Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

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

February 2009

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EXECUTIVE SUMMARY

This is the seventh 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 February 2009 to 28th February 2009. The major activities in this reporting month include construction works of box culvert at Pak Ngan Heung (PNH) River, construction of bypass channel at Luk Tei Tong (LTT) Marshland and site clearance works at Tai Tei Tong (TTT) 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. Most of the monitoring results were within established A/L level hence no exceedance was reported.

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 as no construction work of the Project were conducted near the tower in the reporting month. The breeding season of White-shouldered Starling in this year has not begun. In addition, no disturbance on the flora and fauna in the river channels were observed during the ecological monitoring.

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

Key construction activity in the coming month will be construction of box culvert at PNH, gabion walls at TTT River as well as completion works for the bypass channel at LTT. 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 environmental performance of the project was generally satisfactory.

1. Introduction

This is the seventh 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 June 2009. 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 as the Environmental Team, which comprises the environmental team leader 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.

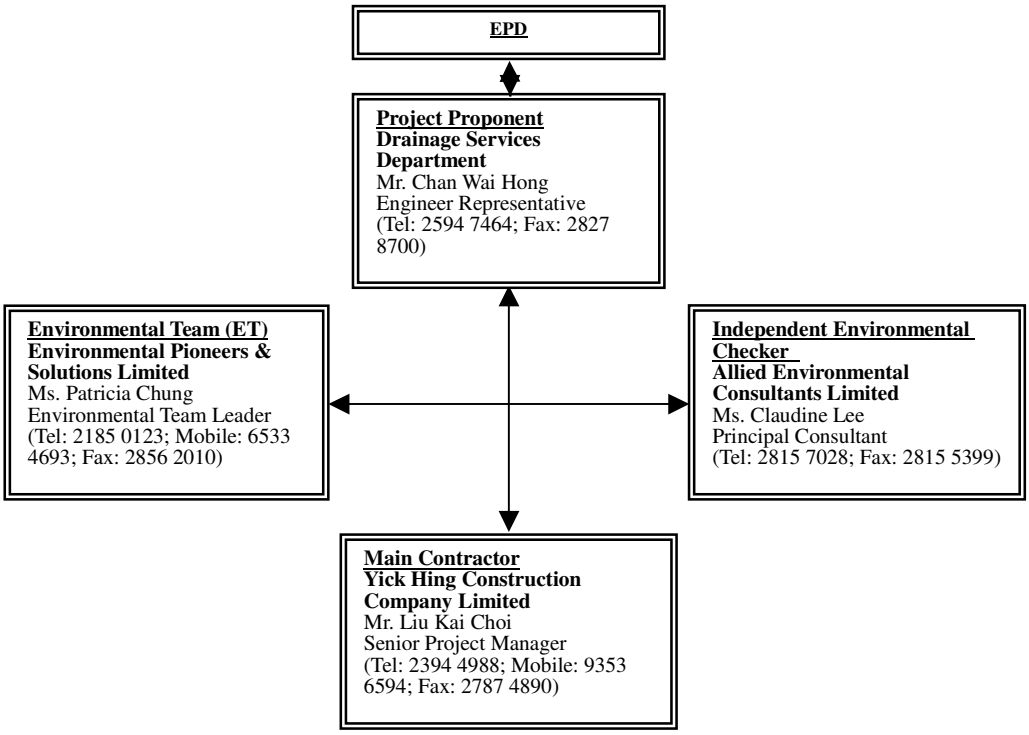


Figure. 2.2.1 Environmental Management structure for the project

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. Shuttering formwork and Steel fixing works of box culvert (coded BC11 & 12) at PNHR;
2. Formation of temporary public access at Pak Ngan Heung.
3. Concreting of box culvert (coded BC2 & 3) at PNH;
4. Construction of LTT bypass channel includes excavation works, formation of gabion walls and reinstatement of retained turf/ topsoil to the channel bed, at ch.50-300;
5. Concreting works for the concrete mass wall and box culvert at LTT; and
6. Site clearance works at ch.10-90 of TTT River.

3.2 Construction Activities for the coming month

Key Construction works in the coming month will include:

1. Completion works for the bypass channel at LTT marshland
2. Concreting of box culvert (coded BC11 & 12) at PNH; and
3. Construction of gabion walls at TTT River ch.10-90 approximately.

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

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

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.

