H ED2 -D28 - D118	320	0	23JUN2008 A	08MAY2009 A	100	8010	uPVC Sewer (DN160-400) M/H ED2 -D28 - D118																																															
8030	uPVC Sewer (DN160-400) M/H D1 - D27	280	191	09MAY2009 A	12FEB2010	32	8020	uPVC Sewer (DN160-400) M/H D1 - D27																																															
9000	Preservation & Protection of Exist Trees	534 *	534 *	06AUG2009	21JAN2011	0	0001	Preservation & Protection of Exist Trees																																															
9010	Preparton for works	100	0	07JAN2008 A	15APR2008 A	100		Preparton for works																																															
9020	Protection & Transplanting Works	1011	534	16APR2008 A	21JAN2011	47	9010	Protection & Transplanting Works																																															

Start date 07JAN2008
 Finish date 21JAN2011
 Data date 06AUG2009
 Run date 15AUG2009
 Page number 6A
 Primavera Systems, Inc.

Yick Hing Construction Co. Ltd.

Drainage Improvement Work in South Lantau
 and Construction of Mui Wo Village Sewerage Phase 1
 Master Programme (Rev.9b)

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

Appendix B Key Personal Contact information chart

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

Appendix C

Calibration Certificates for Measuring Equipments



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

Calibration Reference No. : GCE/CAL/2009/MW/WQM/C2

Client : ENVIRONMENTAL PIONEER AND SOLUTION LIMITED

Equipment No. : WQC-24 Location : Mui Wo Site

Manufacturer : DKK-TOA Serial No.: 617892

Calibration Date : 07 to 09-05-2009 Due Date : 06-08-2009

Criterion: (Repeatability, Linearity)

pH : Both within ± 0.05 pH
 Dissolved oxygen : Both within ± 0.1 mg/L
 Electric conductivity : Both within $\pm 1\%$ FS
 Turbidity : Repeatability : within $\pm 3\%$ FS
 Temperature : Repeatability $\pm 0.25^\circ\text{C}$; Linearity $\pm 0.5^\circ\text{C}$; (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	15.5 mS/m	
0.005	71.8 mS/m	72.8 mS/m	
0.01	0.141 S/m	0.148 S/m	
0.05	0.667 S/m	0.675 S/m	
0.1	1.29 S/m	1.30 S/m	Acceptance Criterion
0.5	5.87 S/m	5.88 S/m	$R^2 > 0.995$
Repeatability	1 st time	0.00 , 5.88 S/m	-
	2 nd time	0.00 , 5.88 S/m	
	3 rd time	0.00 , 5.88 S/m	
	0.00 , 5.88 S/m	0.00 , 0.00	

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

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



Dissolved Oxygen:

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

DO value evaluated by Iodometric Method (mg/L)		Indicated value by meter (mg/L)	Linearity (R ²)
0.00		0.00	0.9990
3.72		3.85	
6.28		6.47	
8.56		8.81	
10.69		10.58	
13.77		13.58	Acceptance Criterion R ² > 0.995
Repeatability	1 st time	0.00 , 8.83	-
	2 nd time	0.00 , 8.80	
	3 rd time	0.00 , 8.81	
	0.00 , 8.56	0.00 , 0.03	

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

pH Value:

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

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

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



Temperature:

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

Setting Temperature (°C)	Indicated value by meter (°C)		Linearity
5.0	4.9		R ² = 0.9999 And SD = ± 0.15°C
15.0	15.2		
25.0	24.8		
35.0	35.4		
45.0	45.2		Acceptance Criterion
55.0	55.5		R ² > 0.995 and within ± 5°C
Repeatability	1 st time	5.2 , 55.4	-
	2 nd time	5.2 , 55.5	
	3 rd time	5.1 , 55.6	
	5.0 , 55.0	0.1 , 0.2	

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

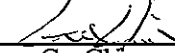
Turbidity:

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

Formazin Standards (NTU)	Indicated value by meter (NTU)		Linearity (R ²)
0.0	0.0		1.0000
20.0	21.0		
100.0	102.1		
400.0	404.2		Acceptance Criterion
800.0	805.4		R ² > 0.995
Repeatability	1 st time	0.3 , 805.8	-
	2 nd time	0.3 , 805.4	
	3 rd time	0.3 , 805.0	
	0.0 , 800.0	0.0 , 0.8	

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

Comments : Pass, comply with the criteria.

Tested by : Ho Tin Kau Certified by : 
 Gu Chin
 Chemist

Checked by : Gu Chin Date : 9-5-2008



綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.

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

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



CERTIFICATE OF CALIBRATION

D094

Certificate No.: 09CA0102 01-01 Page 1 of 2

Item tested

Description: Sound Level Meter (Type I) , Microphone
Manufacturer: ACO, Japan , ACO, Japan
Type/Model No.: 6224 , 7146
Serial/Equipment No.: 060166 , 34733
Adaptors used: - , -

Item submitted by

Customer Name: Geotechnics & Concrete Engineering (H.K.) Ltd.
Address of Customer: G/F., 6 Ko Shan Road, Hung Hom, Kowloon, Hong Kong
Request No.: -
Date of request: 30-12-2008

Date of test: 02-01-2009

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	11-01-2009	CIGISMEC
Signal generator	DS 360	33873	12-06-2009	CEPREI
Signal generator	DS 360	61227	18-07-2009	CEPREI

Ambient conditions

Temperature: 23 ± 2 °C
Relative humidity: 55 ± 15 %
Air pressure: 1010 ± 15 hPa

Test specifications

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

Test results

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

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

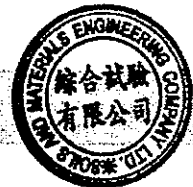
Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 02-01-2009

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

D094

Certificate No.: 09CA0102 01-01

Page 2 of 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by: G.Y. Fung
Date: 02-01-2009

Checked by: 
Date: 02-01-2009

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.



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

2095

Certificate No.: 09CA0102 01-02 Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Castle Group Ltd.
Type/Model No.: GA607
Serial/Equipment No.: 039543
Adaptors used: -

Item submitted by

Customer: Geotechnics & Concrete Engineering (H.K.) Ltd.
Address of Customer: G/F., 6 Ko Shan Road, Hung Hom, Kowloon, Hong Kong
Request No.: -
Date of request: 30-12-2008

Date of test: 02-01-2009

Reference equipment used in the calibration

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

Ambient conditions


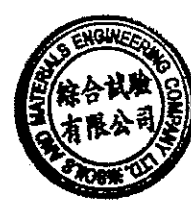
Temperature: 22 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1010 ± 15 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 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.

Approved Signatory:  Date: 02-01-2009 Company Chop: 

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

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

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

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

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

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

Appendix D3 Plant species recorded at Luk Tei Tong River

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

Appendix D4

Ecological Water Monitoring Results (on-site measurements)

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

Date of Sampling: 3/7/09

Weather Condition: Sunny

Monitoring Location	WE1			WE2			WE3			WE4			WE5			WE6		
Time (hhmm)	1135			1125			1045			1110			1205			1150		
Tide Mode	ebb			ebb			ebb			ebb			ebb			ebb		
River Condition	Normal			Normal			Muddy			Muddy			Normal			Normal		
Water Depth (m)	< 1.0			< 1.0			< 1.0			< 1.0			< 1.0			< 1.0		
pH value	6.74			7.79			7.47			6.75			6.63			6.30		
Temperature (oC)	27.6			27.8			27.5			28.6			29.1			27.5		
Salinity (ppt)	0.0			0.1			0.1			4.2			0.2			0.0		
Conductivity (ms/m)	7.4			24.1			29.0			742.0			58.5			5.2		
Water flow (m/s)	0.020			0.050			0.100			0.040			0.040			0.020		
Turbidity (NTU)	0.0	0.0	Average	0.0	0.0	Average	17.2	17.2	Average	17.9	17.9	Average	3.5	3.5	Average	0.0	0.0	Average
			0.00			0.00			17.20			17.9			3.50			0.0
DO (mg/l)	7.58	7.58	Average	8.04	8.04	Average	7.93	7.93	Average	7.01	7.01	Average	7.38	7.38	Average	7.12	7.12	Average
			7.58			8.04			7.93			7.01			7.38			7.12
DO Saturation (%)	97	97	Average	103	103	Average	102	102	Average	93	93	Average	96	96	Average	90	90	Average
			97			103			102			93			96			90

Name
Prepared By: Jimmy Cheng

Signature


Date
3/7/09

remark or observation: Muddy water is observed at WE3 due to water without desilting properly discharged to the public drain of box culvert. Muddy water is observed at location WE4 due to the silted water leakage at Luk Tei Tong river.

Appendix D5

Ecological Water Monitoring Results (lab report)



TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700022 Date of Issue : 09-07-2009

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 : 03-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 04-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	494	1.0	25.3
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	WE1	WE1 Duplicate	WE2	WE2 Duplicate	WE3	WE3 Duplicate		
	Sampling Date/Time	03 July 2009 / 11:35		03 July 2009 / 11:25		03 July 2009 / 10:45			
	LOD Units								
Suspended Solids (SS)	1 mg/L	1.1	1.4	2.1	2.3	8.4	8.3		

TEST RESULTS	Sample ID	WE4	WE4 Duplicate	WE5	WE5 Duplicate	WE6	WE6 Duplicate		
	Sampling Date/Time	03 July 2009 / 11:10		03 July 2009 / 12:05		03 July 2009 / 11:50			
	LOD Units								
Suspended Solids (SS)	1 mg/L	16.2	17.2	7.1	7.5	< 1.0	< 1.0		

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Remarks : Location M1 & WE3 and Location M3 & WE4 are the same location.

---- End ----

Tested By : K.L. Fong

Approved Signatory : 

Checked By : GU CHIN

Name : GU CHIN

Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700242 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 11:35 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE1

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.03
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.09
Phosphorus mg/L	APHA 20ed 4500-P D	0.04
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--


* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE1.

----- End -----

Tested By : T.W. Lam, K.L. Fong Certified By : 
 Name : Gu Chin
 Checked By : Gu Chin Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700250 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 11:35 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE1 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.02
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.09
Phosphorus mg/L	APHA 20ed 4500-P D	0.04
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--


* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE1.

----- End -----

Tested By : T.W. Lam, K.L. Fong Certified By : 
 Name : Gu Chin
 Checked By : Gu Chin Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700268

Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited

Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 03-07-2009

W.O. No.* : --

Contract No.* : --

Date Completed : 10-07-2009

GCE Serial No. : WQM072009

Sampling Date* : 03-07-2009 / 11:25

Sample Type* : River Water

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Sample I.D.* : WE2

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [1 °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	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.14
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.14
Phosphorus mg/L	APHA 20ed 4500-P D	0.06
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE2.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By :

Name

Gu Chin

Checked By : Gu Chin

Post

Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700276

Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited

Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 03-07-2009

W.O. No.* : --

Contract No.* : --

Date Completed : 10-07-2009

GCE Serial No. : WQM072009

Sampling Date* : 03-07-2009 / 11:25

Sample Type* : River Water

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Sample I.D.* : WE2 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.15
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.14
Phosphorus mg/L	APHA 20ed 4500-P D	0.07
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE2.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By : 

Name : Gu Chin

Checked By : Gu Chin

Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700284 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 10:45 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE3

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.17
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.14
Phosphorus mg/L	APHA 20ed 4500-P D	0.1
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--


* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE3.