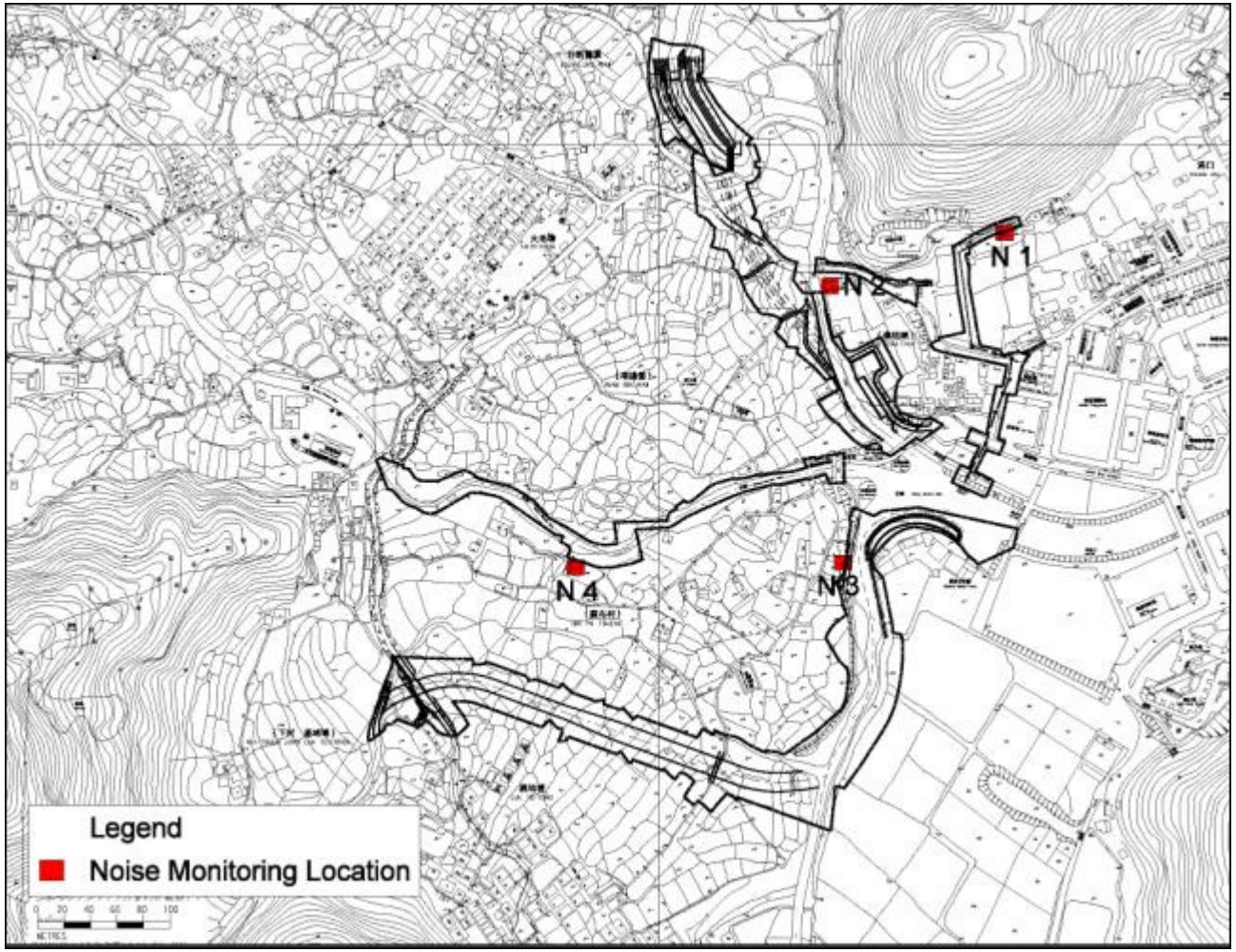


Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in table 4.4.1. The results, ranged between 43.2 dB (A) and 61.8 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	$L_{eq\ 30mins}$	02/02/09	13:00	47.3	75	N	Sunny
N1	$L_{eq\ 30mins}$	09/02/09	15:00	43.2	75	N	Sunny
N1	$L_{eq\ 30mins}$	16/02/09	14:00	43.5	75	N	Sunny
N1	$L_{eq\ 30mins}$	23/02/09	14:50	44.5	75	N	Sunny
N2	$L_{eq\ 30mins}$	02/02/09	13:40	50.8	75	N	Sunny
N2	$L_{eq\ 30mins}$	09/02/09	13:10	51.5	75	N	Sunny
N2	$L_{eq\ 30mins}$	16/02/09	14:05	61.8	75	N	Sunny
N2	$L_{eq\ 30mins}$	23/02/09	14:10	51.3	75	N	Sunny
N3*	$L_{eq\ 30mins}$	02/02/09	11:25	57.0	75	N	Sunny
N3*	$L_{eq\ 30mins}$	09/02/09	14:20	51.7	75	N	Sunny
N3*	$L_{eq\ 30mins}$	16/02/09	13:30	53.5	75	N	Sunny
N3*	$L_{eq\ 30mins}$	23/02/09	13:05	58.4	75	N	Sunny
N4	$L_{eq\ 30mins}$	02/02/09	10:50	53.3	75	N	Sunny
N4	$L_{eq\ 30mins}$	09/02/09	13:45	54.5	75	N	Sunny
N4	$L_{eq\ 30mins}$	16/02/09	11:30	44.9	75	N	Sunny
N4	$L_{eq\ 30mins}$	23/02/09	13:00	49.6	75	N	Sunny

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

4.5 Action and Limit level for Construction noise

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

There was no 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	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.	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.	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.	1. Submit noise mitigation proposals to IC(E); 2. Implement Noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IC(E), ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IC(E), ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	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	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^{o}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^{o}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.

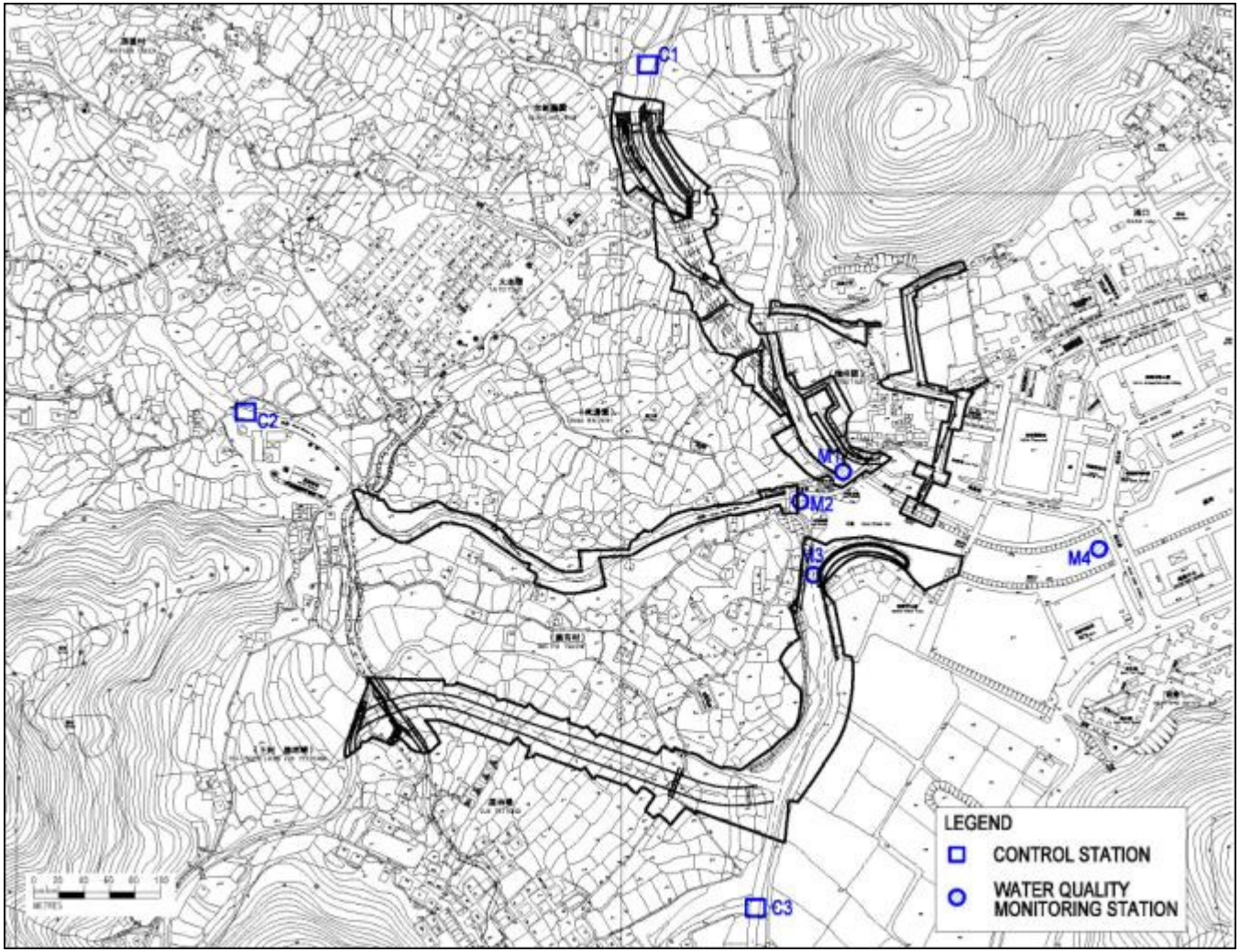


Figure 5.3.1 Water Quality Monitoring Locations

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 February. 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.

Based on the on site monitoring and lab testing results, no exceedance was found in the reporting month.

Table 5.5.1 Water quality monitoring results in February 2009

	M1			M2			M3			M4		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	2.5	12.0	7.0	1.2	5.0	3.6	4.5	13.9	8.7	5.4	11.0	7.7
DO (mg/l)	6.2	11.8	8.7	6.8	12.9	8.8	6.6	10.8	8.1	6.0	9.5	7.2
Suspended Solid (mg/l)	1.4	10.8	5.6	1.0	3.0	2.2	3.6	11.8	7.2	4.4	9.0	6.7

	C1			C2			C3		
	MIN	MAX	Ave	MIN	MAX	Ave	MIN	MAX	Ave
Turbidity (NTU)	0.9	5.7	3.5	0.6	4.9	2.4	3.1	15.4	7.6
DO (mg/l)	5.47	11.5	7.9	7.3	11.0	8.6	2.9	10.8	5.8
Suspended Solid (mg/l)	1.0	3.6	2.0	1.0	1.5	1.1	1.0	21.8	8.2

* 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 baseline water quality monitoring data obtained, the A/L levels are shown in Table 5.6.1. 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 5.6.2 should be taken.

There was no exceedance recorded hence no further actions were taken in this reporting month.

Table 5.6.1 Action and Limit Levels for water quality monitoring

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 5.6.2 Event and action Plan for Water Quality

EVENT	ACTION			
	ET	**IC(E)**	**ER**	**Contractor**
Action Level being exceed by one sampling day	1. Repeat in *situ* 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.	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.	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.	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	1. Repeat in *situ* 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	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.	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.	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	1. Repeat in *situ* 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	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.	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.	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 specially construction run-off and drainage, general construction activities, sewage discharged from construction workforce and river channel excavation works.

From the current observation, contractor installed the wheel washing facilities and desilting tank as implementation of water quality mitigation measures.