----- End -----

Tested By : T.W. Lam, K.L. Fong Certified By : 
 Name : Gu Chin
 Checked By : Gu Chin Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700292 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 10:45 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE3 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.16
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.13
Phosphorus mg/L	APHA 20ed 4500-P D	0.10
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

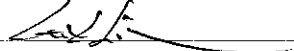
* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE3.

----- End -----

Tested By : T.W. Lam, K.L. Fong Certified By : 
 Name : Gu Chin
 Checked By : Gu Chin Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700307 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 11:10 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE4

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.27
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.36
Phosphorus mg/L	APHA 20ed 4500-P D	0.15
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE4.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By : 

Name : Gu Chin

Checked By : Gu Chin

Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700315 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 11:10 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE4 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.26
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.35
Phosphorus mg/L	APHA 20ed 4500-P D	0.14
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

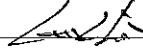
* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE4.

----- End -----

Tested By : T.W. Lam, K.L. Fong Certified By : 
 Name : Gu Chin
 Checked By : Gu Chin Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700323

Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited

Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 03-07-2009

W.O. No.* : --

Contract No.* : --

Date Completed : 10-07-2009

GCE Serial No. : WQM072009

Sampling Date* : 03-07-2009 / 12:05

Sample Type* : River Water

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Sample I.D.* : WE5

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour	TCU	APHA 20ed 2120 B
Turbidity	NTU	APHA 20ed 2130 B
Conductivity at 25°C	µS/cm	APHA 20ed 2510 B
Salinity	g/L	APHA 20ed 2520 B
Nitrogen (Ammonia)	mg/L	APHA 20ed 4500-NH ₃ D
		APHA 20ed 4500-NH ₃ E
		APHA 18ed 4500-NH ₃ C
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO ₃ ⁻ E
Phosphorus	mg/L	APHA 20ed 4500-P D
Biochemical Oxygen Demand (BOD ₅)	mg/L	APHA 20ed 5210 B
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 responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE5.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By

Name

Gu Chin

Checked By : Gu Chin

Post

Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700331

Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited

Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 03-07-2009

W.O. No.* : --

Contract No.* : --

Date Completed : 10-07-2009

GCE Serial No. : WQM072009

Sampling Date* : 03-07-2009 / 12:05

Sample Type* : River Water

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Sample I.D.* : WE5 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.87
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.07
Phosphorus mg/L	APHA 20ed 4500-P D	0.30
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	3
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE5.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By :

Name :

Gu Chin

Checked By : Gu Chin

Post :

Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Page 1 of 1

Report No. : GCC090700349

Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited

Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 03-07-2009

W.O. No.* : --

Contract No.* : --

Date Completed : 10-07-2009

GCE Serial No. : WQM072009

Sampling Date* : 03-07-2009 / 11:50

Sample Type* : River Water

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Sample I.D.* : WE6

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [1 °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	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.03
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.10
Phosphorus mg/L	APHA 20ed 4500-P D	0.02
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE6.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By :

Name :

Gu Chin

Checked By : Gu Chin

Post :

Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090700357 Date of Issue : 29-07-2009

Client* : Environmental Pioneers & Solutions Limited Order Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 10-07-2009

GCE Serial No. : WQM072009 Sampling Date* : 03-07-2009 / 11:50 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE6 Duplicate

Description : River Water

DESCRIPTION	TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance	APHA 20ed 2110	--
Odour	APHA 20ed 2150 B	Odour Characteristics : --
		Threshold Odour Number (TON) : --
pH Value at temperature [] °C	APHA 20ed 4500-H ⁺ B	--
Colour TCU	APHA 20ed 2120 B	--
Turbidity NTU	APHA 20ed 2130 B	--
Conductivity at 25°C μS/cm	APHA 20ed 2510 B	--
Salinity g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia) mg/L	APHA 20ed 4500-NH ₃ D	0.03
	APHA 20ed 4500-NH ₃ E	--
	APHA 18ed 4500-NH ₃ C	--
Nitrogen (Nitrate) mg/L	APHA 20ed 4500-NO ₃ ⁻ E	0.10
Phosphorus mg/L	APHA 20ed 4500-P D	0.02
Biochemical Oxygen Demand (BOD ₅) mg/L	APHA 20ed 5210 B	2
Chemical Oxygen Demand (COD) mg/L	APHA 20ed 5220 D	--
Total Suspended Solid mg/L	APHA 20ed 2540 D	--

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Sample received on 03 July 2009.

REMARKS : Sample Location WE6.

----- End -----

Tested By : T.W. Lam, K.L. Fong

Certified By : 

Checked By : Gu Chin

Name : Gu Chin
 Post : Chemist

Appendix E

Construction Noise Monitoring Data Sheet



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		6/7/2009	
Measurement Start Time (hhmm)		15:08	13:20
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.7	1.3
Measurement Results	L90 (dB(A))	44.7	50.2
	L10 (dB(A))	50.6	55.5
	Leq (dB(A))	48.8	53.9
Weather condition:		Sunny	
Major Construction Noise Source(s) During Monitoring		no construction works are being carried out during measurement.	1. Excavator noise 2. Construction trucks noise 3. Power generator noise
Other Noise Source(s) During Monitoring			1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

6/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		6/7/2009	
Measurement Start Time (hhmm)		13:55	14:30
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		1.4	1.3
Measurement Results	L90 (dB(A))	48.8	53.3
	L10 (dB(A))	62.4	61.7
	Leq (dB(A))	59.8	57.5
Weather condition:		Sunny	
Major Construction Noise Source(s) During Monitoring		1. Excavator noise	no construction works are being carried out during measurement.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise (Bicycles)	1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

6/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		13/7/2009	
Measurement Start Time (hhmm)		14:45	14:10
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.5	0.7
Measurement Results	L90 (dB(A))	45.7	50.7
	L10 (dB(A))	51.3	55.0
	Leq (dB(A))	49.6	53.7
Weather condition:		Sunny	
Major Construction Noise Source(s) During Monitoring		no construction works are being carried out during measurement.	1. Excavator noise 2. Power generator noise
Other Noise Source(s) During Monitoring			1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

13/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		13/7/2009	
Measurement Start Time (hhmm)		13:35	13:00
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		1.1	0.9
Measurement Results	L90 (dB(A))	42.5	47.6
	L10 (dB(A))	54.9	64.9
	Leq (dB(A))	52.5	60.1
Weather condition:		Sunny	
Major Construction Noise Source(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 (Bicycles)	1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

13/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		20/7/2009	
Measurement Start Time (hhmm)		15:03	14:25
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.4	1.3
Measurement Results	L90 (dB(A))	46.8	56.4
	L10 (dB(A))	52.7	61.4
	Leq (dB(A))	50.4	60.2
Weather condition:		Sunny	
Major Construction Noise Source(s) During Monitoring		No construction works are being carried out during measurement.	1. Excavator noise 2. Power generator noise
Other Noise Source(s) During Monitoring			1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

20/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		20/7/2009	
Measurement Start Time (hhmm)		13:15	13:50
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.8	1.1
Measurement Results	L90 (dB(A))	49.8	51.7
	L10 (dB(A))	62.8	62.3
	Leq (dB(A))	60.7	58.6
Weather condition:		Sunny	
Major Construction Noise Source(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 (Bicycle) 3. Dog barking noise	1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

20/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		27/072009	
Measurement Start Time (hhmm)		14:45	14:10
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.3	1.1
Measurement Results	L90 (dB(A))	46.8	58.2
	L10 (dB(A))	52.7	61.0
	Leq (dB(A))	50.4	60.0
Weather condition:		Cloudy	
Major Construction Noise Source(s) During Monitoring		No construction works are being carried out during measurement.	1. Excavator noise 2. Power generator noise 3. Concrete curing noise
Other Noise Source(s) During Monitoring			1. Public noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

27/7/2009



大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		27/7/2009	
Measurement Start Time (hhmm)		13:00	13:35
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 6224	
Calibrator Model/ Identification		Castle Group, GA607	
Wind Speed (m/s)		0.4	0.8
Measurement Results	L90 (dB(A))	42.5	49.1
	L10 (dB(A))	56.7	66.7
	Leq (dB(A))	54.8	62.2
Weather condition:		Cloudy	
Major Construction Noise Source(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 (Bicycle)	1. Public noise 2. Dog barking noise
Remarks			

Name & Designation

Signature

Date:

Prepared by:

Jimmy Cheng

27/7/2009

Appendix F1

Water Quality

Monitoring Data Sheet

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

Date of Sampling: 2/7/2009

Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1110			1115			1123			1130			1140			1150			1205		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	< 1			< 1			< 1			< 1			< 1			< 1			< 1		
pH value	5.97			6.19			6.67			7.24			7.29			6.51			6.67		
Temperature (oC)	28.2			29.0			30.2			30.4			28.2			29.1			30.1		
Salinity (ppt)	0.0			0.0			2.9			3.8			0.0			0.0			0.2		
Turbidity (NTU)	1.3	1.4	Average	0.0	0.0	Average	11.8	12.0	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average	2.4	2.5	Average
			1.4			0.0			11.9			0.0			0.0			0.0			2.5
DO (mg/l)	8.23	8.21	Average	7.52	7.51	Average	6.25	6.26	Average	7.48	7.46	Average	7.37	7.37	Average	7.47	7.45	Average	5.08	5.06	Average
			8.22			7.52			6.26			7.47			7.37			7.46			5.07
DO Saturation (%)	106	106	Average	99	99	Average	84	84	Average	102	102	Average	95	95	Average	98	98	Average	67	67	Average
			106			99			84			102			95			98			67

Name
Prepared By: Jimmy Cheng

Signature


Date
2/7/2009

remark or observation: _____

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

Date of Sampling: 3/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1045			1055			1110			1035			1135			1140			1158		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	Muddy			normal			Muddy			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			<1			<1			<1			<1		
pH value	7.47			6.79			6.75			7.32			6.74			6.46			6.43		
Temperature (oC)	27.5			27.9			28.6			28.5			27.6			27.6			28.2		
Salinity (ppt)	0.1			0.0			4.2			3.6			0.0			0.0			0.1		
Turbidity (NTU)	17.2	17.2	Average	0.0	0.0	Average	17.9	17.9	Average	0.4	0.4	Average	0.0	0.0	Average	0.0	0.0	Average	0.0	0.0	Average
			17.2			0.0			17.9			0.4			0.0			0.0			0.0
DO (mg/l)	7.93	7.93	Average	7.64	7.64	Average	7.01	7.01	Average	7.90	7.89	Average	7.58	7.58	Average	7.87	7.87	Average	6.72	6.72	Average
			7.93			7.64			7.01			7.90			7.58			7.87			6.72
DO Saturation (%)	102	102	Average	99	99	Average	93	93	Average	105	105	Average	97	97	Average	101	101	Average	87	87	Average
			102			99			93			105			97			101			87

Name
Prepared By: Jimmy Cheng

Signature


Date
3/7/2009

remark or observation: M1 - Direct discharge of site water from site retaining wall D without proper treatment. M3- Site run-off from gabion wall site nearby mangrove area

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

Date of Sampling: 4/7/2009

Cloudy

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1110						1120						1140						1130		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			1.1			<1			<1			<1		
pH value	7.05						6.73						6.83						6.80		
Temperature (oC)	26.4						26.9						26.6						26.8		
Salinity (ppt)	0.4						4.5						0.0						0.3		
Turbidity (NTU)	7.8	7.8	Average			Average	12.3	12.3	Average			Average	0.0	0.0	Average			Average	1.0	1.0	Average
			7.8			#DIV/0!			12.3			#DIV/0!			0.0			#DIV/0!			1.0
DO (mg/l)	7.28	7.28	Average			Average	4.79	4.79	Average			Average	7.24	7.24	Average			Average	5.76	5.76	Average
			7.28			#DIV/0!			4.79			#DIV/0!			7.24			#DIV/0!			5.76
DO Saturation (%)	91	91	Average			Average	62	62	Average			Average	90	90	Average			Average	71	71	Average
			91			#DIV/0!			62			#DIV/0!			90			#DIV/0!			71

Name
Prepared By: Jimmy Cheng

Signature


Date
4/7/2009

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

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

Date of Sampling: 6/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1215			1205			1200			1225			1305			1315			1150		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	Muddy			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			1.1			<1			<1			<1		
pH value	6.76			7.21			6.85			6.83			6.79			6.93			6.59		
Temperature (oC)	27.2			26.9			27.5			27.6			26.4			27.2			27.5		
Salinity (ppt)	0.0			0.0			1.2			0.3			0.0			0.0			0.1		
Turbidity (NTU)	35.7	35.7	Average	0.0	0.0	Average	15.1	15.1	Average	14.2	14.2	Average	0.0	0.0	Average	0.0	0.0	Average	2.3	2.3	Average
			35.7			0.0			15.1			14.2			0.0			0.0			2.3
DO (mg/l)	7.61	7.61	Average	7.97	7.97	Average	6.89	6.89	Average	7.54	7.54	Average	7.37	7.37	Average	7.12	7.12	Average	5.42	5.42	Average
			7.61			7.97			6.89			7.54			7.37			7.12			5.42
DO Saturation (%)	96	96	Average	99	99	Average	87	87	Average	96	96	Average	94	94	Average	91	91	Average	69	69	Average
			96			99			87			96			94			91			69

Name
Prepared By: Jimmy Cheng

Signature


Date
6/7/2009

remark or observation: Muddy water is observed at location M1 due to the silted
water leakage at box culvert.

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

Date of Sampling: 7/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1255												1245								
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			< 1			< 1			1.1			< 1			< 1			< 1		
pH value	6.61												6.87								
Temperature (oC)	28.6												29.1								
Salinity (ppt)	0.2												0.0								
Turbidity (NTU)	17.5	17.5	Average			Average			Average			Average	0.0	0.0	Average			Average			Average
			17.5			#DIV/0!			#DIV/0!			#DIV/0!			0.0			#DIV/0!			#DIV/0!
DO (mg/l)	8.11	8.11	Average			Average			Average			Average	7.65	7.65	Average			Average			Average
			8.11			#DIV/0!			#DIV/0!			#DIV/0!			7.65			#DIV/0!			#DIV/0!
DO Saturation (%)	105	105	Average			Average			Average			Average	100	100	Average			Average			Average
			105			#DIV/0!			#DIV/0!			#DIV/0!			100			#DIV/0!			#DIV/0!

Name
Prepared By: Jimmy Cheng

Signature


Date
7/7/2009

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

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

Date of Sampling: 8/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1320			1325			1330			1310			1400			1350			1340		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	< 1			< 1			< 1			< 1			< 1			< 1			< 1		
pH value	7.20			7.03			6.87			6.97			7.12			6.87			7.28		
Temperature (oC)	28.9			29.5			30.7			29.7			29.3			29.6			30.5		
Salinity (ppt)	1.0			0.3			3.3			3.2			0.0			0.0			0.5		
Turbidity (NTU)	1.1	1.1	Average	0.0	0.0	Average	3.8	3.8	Average	2.3	2.3	Average	0.0	0.0	Average	0.0	0.0	Average	2.7	2.7	Average
			1.1			0.0			3.8			2.3			0.0			0.0			2.7
DO (mg/l)	7.94	7.94	Average	7.48	7.48	Average	6.90	6.90	Average	7.52	7.52	Average	7.43	7.43	Average	7.15	7.15	Average	6.71	6.71	Average
			7.94			7.48			6.90			7.52			7.43			7.15			6.71
DO Saturation (%)	104	104	Average	98	98	Average	94	94	Average	101	101	Average	98	98	Average	96	96	Average	91	91	Average
			104			98			94			101			98			96			91

Name
Prepared By: Jimmy Cheng

Signature


Date
8/7/2009

remark or
observation: _____

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

Date of Sampling: 10/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1425			1430			1440			1415			1445			1455			1505		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	< 1			< 1			< 1			< 1			< 1			< 1			< 1		
pH value	7.35			7.18			6.97			7.08			7.24			6.72			6.96		
Temperature (oC)	30.4			31.0			31.1			31.3			30.3			30.0			31.5		
Salinity (ppt)	1.9			0.5			5.3			6.4			0.0			0.0			1.1		
Turbidity (NTU)	2.3	2.3	Average	1.3	1.3	Average	7.2	7.2	Average	3.3	3.3	Average	0.0	0.0	Average	4.3	4.3	Average	5.7	5.7	Average
			2.3			1.3			7.2			3.3			0.0			4.3			5.7
DO (mg/l)	8.08	8.08	Average	7.41	7.41	Average	7.42	7.42	Average	7.65	7.65	Average	7.35	7.35	Average	7.37	7.37	Average	6.37	6.37	Average
			8.08			7.41			7.42			7.65			7.35			7.37			6.37
DO Saturation (%)	109	109	Average	100	100	Average	103	103	Average	108	108	Average	98	98	Average	98	98	Average	80	80	Average
			109			100			103			108			98			98			80

Name
Prepared By: Jimmy Cheng

Signature


Date
10/7/2009

remark or observation: _____

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

Date of Sampling: 13/7/2009

Suuny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1540			1550			1555			1530			1625			1615			1605		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			1.1			<1			<1			<1		
pH value	7.09			6.81			6.90			7.13			6.96			6.93			7.27		
Temperature (oC)	30.5			31.1			31.1			31.7			30.7			29.8			29.5		
Salinity (ppt)	0.2			0.0			3.8			5.0			0.0			0.0			0.4		
Turbidity (NTU)	11.8	11.8	Average	0.0	0.0	Average	3.7	3.7	Average	4.7	4.7	Average	0.0	0.0	Average	0.0	0.0	Average	2.1	2.1	Average
			11.8			0.0			3.7			4.7			0.0			0.0			2.1
DO (mg/l)	7.72	7.72	Average	7.42	7.42	Average	7.51	7.51	Average	7.71	7.71	Average	7.52	7.52	Average	7.41	7.41	Average	6.09	6.09	Average
			7.72			7.42			7.51			7.71			7.52			7.41			6.09
DO Saturation (%)	103	103	Average	101	101	Average	103	103	Average	109	109	Average	99	99	Average	98	98	Average	80	80	Average
			103			101			103			109			99			98			80

Name
Prepared By: Jimmy Cheng

Signature


Date
13/7/2009

remark or observation: _____

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

Date of Sampling: 14/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1610			1620			1555			1630			1510			1525			1540		
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	7.31			7.54			7.12			7.28			6.51			6.21			6.51		
Temperature (oC)	30.2			29.4			30.0			30.0			28.0			28.6			28.7		
Salinity (ppt)	1.1			0.2			5.0			4.2			0.0			0.0			0.1		
Turbidity (NTU)	5.3	5.3	Average	4.4	4.4	Average	13.7	13.7	Average	5.4	5.4	Average	0.0	0.0	Average	0.0	0.0	Average	7.8	7.8	Average
			5.3			4.4			13.7			5.4			0.0			0.0			7.8
DO (mg/l)	7.71	7.71	Average	7.81	7.81	Average	7.68	7.68	Average	8.27	8.27	Average	7.61	7.61	Average	8.50	8.50	Average	5.67	5.67	Average
			7.71			7.81			7.68			8.27			7.61			8.50			5.67
DO Saturation (%)	102	102	Average	103	103	Average	104	104	Average	112	112	Average	98	98	Average	110	110	Average	73	73	Average
			102			103			104			112			98			110			73

Name
Prepared By: Jimmy Cheng

Signature


Date
14/7/2009

remark or observation: _____

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

Date of Sampling: 15/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1650			1645			1640			1700			1610			1620			1630		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			Muudy			normal			normal			normal			Muddy			normal		
Water Depth (m)	<1			< 1			< 1			1.1			< 1			< 1			< 1		
pH value	6.91			7.45			7.09			7.12			7.01			6.83			6.39		
Temperature (oC)	29.2			30.8			31.4			31.6			29.3			29.3			30.2		
Salinity (ppt)	0.0			0.1			3.4			1.8			0.0			0.0			0.8		
Turbidity (NTU)	2.3	2.3	Average	186.5	186.5	Average	6.7	6.7	Average	5.9	5.9	Average	0.0	0.0	Average	45.1	45.1	Average	3.8	3.8	Average
			2.3			186.5			6.7			5.9			0.0			45.1			3.8
DO (mg/l)	7.50	7.50	Average	7.36	7.36	Average	8.26	8.26	Average	8.77	8.77	Average	7.36	7.36	Average	7.68	7.68	Average	6.03	6.03	Average
			7.50			7.36			8.26			8.77			7.36			7.68			6.03
DO Saturation (%)	98	98	Average	99	99	Average	114	114	Average	120	120	Average	97	97	Average	100	100	Average	76	76	Average
			98			99			114			120			97			100			76

Name
Prepared By: Jimmy Cheng

Signature


Date
15/7/2009

remark or observation: Muddy water is observed at locaion C2 due to the construction works being carried out at point C2 by the HAD. Muddy water is observed at location M2 due to the construction works being carried out beside the point M2 by Yick Hing Construction.

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

Date of Sampling: 16/7/2009 Sunny

Monitoring Location	M1		M2		M3		M4		C1		C2		C3					
Time (hhmm)			1630								1615							
Tide Mode	mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb					
River Condition	normal		normal		normal		normal		normal		Muddy		normal					
Water Depth (m)	<1		<1		<1		1.1		<1		<1		<1					
pH value			6.65								6.87							
Temperature (oC)			31.4								29.3							
Salinity (ppt)			0.0								0.0							
Turbidity (NTU)			Average	7.1	7.1	Average			Average			Average	33.5	33.5	Average			Average
			#DIV/0!			7.1			#DIV/0!			#DIV/0!			33.5			#DIV/0!
DO (mg/l)			Average	7.68	7.68	Average			Average			Average	7.23	7.23	Average			Average
			#DIV/0!			7.68			#DIV/0!			#DIV/0!			7.23			#DIV/0!
DO Saturation (%)			Average	104	104	Average			Average			Average	94	94	Average			Average
			#DIV/0!			104			#DIV/0!			#DIV/0!			94			#DIV/0!