5.8 Water Monitoring Schedule for the Next reporting period

Water monitoring in the next reporting period is scheduled for 2, 3, 4, 9, 11, 13, 16, 17, 18, 23, 25, 27 and 30 March.

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^{o}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^{o}C without frozen) and delivered to the laboratory for analysis as soon as possible after collection. Duplicate samples from each independent sampling event were undertaken during impact monitoring.

6.3 Monitoring Locations

According to the Final EM&A Manual, the improved section of the river channels will be divided into 50m long sections, and ecological survey will be carried out in each of the 50m sections. A total of nine sections will be divided for the two rivers which include:
- Two sections for existing upstream of PNH river (i.e. the proposed 80m long trapezoidal channel)
- Two sections for existing downstream of PNH river (i.e. the proposed 100m long rectangular channel)
- Five sections for existing Luk Tei Tong River (i.e. the proposed 240m long trapezoidal channel)

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

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

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

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

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

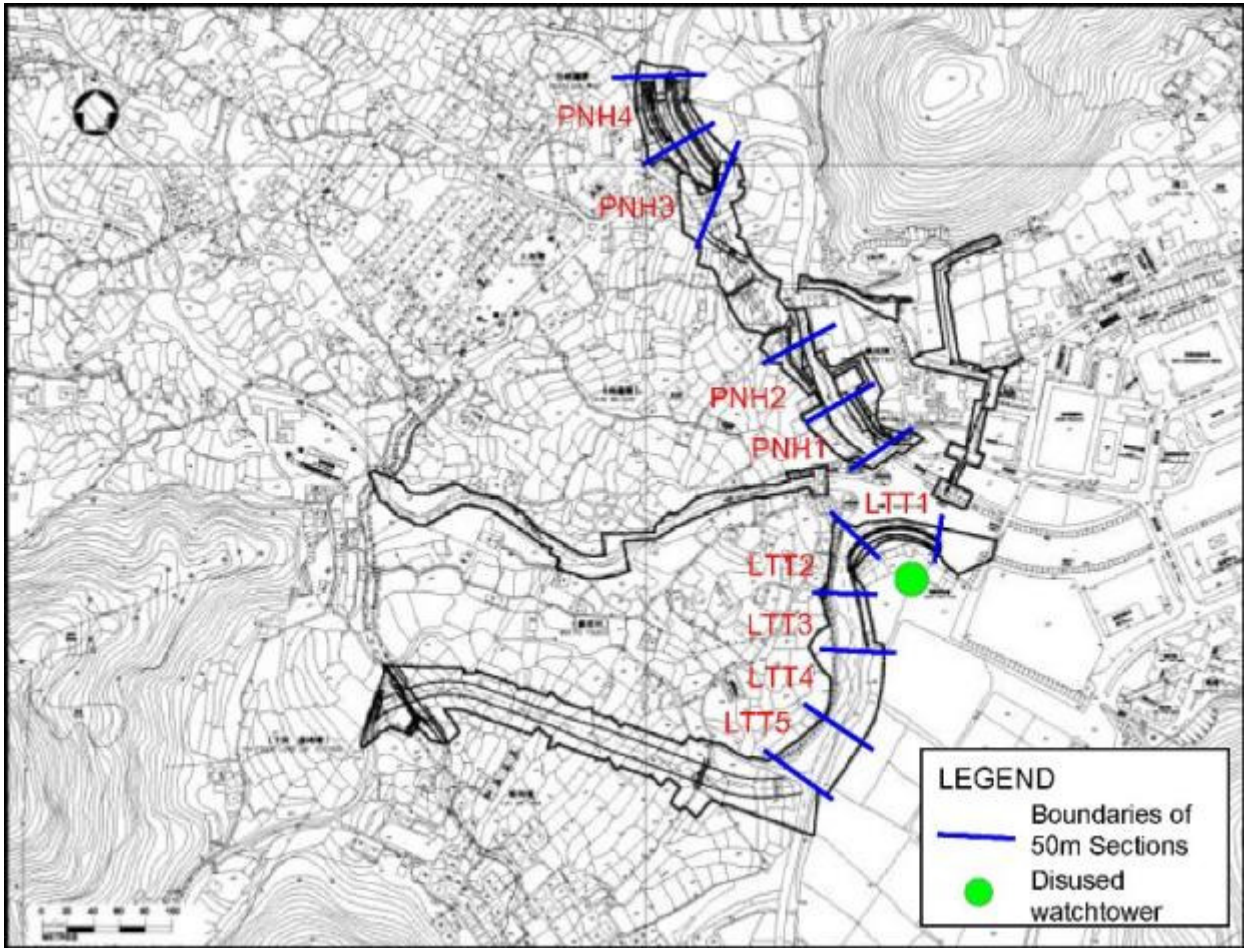


Figure 6.1 Ecological Monitoring Locations

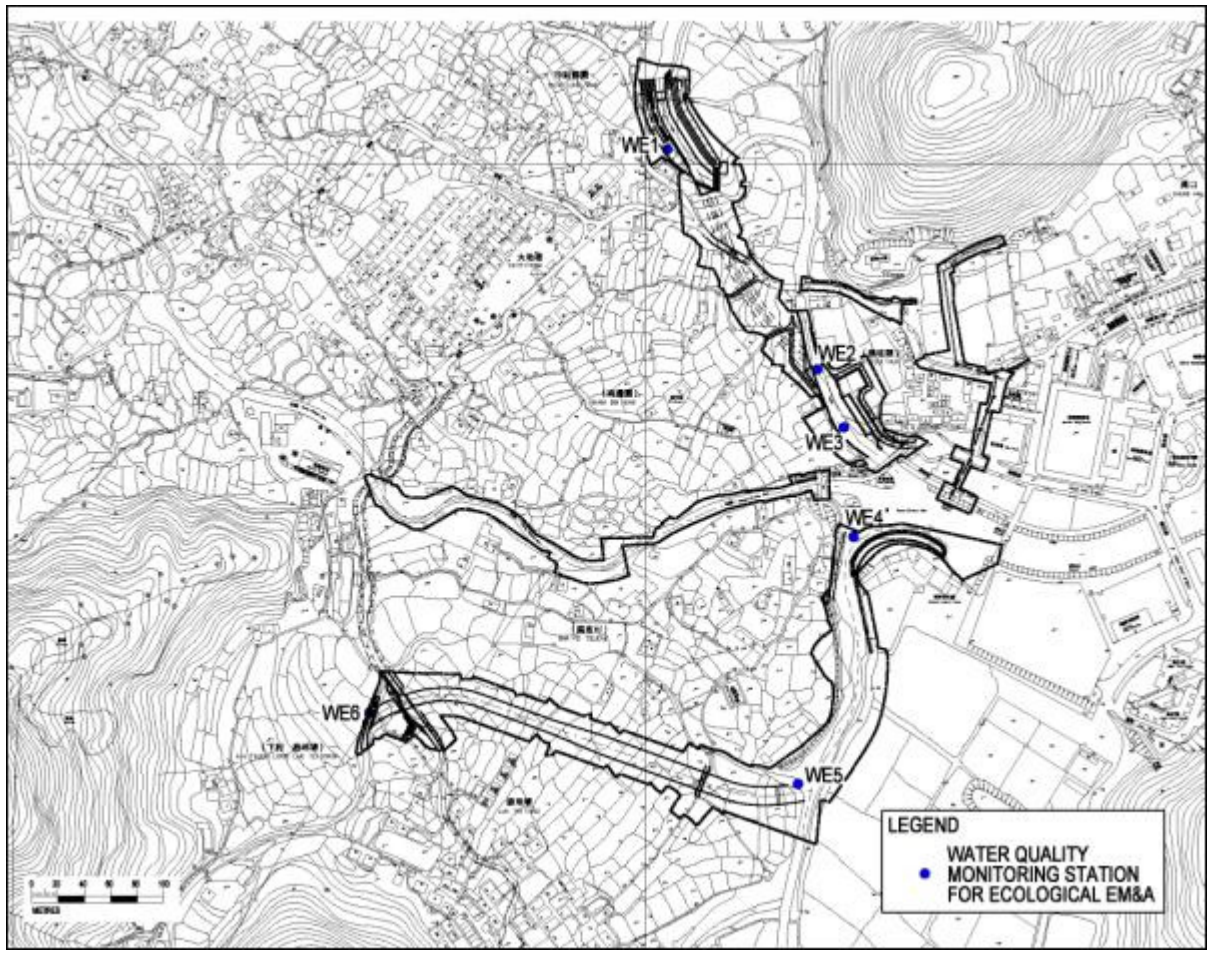


Figure 6.2 Ecological Water Quality monitoring locations

6.4 Monitoring Frequency

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

6.5 Monitoring results

Pak Ngan Heung Stream N and S sections

Vegetation

Surveys were conducted on 10 February 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 66 species, including 22 trees, 10 shrub, 19 herb and 6 grass species (Appendix D1). 55 of the species recorded are natives, while 11 were exotics. The quantitative sampling recorded 26 species at the north section. Large native (e.g. *Celtis sinensis, Cleistocalyx operculata, Ficus hispida*) and exotic trees (*Acacia confusa*) dominated the transects. Other species recorded include common and typical native pioneer forest and streamside tree species and ruderal species. No species of conservation interest was recorded.

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

	Relative % cover	
Species	**PNH3**	**PNH4**
Acacia confusa		16.40
Acorus graminifolius		1.08
Alocasia macrorrhiza		0.03
Aporosa dioica	0.58	2.48
Bamboo	10.51	
Celtis sinensis	23.75	21.36
Christella parasitca	0.70	1.64
Cleistocalyx operculata	33.49	
Embelia ribes		0.15
Ficus hispida		10.31
Hibiscus rosa-sinensis		0.62
Litsea glutinosa		16.09
Macaranga tanarius		20.12
Mallotus paniculatus	15.58	0.31
Microstegium ciliatum		1.86
Mikania micrantha	1.01	0.87
Phyllanthus urinaria	0.43	
Phyllanthus urinaria		0.15
Pueraria phaseoloides	0.78	0.15
Pueraria phaseoloides		
Sageretia thea		3.71
Spirodela polyrrhiza	0.19	0.19
Sporobolus fertilis		2.48
Sterculia lanceolata	3.12	
Syzygium jambos	9.35	
Widelia trilobata	0.51	
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 20 species recorded, 15 of which were native and 5 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 13 February 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**
Little Egret	*Egretta garzetta*	1				CW
Grey Wagtail	*Motacilla cinerea*		1			CW
Chinese Bulbul	*Pycnonotus sinensis*			2		CW
Yellow-bellied Prinia	*Prinia flaviventris*		1			CW
Jungle Crow	*Corvus macrorhynchus*				1	CW

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

No dragonfly was recorded in the proposed work area of the Pak Ngan Heung River in February 2009 .

Aquatic fauna and fish

8 species of fish and 3 crustacean were recorded in the 4 sections at PNH. All are common and widespread in Hong Kong. Both the species number of aquatic fauna and their abundance recorded in the present monitoring survey were lower than those recorded in previous wet season months, probably due to the lower temperature. As observed on site, the stream flow was very small and the water level was low, and there were algae on the stream bed. This is typical in local streams during dry season. Though Predaceous Chub was observed, the another one fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata*, was not recorded in PNH during the present monthly monitoring survey.

Table 6.5.4 Aquatic Invertebrates and fish in Pak Ngan Heung

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

Broken-band Hillstream Loach	*Liniparhomaloptera disparis*			+	