Name
Prepared By: Jimmy Cheng

Signature


Date
16/7/2009

remark or observation: Muddy water is observed at location C2 due to the construction works being carried out at location C2 by the HAD construction activity

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

Date of Sampling: 20/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1045			1050			1100			1035			1130			1120			1110		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			Muddy			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			<1			<1			<1			<1		
pH value	6.79			6.71			6.75			6.91			6.73			6.53			6.95		
Temperature (oC)	28.4			27.6			29.1			27.8			27.4			27.1			29.0		
Salinity (ppt)	0.0			0.0			1.1			0.3			0.0			0.0			0.1		
Turbidity (NTU)	11.5	11.5	Average	0.0	0.0	Average	66.0	66.0	Average	11.1	11.1	Average	0.0	0.0	Average	0.0	0.0	Average	1.2	1.2	Average
			11.5			0.0			66.0			11.1			0.0			0.0			1.2
DO (mg/l)	7.98	7.98	Average	7.94	7.94	Average	6.92	6.92	Average	7.76	7.76	Average	7.86	7.86	Average	7.54	7.54	Average	5.12	5.12	Average
			7.98			7.94			6.92			7.76			7.86			7.54			5.12
DO Saturation (%)	103	103	Average	101	101	Average	91	91	Average	100	100	Average	101	101	Average	98	98	Average	67	67	Average
			103			101			91			100			101			98			67

Name
Prepared By: Jimmy Cheng

Signature


Date
20/7/2009

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

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

Date of Sampling: 22/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1255			1250			1245			1305			1215			1225			1235		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			Muddy			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			<1			<1			<1			<1		
pH value	7.02			7.12			6.91			7.07			6.71			6.74			6.54		
Temperature (oC)	29.1			29.7			30.0			30.5			28.0			28.7			29.7		
Salinity (ppt)	2.2			0.7			5.9			5.1			0.0			0.0			0.8		
Turbidity (NTU)	1.3	1.3	Average	11.2	11.2	Average	4.8	4.8	Average	5.7	5.7	Average	0.0	0.0	Average	0.0	0.0	Average	2.4	2.4	Average
			1.3			11.2			4.8			5.7			0.0			0.0			2.4
DO (mg/l)	7.84	7.84	Average	7.35	7.35	Average	6.55	6.55	Average	7.11	7.11	Average	7.84	7.84	Average	7.78	7.78	Average	5.86	5.86	Average
			7.84			7.35			6.55			7.11			7.84			7.78			5.86
DO Saturation (%)	104	104	Average	97	97	Average	89	89	Average	98	98	Average	101	101	Average	100	100	Average	81	81	Average
			104			97			89			98			101			100			81

Name
Prepared By: Jimmy Cheng

Signature


Date
22/7/2009

remark or observation: Muddy water is observed at location M2 due to the
construction activities being carried out at Tiger
House the upper location M2

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

Date of Sampling: 23/7/2009 Sunny

Monitoring Location	M1		M2		M3		M4		C1		C2		C3					
Time (hhmm)			1315								1330							
Tide Mode	mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb		mid-ebb					
River Condition	normal		normal		normal		normal		normal		normal		normal					
Water Depth (m)	< 1		< 1		< 1		1.1		< 1		< 1		< 1					
pH value			7.18								7.14							
Temperature (oC)			29.7								28.6							
Salinity (ppt)			1.5								0.1							
Turbidity (NTU)			Average	2.8	2.8	Average			Average			Average	0.0	0.0	Average			Average
			#DIV/0!			2.8		#DIV/0!		#DIV/0!		#DIV/0!		0.0		#DIV/0!		
DO (mg/l)			Average	7.27	7.27	Average			Average			Average	7.62	7.62	Average			Average
			#DIV/0!			7.27		#DIV/0!		#DIV/0!		#DIV/0!		7.62		#DIV/0!		
DO Saturation (%)			Average	97	97	Average			Average			Average	99	99	Average			Average
			#DIV/0!			97		#DIV/0!		#DIV/0!		#DIV/0!		99		#DIV/0!		

Name
Prepared By: Jimmy Cheng

Signature


Date
23/7/2009

remark or
observation: _____

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

Date of Sampling: 24/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1410			1415			1420			1400			1500			1445			1450		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	<1			<1			<1			1.1			<1			<1			<1		
pH value	7.26			7.16			7.01			7.19			6.73			6.87			7.12		
Temperature (oC)	28.9			29.0			29.3			29.6			28.7			28.7			29.1		
Salinity (ppt)	2.6			1.1			5.9			9.6			0.0			0.0			0.5		
Turbidity (NTU)	4.2	4.0	Average	0.0	0.0	Average	5.0	5.2	Average	5.4	5.2	Average	0.0	0.0	Average	0.0	0.0	Average	2.4	2.2	Average
			4.1			0.0			5.1			5.3			0.0			0.0			2.3
DO (mg/l)	7.94	7.92	Average	9.48	9.50	Average	7.29	7.27	Average	6.77	6.75	Average	7.83	7.83	Average	7.88	7.86	Average	5.73	5.71	Average
			7.93			9.49			7.28			6.76			7.83			7.87			5.72
DO Saturation (%)	105	105	Average	98	98	Average	98	98	Average	94	94	Average	103	103	Average	102	102	Average	76	76	Average
			105			98			98			94			103			102			76

Name
Prepared By: Jimmy Cheng

Signature


Date
24/7/2009

remark or observation: _____

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

Date of Sampling: 27/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1610			1605			1600			1620			1530			1540			1550		
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	6.92			7.34			6.91			7.08			6.68			6.19			6.36		
Temperature (oC)	28.6			28.6			29.3			29.1			28.2			27.9			28.4		
Salinity (ppt)	0.2			0.1			1.8			1.5			0.0			0.0			0.1		
Turbidity (NTU)	5.1	5.1	Average	0.4	0.4	Average	7.3	7.3	Average	5.4	5.4	Average	0.9	0.9	Average	0.0	0.0	Average	4.9	4.9	Average
			5.1			0.4			7.3			5.4			0.9			0.0			4.9
DO (mg/l)	7.58	7.58	Average	7.44	7.44	Average	6.91	6.91	Average	7.59	7.59	Average	7.54	7.54	Average	7.52	7.52	Average	5.43	5.43	Average
			7.58			7.44			6.91			7.59			7.54			7.52			5.43
DO Saturation (%)	97	97	Average	96	96	Average	91	91	Average	100	100	Average	97	97	Average	97	97	Average	69	69	Average
			97			96			91			100			97			97			69

Name
Prepared By: Jimmy Cheng

Signature


Date
27/7/2009

remark or observation: _____

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

Date of Sampling: 28/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1650			1645			1640			1700			1600			1620			1630		
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	6.98			7.18			6.91			6.96			6.93			6.44			6.63		
Temperature (oC)	29.7			30.1			30.6			30.6			29.1			29.3			30.1		
Salinity (ppt)	0.0			0.1			2.5			1.3			0.0			0.0			0.8		
Turbidity (NTU)	3.1	3.1	Average 3.1	8.7	8.7	Average 8.7	11.8	11.8	Average 11.8	5.8	5.8	Average 5.8	0.0	0.0	Average 0.0	0.0	0.0	Average 0.0	6.5	6.5	Average 6.5
DO (mg/l)	7.37	7.37	Average 7.37	7.02	7.02	Average 7.02	6.96	6.96	Average 6.96	7.37	7.37	Average 7.37	7.46	7.46	Average 7.46	7.62	7.62	Average 7.62	7.31	7.31	Average 7.31
DO Saturation (%)	97	97	Average 97	94	94	Average 94	94	94	Average 94	99	99	Average 99	98	98	Average 98	100	100	Average 100	95	95	Average 95

Name
Prepared By: Jimmy Cheng

Signature


Date
28/7/2009

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

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

Date of Sampling: 29/7/2009 Sunny

Monitoring Location	M1		M2		M3		M4		C1		C2		C3				
Time (hhmm)			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		1.1		< 1		< 1		< 1				
pH value			6.87								6.61						
Temperature (oC)			28.6								28.0						
Salinity (ppt)			0.0								0.0						
Turbidity (NTU)			Average	0.0	0.0	Average			Average			Average	0.0	0.0	Average		
			#DIV/0!			0.0			#DIV/0!				#DIV/0!	0.0			#DIV/0!
DO (mg/l)			Average	7.33	7.33	Average			Average			Average	7.86	7.86	Average		
			#DIV/0!			7.33			#DIV/0!				#DIV/0!	7.86			#DIV/0!
DO Saturation (%)			Average	96	96	Average			Average			Average	101	101	Average		
			#DIV/0!			96			#DIV/0!				#DIV/0!	101			#DIV/0!

Name
Prepared By: Jimmy Cheng

Signature


Date
29/7/2009

remark or
observation: _____

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

Date of Sampling: 31/7/2009 Sunny

Monitoring Location	M1			M2			M3			M4			C1			C2			C3		
Time (hhmm)	1040			1050			1100			1110			1140			1130			1120		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal			normal		
Water Depth (m)	< 1			< 1			< 1			1.1			< 1			< 1			< 1		
pH value	7.04			6.82			6.96			7.47			6.65			7.31			7.17		
Temperature (oC)	28.9			29.5			30.6			30.9			29.0			29.7			30.7		
Salinity (ppt)	0.0			0.0			2.3			1.7			0.0			0.0			0.3		
Turbidity (NTU)	1.1	1.1	Average	0.0	0.0	Average	3.7	3.7	Average	11.8	11.8	Average	0.0	0.0	Average	0.0	0.0	Average	4.1	4.1	Average
			1.1			0.0			3.7			11.8			0.0			0.0			4.1
DO (mg/l)	8.14	8.14	Average	8.03	8.03	Average	7.85	7.85	Average	7.69	7.69	Average	7.72	7.72	Average	8.11	8.11	Average	5.60	5.60	Average
			8.14			8.03			7.85			7.69			7.72			8.11			5.60
DO Saturation (%)	106	106	Average	105	105	Average	107	107	Average	104	104	Average	101	101	Average	107	107	Average	75	75	Average
			106			105			107			104			101			107			75

Name
Prepared By: Jimmy Cheng

Signature


Date
31/7/2009

remark or observation: _____

Appendix F2

Water Quality

Monitoring Lab report



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700014 Date of Issue : 09-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 02-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 03-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	493	1.2	24.1
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	02 July 2009 / 11:40		02 July 2009 / 11:50		02 July 2009 / 12:05			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	4.6	4.3	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	02 July 2009 / 11:10		02 July 2009 / 11:15		02 July 2009 / 11:23		02 July 2009 / 11:30	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	4.2	4.1	1.5	1.7	10.4	10.1	9.3

* : 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 : 

Checked By : GU CHIN

Name : GU CHIN

Post : Chemist



TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700022 Date of Issue : 09-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 04-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	494	1.0	25.3
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	03 July 2009 / 11:35		03 July 2009 / 11:40		03 July 2009 / 11:58			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	1.1	< 1.0	< 1.0	4.4	4.7	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	03 July 2009 / 10:45		03 July 2009 / 10:55		03 July 2009 / 11:10		03 July 2009 / 10:35		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	8.4	8.3	1.4	1.6	16.2	17.2	5.4	5.5

* : Information provided by client

Note : This laboratory has no responsibility on sampling and all the test results relate only to the sample tested as received.

Remarks : Location M1 & WE3 and Location M3 & WE4 are the same location.

----- End -----

Tested By : K.L. Fong

Approved Signatory : 

Name : GU CHIN

Checked By : GU CHIN

Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700030 Date of Issue : 09-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 04-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 06-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	497	502	-1.0	24.5
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate			
	Sampling Date/Time	04 July 2009 / 11:40			--		04 July 2009 / 11:30			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	--	--	4.5	4.3		

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	04 July 2009 / 11:10			--		04 July 2009 / 11:20		--	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	5.0	4.9	--	--	12.0	12.1	--	

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700098 Date of Issue : 16-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 06-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 07-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	492	486	1.2	25.3
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	06 July 2009 / 13:05		06 July 2009 / 13:15		06 July 2009 / 11:50			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	1.1	1.3	1.5	1.4	3.8	3.8	

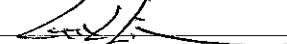
TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	06 July 2009 / 12:15		06 July 2009 / 12:05		06 July 2009 / 12:00		06 July 2009 / 12:25	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	15.9	16.1	1.1	1.3	9.5	9.3	6.7

* : 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
 Checked By : GU CHIN

Approved Signatory : 
 Name : GU CHIN
 Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700103 Date of Issue : 16-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 07-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 08-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	491	1.6	24.0
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate			
	Sampling Date/Time	07 July 2009 / 12:55			--		--			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.7	1.9	--	--	--	--		


TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	07 July 2009 / 12:45			--		--		--	--
	LOD	Units								
Suspended Solids (SS)	1	mg/L	10.2	10.4	--	--	--	--	--	

* : 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
 Checked By : GU CHIN

Approved Signatory : 
 Name : GU CHIN
 Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700111 Date of Issue : 16-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 08-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 09-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	497	502	-1.0	22.9
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	08 July 2009 / 14:00		08 July 2009 / 13:50		08 July 2009 / 13:40			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	1.9	2.1	2.2	2.7	4.2	3.8	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	08 July 2009 / 13:20		08 July 2009 / 13:25		08 July 2009 / 13:30		08 July 2009 / 13:10	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	3.9	3.7	2.0	2.2	11.6	11.2	5.5


* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700129 Date of issue : 16-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 10-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 11-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	501	495	1.2	23.5
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	10 July 2009 / 14:45		10 July 2009 / 14:55		10 July 2009 / 15:05			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	3.4	3.7	5.7	5.2	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	10 July 2009 / 14:25		10 July 2009 / 14:30		10 July 2009 / 14:40		10 July 2009 / 14:15	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	3.0	2.8	2.2	2.5	9.5	9.5	5.1 5.2

* : Information provided by client

Note : This 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 : 

Checked By : GU CHIN

Name : GU CHIN

Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700195 Date of Issue : 21-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 13-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 14-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	498	503	-1.0	23.7
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	13 July 2009 / 16:25		13 July 2009 / 16:15		13 July 2009 / 16:05			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	5.6	5.2	< 1.0	< 1.0	6.4	6.7	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	13 July 2009 / 15:40		13 July 2009 / 15:50		13 July 2009 / 15:55		13 July 2009 / 15:30	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	5.7	6.0	2.3	2.6	10.9	10.9	5.5

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700200 Date of Issue : 21-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 14-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 15-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	497	501	-0.8	25.0
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	14 July 2009 / 15:10		14 July 2009 / 15:25		14 July 2009 / 15:40			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	1.1	1.3	< 1.0	< 1.0	6.2	6.5	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	14 July 2009 / 16:10		14 July 2009 / 16:20		14 July 2009 / 15:55		14 July 2009 / 16:30		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	4.1	3.9	2.6	2.5	11.5	10.9	6.3	6.5

* : Information 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700218

Date of Issue : 21-07-2009

Client* : Environmental Pioneers & Solutions Limited

P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 15-07-2009

W.O. No.* : --

Sample Type* : River Water

Date Completed : 17-07-2009

GCE Serial No. : WQM072009

GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results						
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L		
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	502	491	2.2	24.1		
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29		
TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	15 July 2009 / 16:10		15 July 2009 / 16:20		15 July 2009 / 16:30			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	31.2	32.4	9.5	10.0	
TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	15 July 2009 / 16:50		15 July 2009 / 16:45		15 July 2009 / 16:40		15 July 2009 / 17:00	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	2.5	2.5	122.8	128.4	11.2	11.6	6.1

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700226 Date of Issue : 21-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 16-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 17-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	502	491	2.2	24.1
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	--		16 July 2009 / 16:15		--			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	--	--	17.8	18.2	--	--	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	--		16 July 2009 / 16:30		--		--	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	--	--	3.7	3.6	--	--	--


* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700365 Date of Issue : 30-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 20-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 21-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	504	496	1.6	24.1
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	20 July 2009 / 11:30		20 July 2009 / 11:20		20 July 2009 / 11:10			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	1.8	1.9	1.7	1.9	4.0	3.7	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	20 July 2009 / 10:45		20 July 2009 / 10:50		20 July 2009 / 11:00		20 July 2009 / 10:35	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	6.8	6.4	2.3	2.1	45.0	44.6	10.4

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700373 Date of Issue : 30-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 22-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 24-07-2009

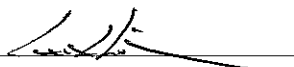
GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results							
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L			
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	494	1.0	25.3			
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29			
TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate			
	Sampling Date/Time	22 July 2009 / 12:15		22 July 2009 / 12:25		22 July 2009 / 12:35				
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.3	1.2	< 1.0	< 1.0	2.9	3.3		
TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	22 July 2009 / 12:55		22 July 2009 / 12:50		22 July 2009 / 12:45		22 July 2009 / 13:05		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	3.7	3.8	9.0	8.9	9.4	9.3	6.5	6.2

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090700381 Date of Issue : 30-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 23-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 24-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	499	494	1.0	25.3
Acceptance Criteria			<2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29


TEST RESULTS	Sample ID		C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time		--		23 July 2009 / 13:30		--			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	--	--	< 1.0	< 1.0	--	--		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		--		23 July 2009 / 13:15		--		--	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	--	--	3.1	3.0	--	--	--	--

* : 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700399 Date of Issue : 30-07-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 24-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 25-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	505	496	1.8	24.5
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ±5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	24 July 2009 / 15:00		24 July 2009 / 14:45		24 July 2009 / 14:30			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	5.1	4.9	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	24 July 2009 / 14:10		24 July 2009 / 14:15		24 July 2009 / 14:20		24 July 2009 / 14:00		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	3.4	3.1	2.8	2.9	10.5	10.9	5.6	5.5

* : Information 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



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700412 Date of Issue : 04-08-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 27-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 28-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	505	498	1.4	25.7
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate	
	Sampling Date/Time	27 July 2009 / 15:30		27 July 2009 / 15:40		27 July 2009 / 15:50		
	LOD	Units						
Suspended Solids (SS)	1	mg/L	2.7	2.6	< 1.0	< 1.0	4.5	4.3

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	27 July 2009 / 16:10		27 July 2009 / 16:05		27 July 2009 / 16:00		27 July 2009 / 16:20		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	4.6	4.6	2.9	2.7	10.9	10.6	6.6	6.4

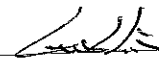
* : Information provided by client

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

Checked By : GU CHIN

Approved Signatory : 
 Name : GU CHIN
 Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700420 Date of Issue : 04-08-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 28-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 30-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	502	497	1.0	25.7
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	28 July 2009 / 16:00		28 July 2009 / 16:20		28 July 2009 / 16:30			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	7.0	6.6	

TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate	
	Sampling Date/Time	28 July 2009 / 16:50		28 July 2009 / 16:45		28 July 2009 / 16:40		28 July 2009 / 17:00		
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.7	2.4	8.2	8.2	11.5	11.2	6.9	7.0


* : 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

Checked By : GU CHIN

Approved Signatory : 
 Name : GU CHIN
 Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700438 Date of Issue : 04-08-2009

Client* : Environmental Pioneers & Solutions Limited P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.
 DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 29-07-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 30-07-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results				
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	502	497	1.0	25.7
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29

TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	--		29 July 2009 / 16:20		--			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	--	--	1.4	1.5	--	--	


TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	--		29 July 2009 / 16:30		--		--	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	--	--	2.3	2.5	--	--	

* : 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
 Checked By : GU CHIN

Approved Signatory : 
 Name : GU CHIN
 Post : Chemist



TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Page 1 of 1

Report No. : GCC090700446

Date of Issue : 04-08-2009

Client* : Environmental Pioneers & Solutions Limited

P.O. Received : 08-09-2008

Client Address* : 8/F, Chaiwan Industrial Centre Building, 20 Lee Chung Street, Chaiwan, HK.

DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of

Project* : Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon.

Date Started : 31-07-2009

W.O. No.* : -- Sample Type* : River Water

Date Completed : 01-08-2009

GCE Serial No. : WQM072009 GCE Reg. No. : GCE 081096

Test Unit No. : CH 08258

Analysis Description	Test Method	Units	Quality Control Results						
			Method Blank	QC 500 mg/L	QC Duplicate	RPD%	Spike 25 mg/L		
Suspended Solids (SS)	APHA 20ed 2540 D	mg/L	< 1.0	498	505	-1.4	25.1		
Acceptance Criteria			< 2.5 mg/L	475 ≤ Control Limit ≤ 514		≤ ± 5%	21 ≤ R ≤ 29		
TEST RESULTS	Sample ID	C1	C1 Duplicate	C2	C2 Duplicate	C3	C3 Duplicate		
	Sampling Date/Time	31 July 2009 / 11:40		31 July 2009 / 11:30		31 July 2009 / 11:20			
	LOD	Units							
Suspended Solids (SS)	1	mg/L	1.4	1.2	2.7	2.7	6.2	5.7	
TEST RESULTS	Sample ID	M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time	31 July 2009 / 10:40		31 July 2009 / 10:50		31 July 2009 / 11:00		31 July 2009 / 11:10	
	LOD	Units							
Suspended Solids (SS)	1	mg/L	3.8	4.0	3.0	2.9	11.5	11.2	11.4

* : 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

Appendix G
Monitoring Schedule
for July 2009

Environmental Pioneers and Solutions Limited

DC/2006/11 - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

Master Schedule of EM&A works in July 2009

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

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

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

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

Appendix H Implementation Status of environmental protection / mitigation measures