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

Luk Tei Tong Stream Section

Vegetation

Surveys were conducted on 10 February 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 26 species, including 11 tree, 6 shrub, 4 grass species (Appendix D3). 21 of the species recorded are natives, while 5 were exotics. The quantitative sampling recorded 11 species at Sections 2 and 3. Section 2 was dominated by *Terminalia catappa* and *Wollastonia biflora*, while Section 3 was dominated by *Hibiscus tiliaceus*. No quantitative survey was carried out on Section 4 due to vegetation clearance on stream banks as part of the site clearance works under the project. .

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

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

	Relative % cover	
Species	**LLT2**	**LLT3**
Acanthus ilicifolius	10.43	32.24
Celtis sinensis	12.69	
Cyperus malaccensis	3.17	
Execoecaria agallocha	2.90	
Fimbristylis sp.	8.25	
Hibiscus tiliaceus		42.06
Kandelia obovata	2.27	25.70
Papalum paspaloides	7.80	
Premna serratifolia	9.34	
Terminalia catappa	39.89	
Wollastonia biflora	3.26	
Total Relative % Cover	100.0	100.0
Total Transect Length (m)	11	10

*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 13 February 2009.

A total of ten 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 1**	**LTT 2**	**LTT 3**	**LTT 4**	**LTT 5**	**Commonness & distribution**
Little Egret	*Egretta garzetta*	2	6				CW
Great Egret	*Casmerodius albus*	1		1			CL
Chinese Pond Heron	*Ardeola bacchus*		1				CW

Grey Heron	*Ardea cinerea*				1		CL
Black-crowned Night Heron	*Nycticorax nycticorax*		7	1			CL
White Wagtail	*Motacilla alba*	1					CW
Greater Coucal	*Centropus sinensis*					1	CW
Chinese Bulbul	*Pycnonotus sinensis*				1		CW
Common Blackbird	*Turdus merula*					1	CL
Yellow-browed Warbler	*Phylloscopus inornatus*	1					CW

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

No species of dragonfly were recorded in the Luk Tei Tong River in February 2009.

Aquatic invertebrates and fish

3 species of fish, 4 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 species number of the aquatic fauna, in particular crustacean, and their abundance recorded in the present monitoring survey were lower than those recorded in previous wet season months, probably due to the lower temperature. As observed on site, the stream flow was very small and the water level was low. This is typical in local streams during dry season. The two fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata* and Predaceous Chub *Parazacco spilurus* were not recorded in LTT during the present monitoring as well as the baseline monitoring survey.

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

Common names	**Scientific names**	**LTT1**	**LTT2**	**LTT3**	**LTT4**	**LTT5**
Invertebrates						
Mangrove clam	*Geloina erosa*			+		
Rock oyster	*Saccostrea cuculata*		++	+	+	
Snail	*Melanoides tuberculata*				++	
Crab	*Varuna litterata*					
Fiddler crab	*Uca lactea*		++			

Fiddler crab	*Uca arcuata*					
Fiddler crab	*Uca crassipes*		+			
Crab	*Perisesarma bidens*		+			+
Mangrove mud crab	*Scylla paramamosain*					
Mitten crab	*Eriocheir japonica*	+				
Fish						
Common mudskipper	*Periophthalmus cantonensis*					
Tilapia		+++				
Jarbua terapon	*Terapon jarbua*	++	+			
Mullet	*Mugil cephalus*	+++	++			
Common Silver-biddy	*Gerres oyena*					
Barcheek Goby	*Rhinogobius giurinus*					

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

Disused Watchtowers

Surveys were conducted on 13 February 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 February 2009 monitoring.

No bird entered the tower during the survey. It seems the birds do not prefer the watchtower as night roost.

Ecological Water Quality Monitoring (EWQM)

EWQM was conducted on 9 February 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, Suspended Solid (8.0 mg/l), Ammonia Nitrogen (1.71 mg/l), Phosphorous (0.27 mg/l), BOD_5 (4 mg/l) and turbidity (13.1 NTU) recorded in location WE5 were higher than that of the others. Such results were believed to be caused by seasonal change and extremely low water level. As no river-based site activities were being carried out at LTT River in this reporting month and no site water was directly discharged to the stream from the construction of LTT bypass channel. The occurrence of such phenomenon was not likely to be caused by construction works of the Project. In addition, due to low water level during the dry season, there was nearly no water flow in monitoring location WE1 and WE6.