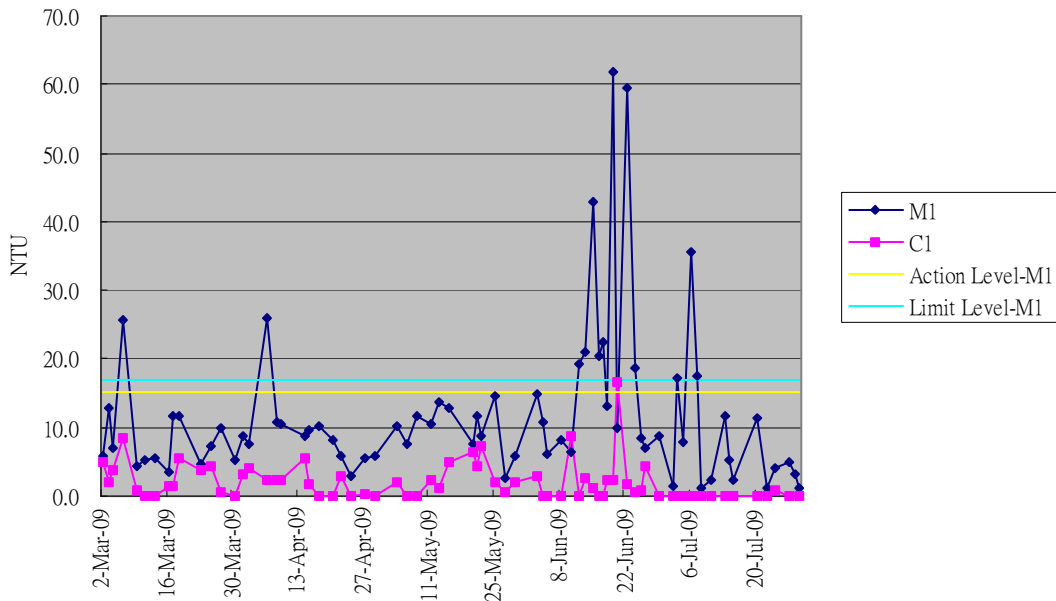
Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Implemented	
	Use of frequent watering for particular dusty static construction areas and areas close to ASRs.	Implemented	-
	Tarpaulin covering of all dusty vehicle loads transported to and from and between site location;	Implemented	-
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	Defects found on May 09	Ongoing
	Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	Implemented	-
Noise	Use of quiet powered mechanical equipment (PME)	Implemented	-
	Adoption of movable noise barriers and temporary noise barriers	Not applicable at this stage	-
	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.	Defects found on June 09	Ongoing
	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.	Defects found in this reporting month	Ongoing
	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.	Defects found in this reporting month	Ongoing
	Water pumped out from foundation excavations should be discharged into silt removal facilities.	Deficiencies found in this reporting month	Ongoing
	During rainstorms, exposed slope surface should be covered by a tarpaulin or the means.	Implemented	-
	Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.	Implemented	-
	Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce potential of soil erosion.	Defect found in this month	Follow up actions were taken. Defects were settled on 27 July
	Open stockpiles of construction materials or construction wastes on-site of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms.	Defects found in this reporting month	Ongoing
	Oils and fuels should only be used and stored on designated areas which have pollution prevention facilities.	Implemented	-
	Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site.	Not applicable	-
	The excavation and widening works for the drainage improvements to the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei Tong River and Luk Tei Tong By-pass Channel should be carried out in sections (approximately 300 –400 m in length) and in dry condition.	Implemented	-

Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up 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 Solid Waste	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	-
	Chemical waste stores should be provided with fire precaution facilities (i.e. fire extinguisher, no smoking warning etc).	Implemented	-
	Chemical wastes should be properly stored in corrosion resistant containers placed inside the store and labelled with warning signs in English and Chinese.	Implemented	-
	Chemical wastes should be disposed of by licensed chemical waste collector with supporting delivery records.	Implemented	-
	All containers for fuel, diesel and fluid chemical (in use) and oil filled stationery plants located with proper drip pans.	Deficiencies found in this reporting month	Ongoing
	Construction wastes should be managed and disposed to the designated public fill and landfill areas in acceptable manner.	Implemented	-
	All waste disposals managed in a proper manner i.e. trip ticket system implementation.	Implemented	-

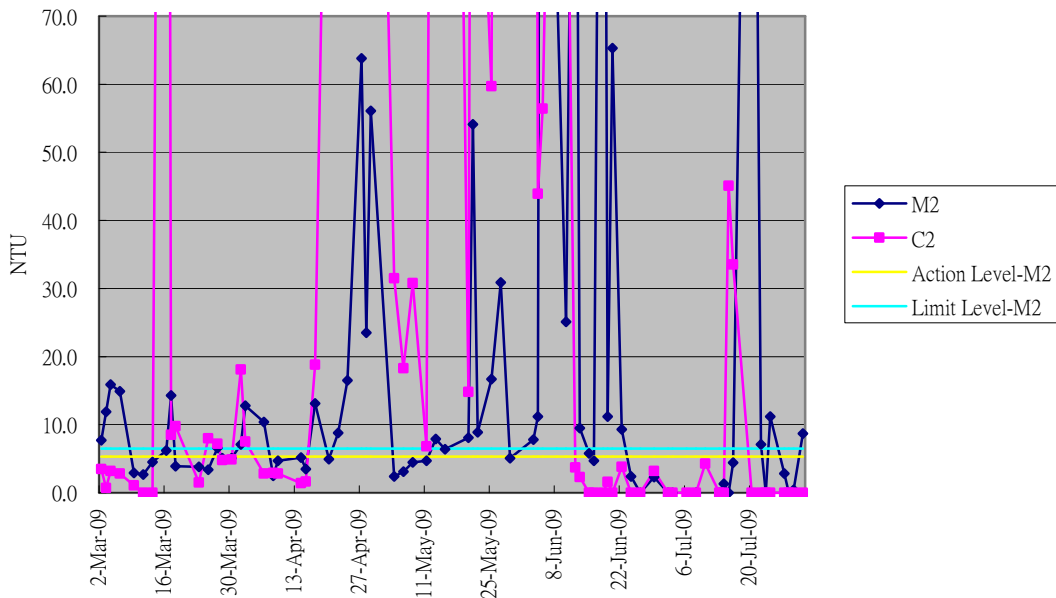
Appendix I

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

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

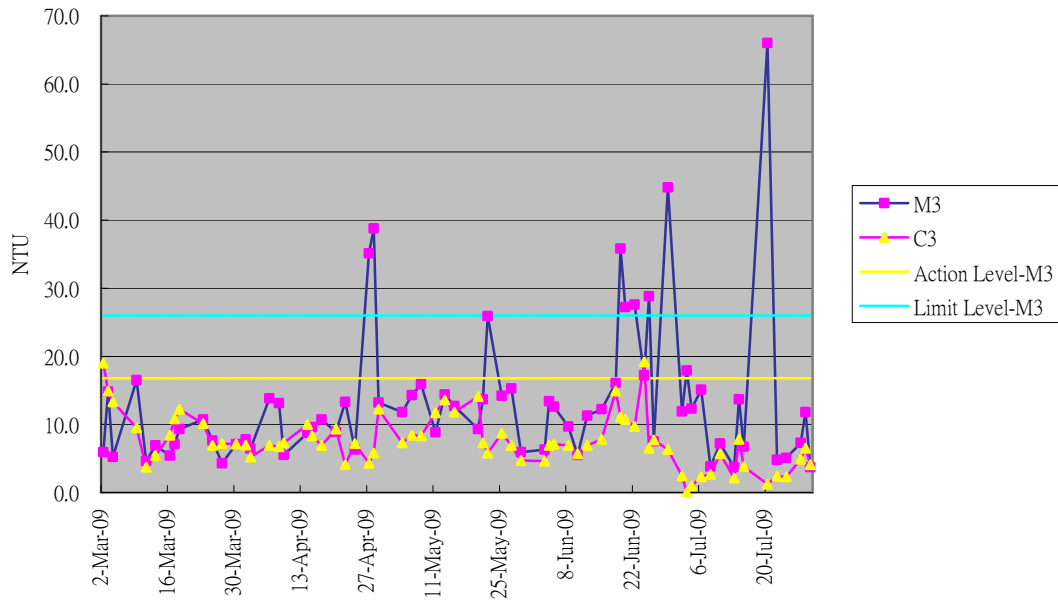


Graphical Plot of Turbidity Trend M2&C2 (Apr - July 09)

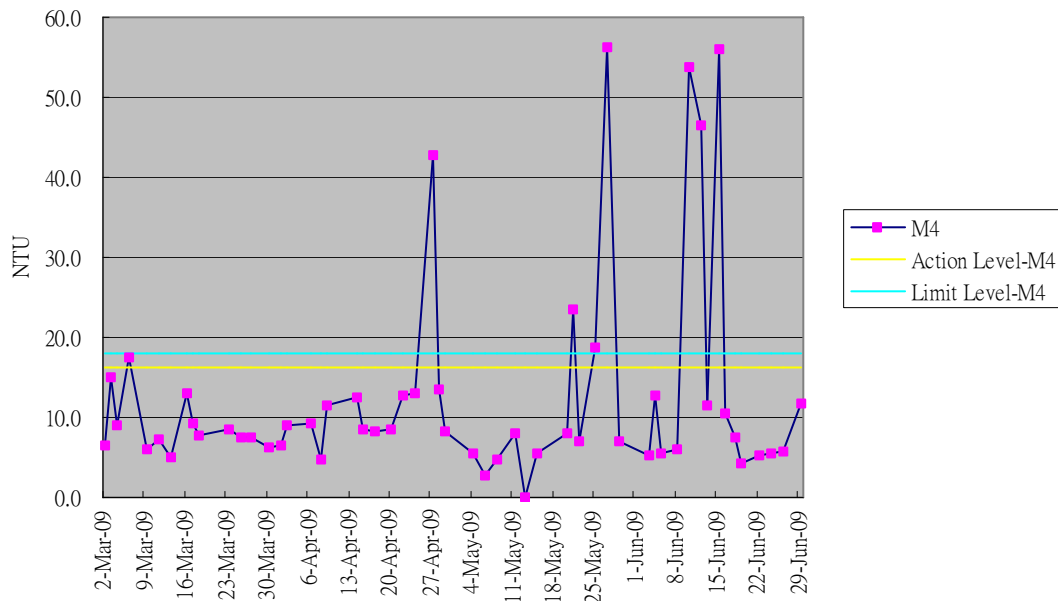


Remarks: The reading of M1 on 3rd, 6th and 7th July 2009 is 17.2, 35.7 and 17.5, M2 on 15th 16th 22nd and 28th July 2009 is 186.5, 7.1, 11.2 and 8.7, M3 on 3rd and 20th July 2009 is 17.9 and 66.0 which was over the range of the plot.

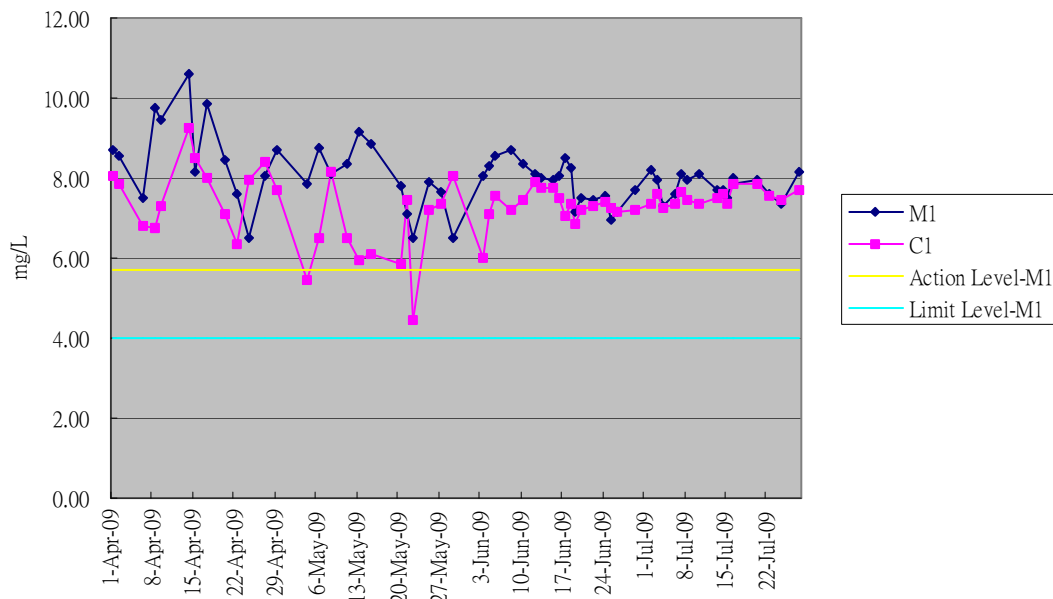
Graphical Plot of Turbidity Trend M3&C3 (Apr - July 09)