Table 6.9 Summarized Ecological water quality monitoring results (9 February 2009)

Parameters	Limit of detection	WE1	WE2	WE3	WE4	WE5	WE6
Suspended Solid (mg/l)	1	2.70	2.20	1.35	9.20	8.00	2.50
Nitrogen (Ammonia) (mg/l)	0.01	0.24	0.20	0.12	0.22	1.71	0.16
Nitrogen (Nitrate) (mg/l)	0.01	0.03	0.30	0.28	0.16	0.14	0.02
Phosphorous (mg/l)	0.01	0.02	0.06	0.05	0.05	0.27	0.03
BOD_5 (mg/l)	1	3.00	2.00	2.00	3.00	4.00	1.00
DO (mg/l)	0.01	9.45	7.56	8.26	6.59	9.55	6.18
Turbidity (NTU)	0.01	3.40	5.40	2.70	7.10	13.10	2.50
Temperature (oC)	0.1	20.6	22.6	21.4	21.2	23.6	19.2
pH	0.01	6.93	7.57	7.65	7.15	6.82	6.51
Salinity (ppt)	0.1	0.2	5.9	6.5	19.8	4.5	0.0
Conductivity (ms/m)	0.1	60.0	1060.0	1140.0	3140.0	550.0	5.5
Water Flow (m/s)	N/A	0	0.075	0.015	0.033	0.18	0

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, 20th and 26th March, while ecological water quality monitoring is scheduled on 9th March.

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, water quality and ecological measurements recorded; therefore no further actions were taken.

8. Construction waste disposal

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

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

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

Table 8.1 Summary of Construction Waste Disposal

	Amount of Construction Waste disposed		
Month	**Inert Waste (to Public Fill)**	**Non-inert Waste (to Landfill)**	**Chemical Waste (to treatment plant)**
Feb 09	56.83 (ton)	Nil	Nil
Total (from June 08 to Feb 09)	8913.24 (ton)	5.22 (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.

Table 10.1 Summary of Formal Complaints received

	Noise	Water	Ecology	Cultural	Others
January 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 6, 13, 18 and 26 of February.

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
16 Jan 09	Roots of the tree next to the gabion blocks at LTT marsh, were found excavated and damaged	Contractor was requested to taken remedial actions wherever possible	The tree was fertilized and fenced up with steel bars and orange meshes to prevent further damage	06 Feb 09
21 Jan 09	A lot of vegetative and non-inert wastes were found stored at sites	Contractor was advised to dispose their wastes more frequently, reuse and/or recycle of wood logs and formwork should be implemented if practicable	Wastes were disposed progressively	Ongoing
21 Jan 09	Stockpile of boulders were found placed near trees at LTT marsh	Contractor was reminded again on not placing any stockpiles near trees	Boulders were removed from the trees as advised	06 Feb 09
06 Feb 09	Stockpile of excavated materials were found storing at the open area nearby LTT river channel	Contractor should provide proper covering with tarpaulin to prevent erosion and surface run-off, bunds should be formed at nearby of the river channel to	Tarpaulin coverings were provided and earth bunds with geo-textile materials were formed for run-off blockage	26 Feb 09

Table 11.1 Summary of site inspection

Date	Observations	Advice from ET	Action taken	Closing Date
		block the potential runoff		
13 Feb 09	Housekeeping issues of Power generator was found occupied the waste storage area at PNH	Contractor was advised to assign a new area for waste storage/ collection	Waste storage area was moved to the site area of PNH BC 1 & 2	18 Feb 09
13 Feb 09	Oil leakage from the excavator was observed at the site of LTT bypass channel	Contractor was advised to take immediate action to stop further leakage from their plants, and proper handle the contaminated soil as chemical waste	Contaminated soil was collected and stored in the chemical waste cabinet for further disposal	18 Feb 09
13 Feb 09	Vegetative wastes were found dumped on top of the retained turf/ topsoil storing at LTT	Wastes/ construction materials should not be mixed with the retained turf/ topsoil	Vegetative wastes were removed as advised	26 Feb 09
18 Feb 09	No covering was provided to the U-channel at the site entrance to PNH BC 9 & 10	Contractor should provide proper covering to the U-channel to prevent run-off to the public drain	Wood board was provided as covering to the U-channel	26 Feb 09
18 Feb 09	Further oil leakage from the excavator was observed	Contractor was advised to take immediate action to stop further leakage from their plants, and proper handle the contaminated soil as chemical waste	Contaminated soil was collected and stored in the chemical waste cabinet for further disposal	26 Feb 09
26 Feb 09	Construction wastes were found stored outside of the site boundary at LTT	Contractor was advised to assign a waste storage area at LTT bypass channel for waste collection and segregation	To be follow up	N/A
26 Feb 09	Vehicle was found leaving the site of LTT without washing	Contractor was reminded to always wash their vehicles when leaving site to avoid bringing any earth materials to the public road	To be follow up	N/A
26 Feb 09	Generate wastes were found trapped in the U-channel at the LTT site entrance	Contractor should remove the wastes in the U-channel and provide a proper covering to protect the public drain	To be follow up	N/A

11.2 Compliance with legal and Contractual requirement

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

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

12. Future key issues

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

Contractor was reminded to provide proper mitigation measures to control surface run-off and contamination to river water as river-based construction works at TTT is being carried out. Construction works in the river shall be carried out in dry condition; 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.

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 stormwater drainage; also reuse of site water should be considerable.

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.

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.

13. Conclusions

In this reporting month, Construction work of box culvert at PNH, excavation and installation works for gabion blocks for LTT bypass channel were 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, results of all parameters were within the established A/L levels. According to the monthly ecological water monitoring results performed on 09 February 2009, measurement recorded in location WE5 was higher than that of the other monitoring locations. However, these are similar with results recorded in last month and it was believed to be caused by seasonal change and extremely low water level.

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 as no construction work of the Project were conducted near the tower in January 2009. The breeding season of White-shouldered Starling in this year has not begun. In addition, no disturbance on the flora and fauna in the river channels were observed during the ecological monitoring.

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

complaints recorded.

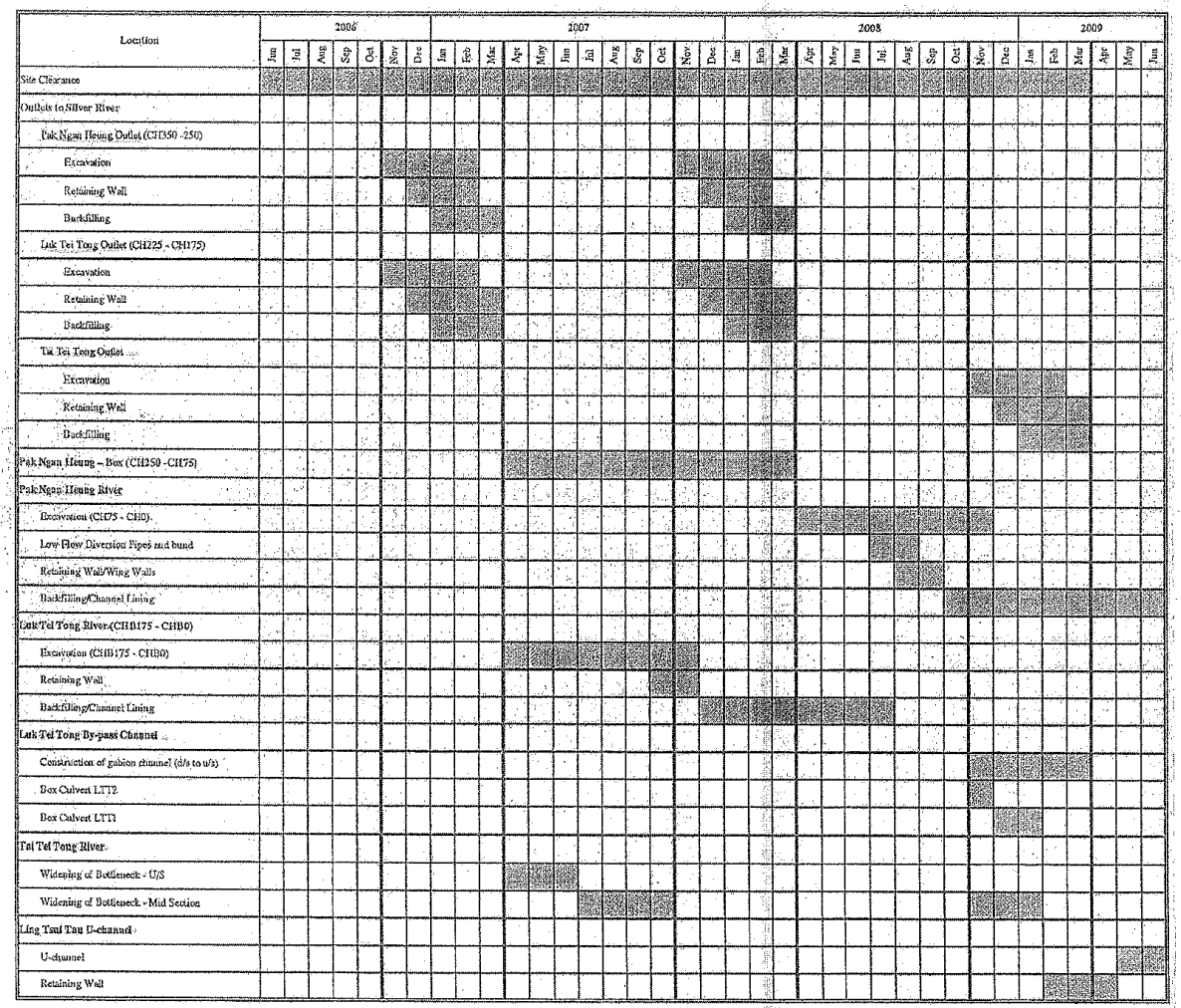
Housekeeping issues of wastes and/or material arrangement as well as preventative measures of chemical leakage from the equipments were the major concerns inspected in this reporting month, appropriate follow up actions have been taken by the contractor as advised.

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



DRAINAGE SERVICES DEPARTMENT, THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU INVESTIGATION

PRELIMINARY CONSTRUCTION PROGRAMME

Metcalf & Eddy Ltd 美凱工程顧問有限公司

DRG.NO. 1.2

MAR 2005

PRELIMINARY

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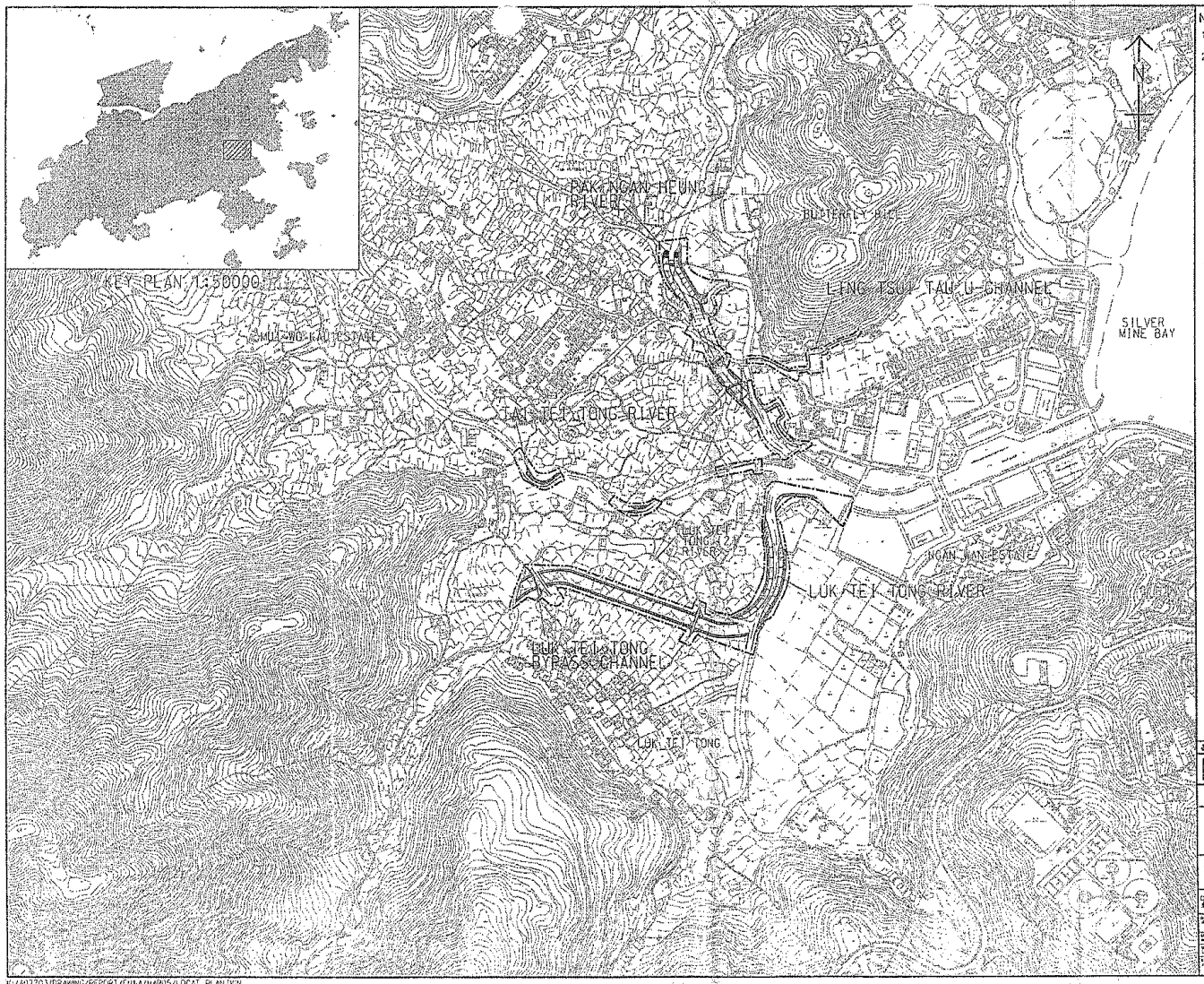

NOTES:

1. GRID LINES ARE HONG KONG GRID 1980
2. ALL LEVELS ARE IN METERS AND REFERRED TO H.K.P.D.

DRAINAGE SERVICES DEPARTMENT, THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