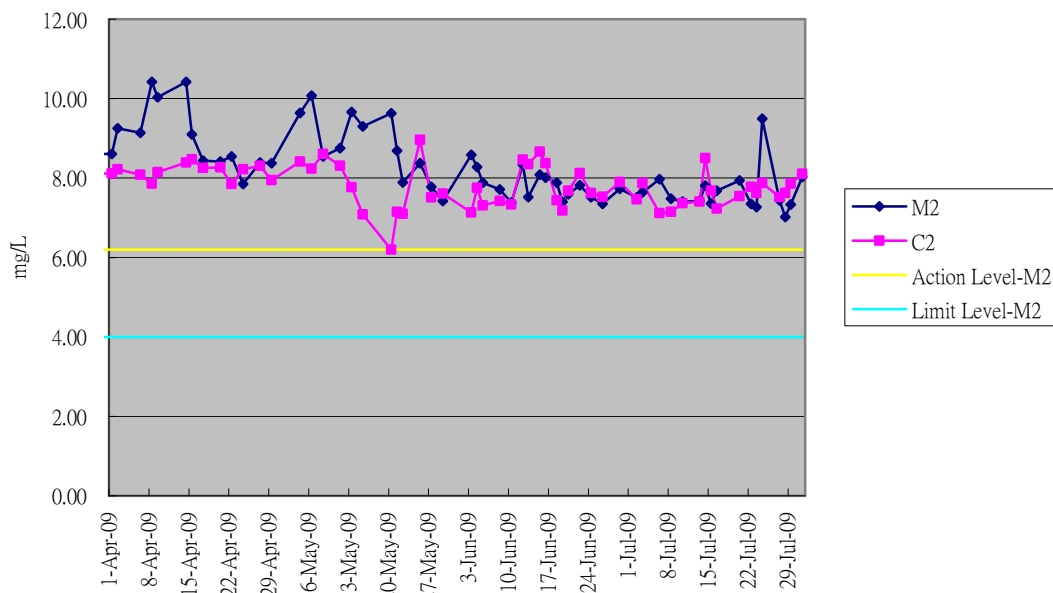
Graphical Plot of Turbidity Trend M4 (Apr - July 09)



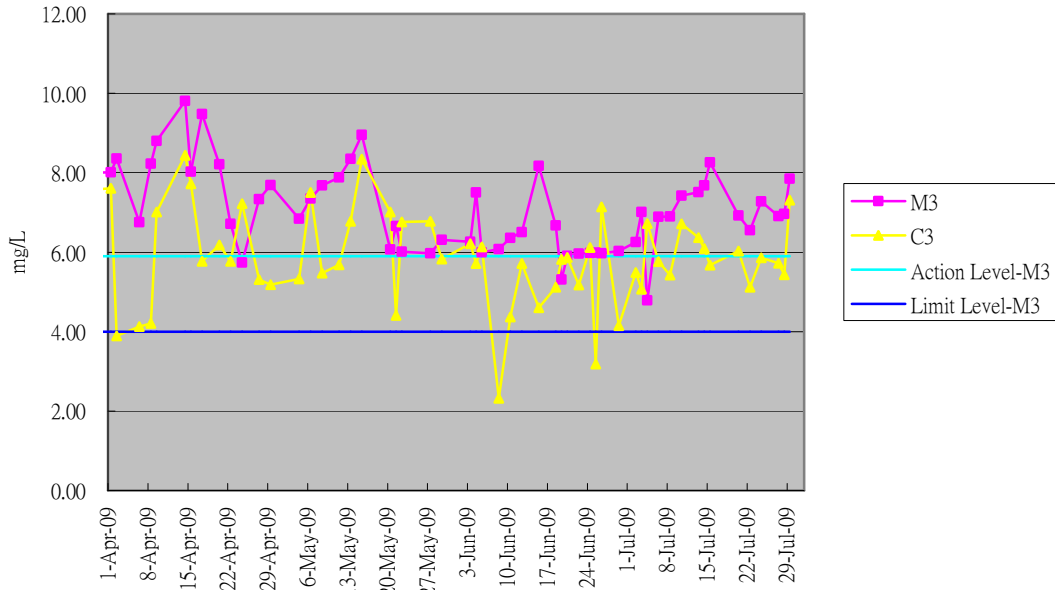
Graphical Plot of Dissolved Oxygen Trend M1&C1 (Apr - July 09)



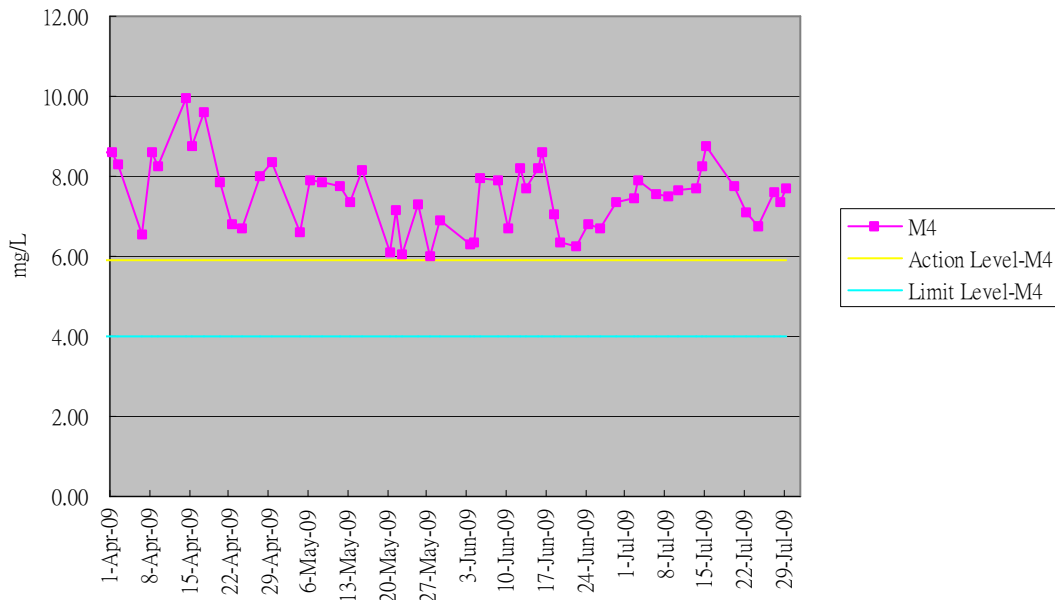
Graphical Plot of Dissolved Oxygen Trend M2&C2 (Apr - July 09)



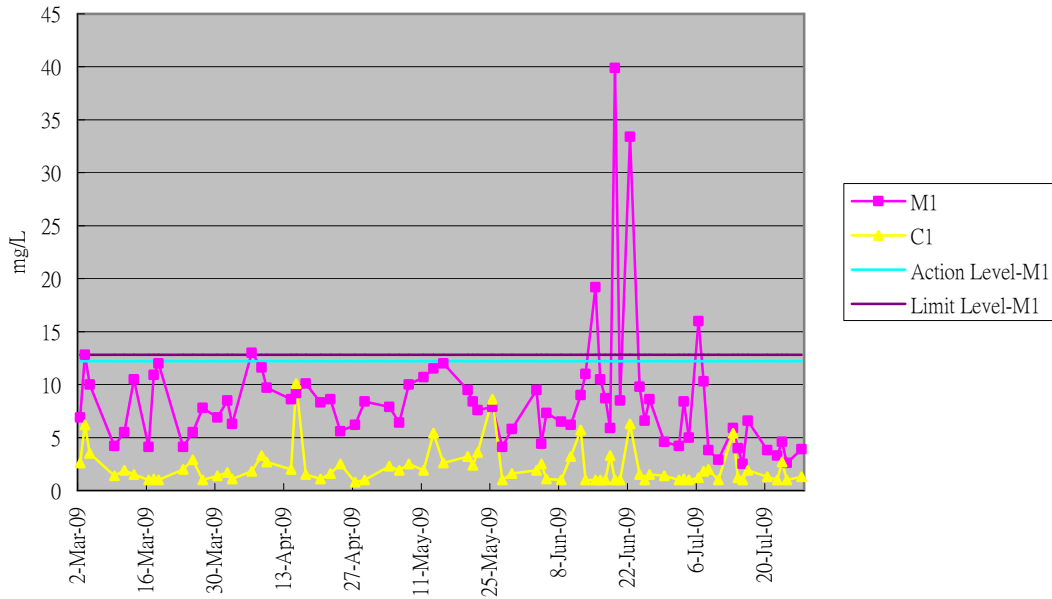
Graphical Plot of Dissolved Oxygen Trend M3&C3 (Apr - July 09)



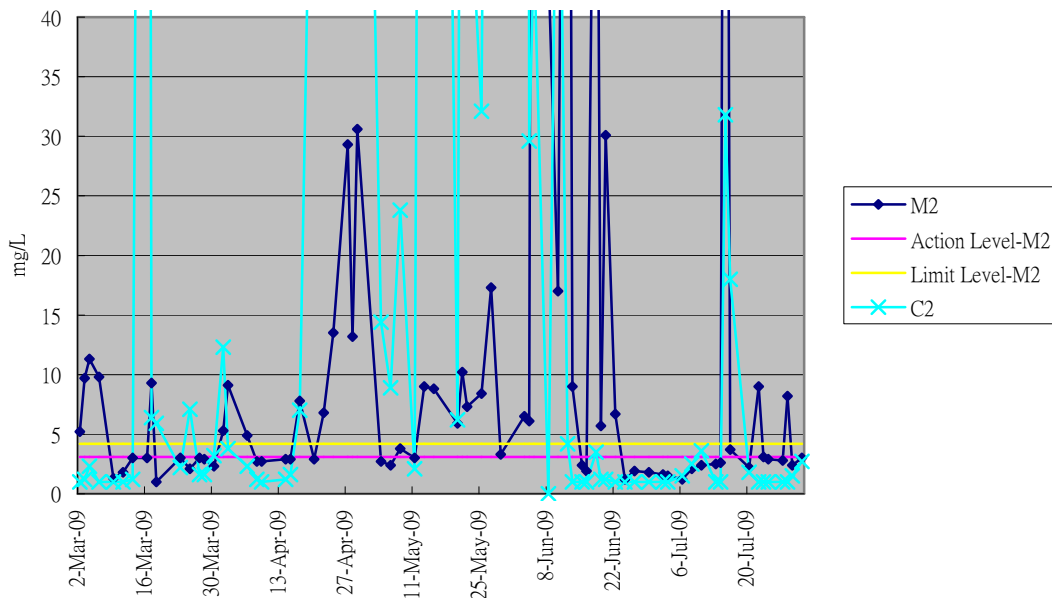
Graphical Plot of Dissolved Oxygen Trend M4 (Apr - July 09)