STORMWATER IMPROVEMENT IN SOUTHERN KOWLOON INVESTIGATION

LOCATION PLAN OF THE PROJECT

Metcalf & Eddy Ltd 美地工程顧問有限公司

ORIGINAL SIZE: A3

1.1

SEP 2004

PREPARED BY: JLFL

SCALE: 1:50000

PRELIMINARY

DRAWING NO. IN METRES

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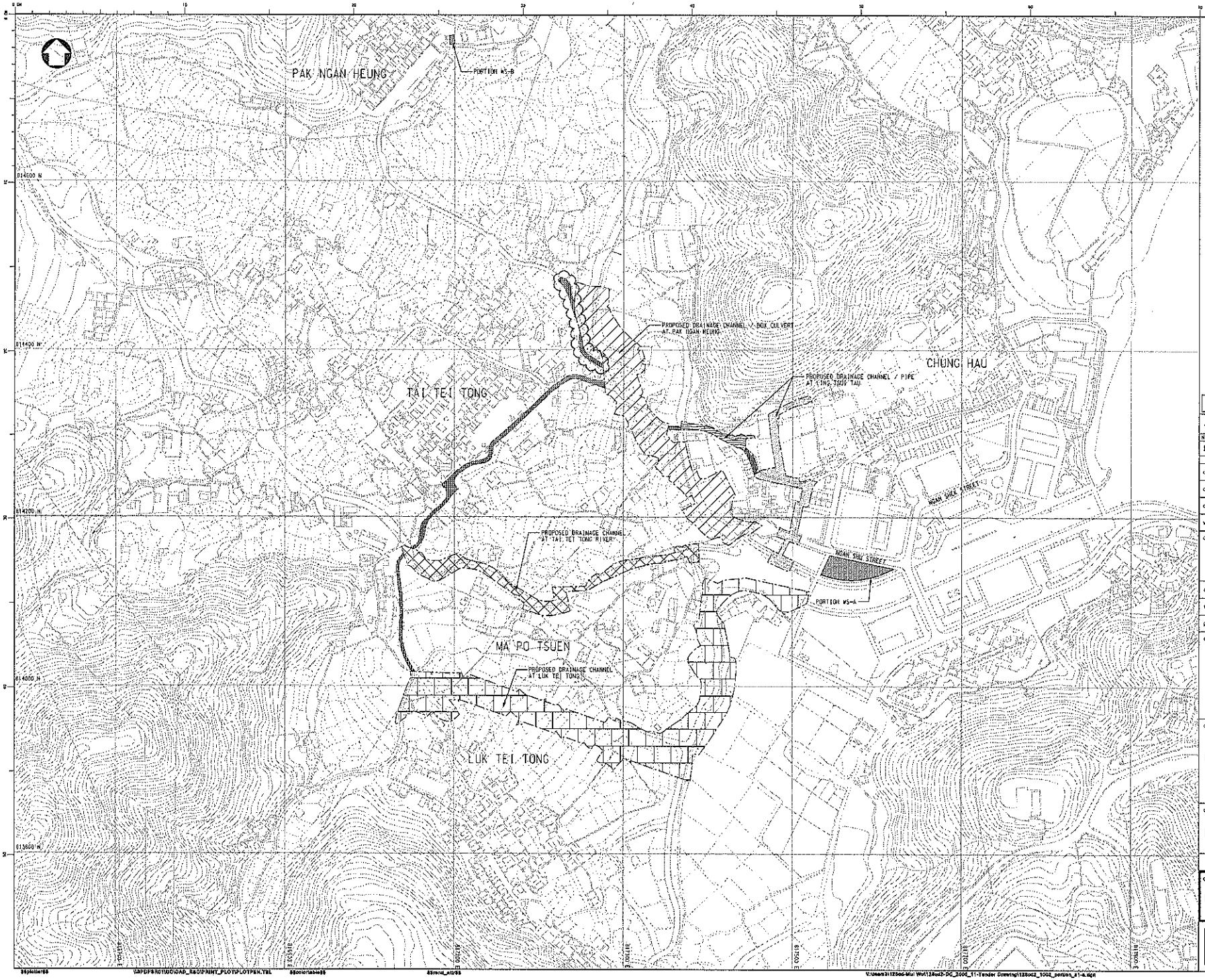


NOTES :

1. ALL LEVELS ARE IN METRES ABOVE P.D.H.K..
2. ALL GRIDS REFER TO HONG KONG 1980 GRID.

LEGENDS :

- SITE BOUNDARIES
- PORTION D1 - PAK NGAN HEUNG
- PORTION D2 - LING TSUI TAU (A)
- PORTION D3 - LING TSUI TAU (B)
- PORTION D4 - TAI TEI TONG RIVER
- PORTION D5 - LUK TEI TONG
- PORTION D6 - PUI O
- PORTION D7 - LO UK TSUEN
- PORTION D8 - CHEUNG SHA SHEUNG TSUEN
- PORTION D9 - EMERGENCY VEHICULAR ACCESS (EVA) AT HUI WO

FOR TENDER PURPOSES ONLY

No.	date	description	initial
A	16 MAY 2007	GENERAL REVISION	SIGNED H. Y. CHOW for

REVISION

	name		date
designed	SIGNED	H. Y. CHOW	12 FEB 2006
drawn	SIGNED	B. D. CHAN	23 MAR 2007
checked	SIGNED	W. H. CHAN	10 MAY 2007
vetted	SIGNED	T. Y. CHAN	11 MAY 2007

approved

SIGNED K. K. CHAN, Chief Engineer, 14 MAY 2007 Date

contract no. DC/2006/11

file no. DP/6/4128CD

project no. 128CD

contract

DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

drawing title

PORTIONS OF SITE - SOUTHERN LANTAU

(SHEET 1 OF 2)

drawing no.	scale
DDN/128CD2/1002A	1 : 2000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

A1 841x594

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

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

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

Calibration Reference No. : GCE/CAL/2008/MW/WQM/C1

Client : ENVIRONMENTAL PIONEER AND SOLUTION LIMITED

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

Manufacturer : DKK-TOA Serial No.: 617892

Calibration Date : 03 ot 04-12-2008 Due Date : 02-03-2009

Criterion: (Repeatabilty, Linearity)

pH	:	Both within ±0.05pH
Dissolved oxygen	:	Both within ±0.1mg/L
Electric conductivity	:	Both within ±1%FS
Turbidity	:	Repeatability : within ±3%FS
Temperature	:	Repeatability ±0.25°C; Linearity ±0.5°C; (Ambient 5~45°C)

Electric Conductivity (Salinity converted from EC):

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

Concentration of KCl Standard Solution (M)	Reference conductivity value at 25.0 °C	Indicated value by meter	Linearity (R^2)
0	0.0 mS/m*	0.0 mS/m	0.9996
0.001	14.7 mS/m	14.4 mS/m	
0.005	71.8 mS/m	71.3 mS/m	
0.01	0.141 S/m	0.140 S/m	
0.05	0.667 S/m	0.665 S/m	
0.1	1.29 S/m	1.28 S/m	Acceptance Criterion
0.5	5.87 S/m	5.86 S/m	$R^2 > 0.995$
Repeatability	1st time	0.00 , 5.86 S/m	-
	2nd time	0.00 , 5.86 S/m	
	3rd time	0.00 , 5.86 S/m	
	0.00 , 5.86 S/m	0.00 , 0.00	

* 1 S/m = 10^4 µmhos/cm = 10^3 mS/m

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

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

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	0.9999
4.17		4.12	
6.63		6.60	
8.89		8.92	
10.45		10.52	Acceptance Criterion
13.66		13.75	$R^2 > 0.995$
Repeatability	1st time	0.00 , 8.90	-
	2nd time	0.00 , 8.92	
	3rd time	0.00 , 8.93	
	0.00 , 8.89	0.00 , 0.02	

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	1.68	1.0000
pH = 6.86	4.00	4.01	
pH = 7.42	7.00	7.02	
pH = 9.18	10.00	10.03	Acceptance Criterion
pH = 12.45	12.45	12.47	$R^2 > 0.995$
Repeatability	1st time	4.01 , 10.03	-
	2nd time	4.01 , 10.02	
	3rd time	4.01 , 10.03	
	pH 4.00 , 10.00	0.00 , 0.01	

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

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

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	4.8		$R^2 = 0.9999$ And ± 0.08°C
15.0	15.2		
25.0	25.1		
35.0	34.8		
45.0	44.7		Acceptance Criterion
55.0	54.7		$R^2 > 0.995$ and within $\pm$ 5°C
Repeatability	1st time	4.8 , 54.8	-
	2nd time	4.8 , 54.7	
	3rd time	4.9 , 54.7	
	5.0 , 55.0	0.1 , 0.1	

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	0.3		1.0000
20.0	19.2		
100.0	101.8		
400.0	403.1		Acceptance Criterion
800.0	804.9		$R^2 > 0.995$
Repeatability	1st time	0.3 , 805.2	-
	2nd time	0.3 , 804.8	
	3rd time	0.3 , 804.8	
	0.0 , 800.0	0.0 , 0.3	

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 : 04-12-2008

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. Tel : (852) 2873 6860
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓 Fax : (852) 2555 7533
E-mail: smec@cigismec.com Website: www.cigismec.com
HOKLAS 028

CERTIFICATE OF CALIBRATION

D094

Certificate No.: 09CA0102 01-01

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 responsess of the Sound Level Meter.