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

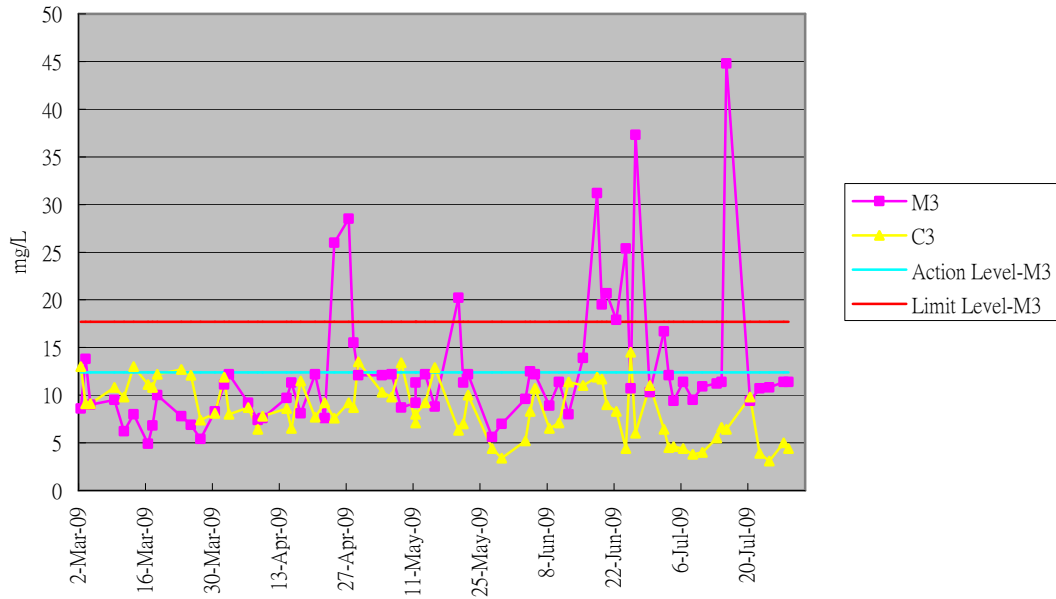


Graphical Plot of Suspended Soild M2&C2 (Apr - July 09)

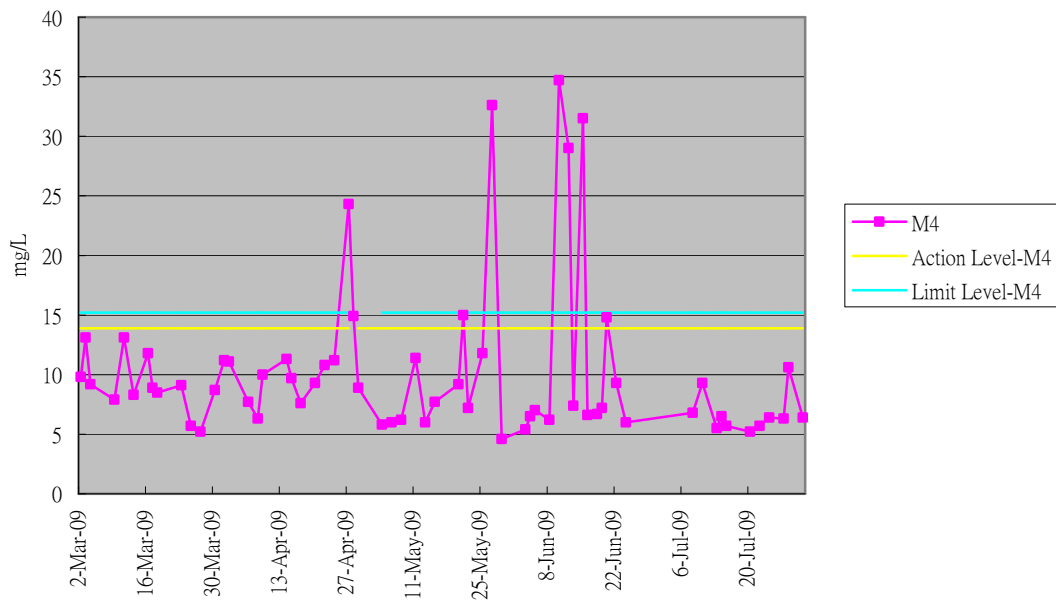


Remarks: The reading of M1 on 6th July 2009 is 16, M2 on 15th, 16th, 22nd, 23rd and 28th June 2009 is 125.6, 3.7, 9, 3.1 and 8.2, M3 on 3rd and 20th July is 16.7 and 44.8 which was over the range of the plot.

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

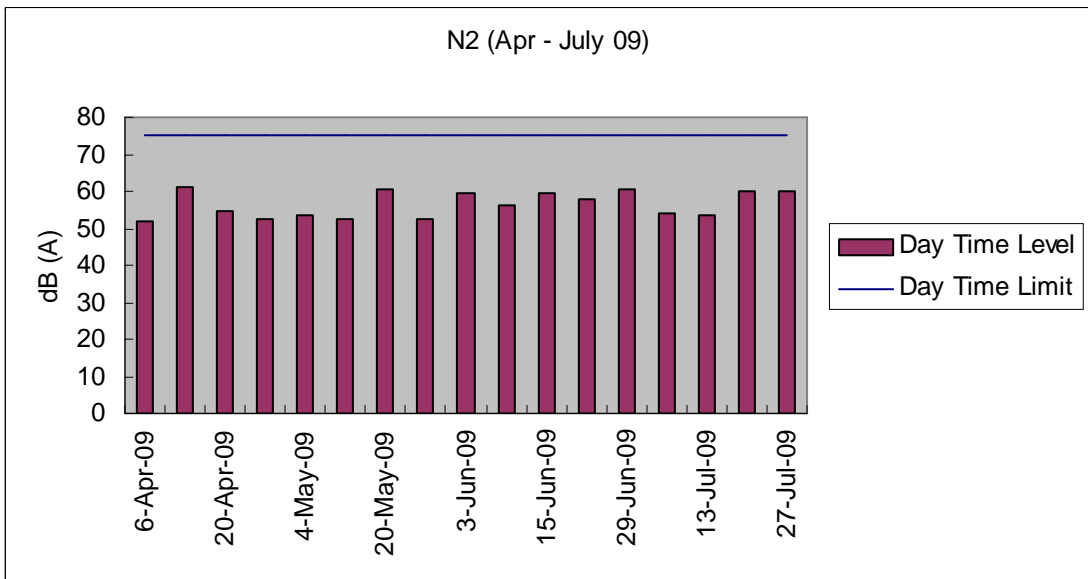
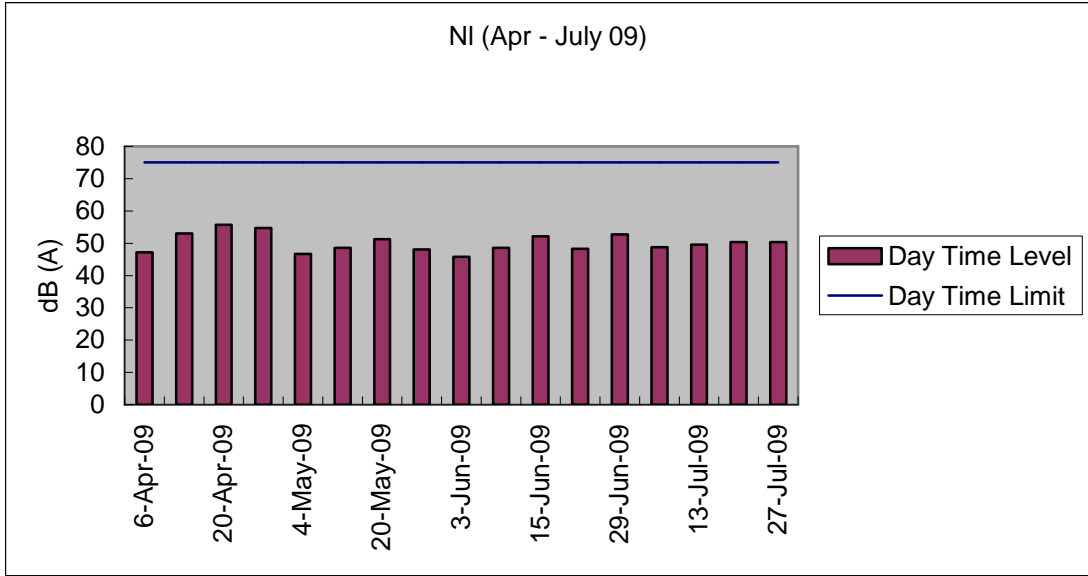


Graphical Plot of Suspended Soild M4 (Apr - July 09)

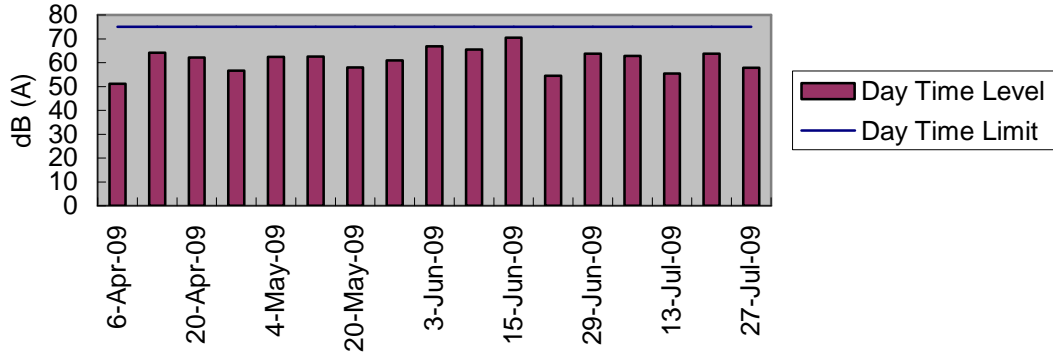


Appendix J

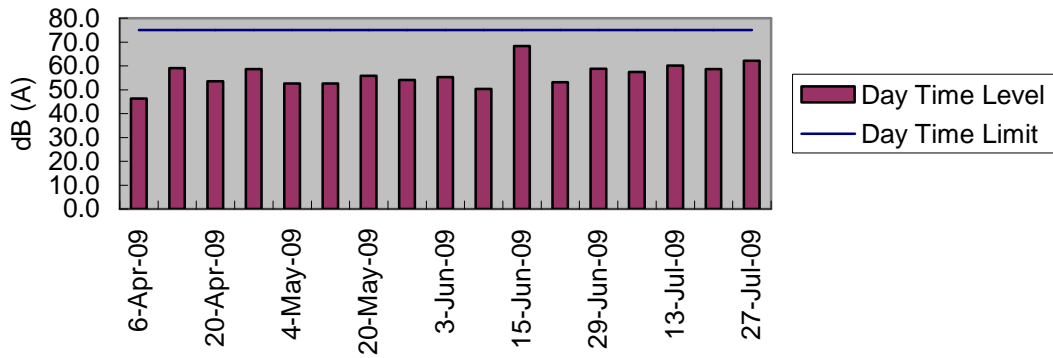
Graphical plot of noise
monitoring results



N3 (Apr - July 09)



N4 (Apr - July 09)



Appendix K

Ecological Survey Report

for the mangrove area at Luk Tei Tong

Ecological Survey Report for the mangrove area at Luk Tei Tong

Background

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

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

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

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

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

The objectives of the ecological monitoring are to:

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

Method

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

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

Results

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

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

Conclusions and Recommendations

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

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

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

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



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6