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 02-01-2009 **Company Chop:** 綜合試驗有限公司 SOILS & MATERIALS ENGINEERING COMPANY LTD.

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.

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. Tel : (852) 2873 6860
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓 Fax : (852) 2555 7533
E-mail: smec@cigismec.com Website: www.cigismec.com
HOKLAS 028

CERTIFICATE OF CALIBRATION

0094

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed 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	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	N/A	N/A	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

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

Test:	Subtest	Status	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: C.Y. Fung Checked by:
Date: 02-01-2009 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
HOKLAS 028

CERTIFICATE OF CALIBRATION

D095

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

Curstomer:	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

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

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

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 02-01-2009 **Company Chop:**

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

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

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. Tel : (852) 2873 6860
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓 Fax : (852) 2555 7533
E-mail: smec@cigismec.com Website: www.cigismec.com

HOKLAS 028

CERTIFICATE OF CALIBRATION

D095

(Continuation Page)

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

1, Measured Sound Pressure Level

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

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Uncertainty dB
1000	94.00	94.30	0.1

2, Sound Pressure Level Stability - Short Term Fluctuations

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

At 1000 Hz **STF = 0.002 dB**

Estimated uncertainty 0.005 dB

3, Actual Output Frequency

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

At 1000 Hz **Actual Frequency = 1000.0 Hz**

Estimated uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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

At 1000 Hz **TND = 2.1%**

Estimated uncertainty 0.7%

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

- End -

Calibrated by: C.Y. Fung **Checked by:**
Date: 02-01-2009 **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.

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

			Relative	Occurrence	
Species	**Habit**	**Native**	**Abundance**	**PNH3**	**PNH4**
Acacia confusa	tree	no	occasional		+
Achyranthes aspera	herb	yes	scarce		+
Acorus gramineus	herb	yes	scarce		+
Acronychia pedumculata	tree	yes	scarce		+
Ageratum conyzoides	herb	yes	scarce	+	
Alangium chinensis	tree	yes	scarce		+
Alocasia macrorrhiza	herb	yes	occasional	+	+
Aporosa dioica	tree	yes	occasional	+	+
Ardisia crenata	shrub	yes	occasional	+	+
Atalantia buxifolia	tree	yes	scarce		+
Bamboo	herb	-	scarce	+	+
Bischofia javanica	herb	yes	scarce	+	
Breynia fruticosa	shrub	yes	scarce		+
Bridelia tomentosa	tree	yes	scarce		+
Caryota mitis	herb	yes	scarce		+
Celtis sinensis	tree	yes	occasional	+	+
Christella parasitica	fern	yes	occasional	+	+
Cleistocalyx operculata	tree	yes	occasional	+	
Commelina sp.	herb	yes	occasional	+	
Conyza canadensis	herb	no	scarce	+	+
Desmos chinensis	shrub	yes	occasional	+	
Dimocarpus longan	tree	no	occasional	+	+
Elephantopus tomentosa	herb	yes	occasional		+
Embelia ribes	climber	yes	scarce		+
Ficus hispida	tree	yes	common	+	+
Ficus superba	tree	yes	occasional		+
Ficus variegata	tree	yes	scarce	+	
Garcinia oblongifolia	tree	yes	occasional		+
Glochidion puberum	shrub	yes	scarce	+	
Hedychium coronarium	herb	no	scarce		+
Ipomoea cairica	climber	yes	occasional		+
Liriope spicata	herb	yes	scarce		+
Litsea glutinosa	tree	yes	occasional		+
Litsea rotundifolia	shrub	yes	scarce	+	
Lophatherum gracile	grass	yes	occasional		+
Ludwigia perennis	herb	yes	occasional	+	
Lygodium japonicum	fern	yes	scarce	+	

			Relative	Occurrence	
Species	**Habit**	**Native**	**Abundance**	**PNH3**	**PNH4**
Macaranga tanarius	tree	yes	occasional	+	+
Maesa perlarius	shrub	yes	scarce	+	
Mallotus paniculatus	tree	yes	scarce	+	+
Microcos paniculata	tree	yes	scarce	+	+
Microstegium ciliatum	grass	yes	common	+	+
Mikania micrantha	climber	no	common	+	+
Milletia nitida	climber	yes	scarce	+	
Mimosa pudica	herb	yes	scarce	+	+
Murraya paniculata	shrub	no	scarce	+	
Musa paradisiaca	tree	no	scarce	+	
Mussaenda pubescens	shrub	yes	scarce	+	
Panicum maximum	grass	no	common	+	+
Paspalum paspaloides	grass	yes	scarce		+
Phyllanthus urinaria	herb	yes	scarce	+	+
Pogonatherum crinitum	grass	yes	scarce		+
Polygonum barbatum	herb	yes	scarce	+	
Polygonum chinense	herb	yes	occasional	+	
Psychotria asiatica	shrub	yes	common	+	+
Pueraria phaseoloides	climber	yes	occasional	+	+
Sageretia thea	climber	yes	occasional		+
Spilanthes paniculata	herb	yes	occasional	+	+
Sporobolus fertilis	grass	yes	scarce		+
Sterculia lanceolata	tree	yes	common	+	+
Syngonium podophyllum	climber	no	occasional	+	
Syzygium jambos	tree	no	common	+	+
Syzygium levinei	tree	yes	scarce	+	
Urena lobata	herb	yes	scarce		+
Uvaria microcarpa	shrub	yes	occasional		+
Zanthoxylum avicennae	tree	yes	scarce		+

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

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

Appendix D3 Plant species recorded at Luk Tei Tong River

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

Appendix D4

Ecological Water Monitoring Results (on-site measurements)

Environmental Pioneers & Solutions Limited

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

Date of Sampling: 9/2/2009 **Weather Condition:** Sunny

Monitoring Location	WE1			WE2			WE3			WE4			WE5			WE6		
Time (hhmm)	1120			1110			1049			1100			1152			1135		
Tide Mode	mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb			mid-ebb		
River Condition	normal			normal			normal			normal			normal			normal		
Water Depth (m)	< 1			< 1			< 1			< 1			< 1			< 1		
pH value	6.93			7.57			7.65			7.15			6.82			6.51		
Temperature (oC)	20.6			22.6			21.4			21.2			23.6			19.2		
Salinity (ppt)	0.20			5.90			6.50			19.80			4.50			0.00		
Conductivity (ms/m)	60.0			1060.0			1140.0			3140.0			550.0			5.5		
Water flow (m/s)	0.000			0.075			0.015			0.033			0.180			0.000		
Turbidity (NTU)	3.4	3.4	Average 3.40	5.4	5.4	Average 5.40	2.7	2.7	Average 2.70	7.1	7.1	Average 7.1	13.1	13.1	Average 13.10	2.5	2.5	Average 2.5
DO (mg/l)	9.45	9.45	Average 9.45	7.56	7.56	Average 7.56	8.26	8.26	Average 8.26	6.59	6.59	Average 6.59	9.55	9.55	Average 9.55	6.18	6.18	Average 6.18
DO Saturation (%)	101	101	Average 101	97	97	Average 97	94	94	Average 94	86	86	Average 86	85	85	Average 85	70	70	Average 70

Name	Signature	Date
Prepared By: Jimmy Cheng		9/2/2009

remark or observation: M1 and WE3 are the same location.
M3 and WE4 are the same location.
Water Level at WE6 is too low to take the water

Appendix D5

Ecological Water Monitoring Results (lab report)

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

TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200111 Date of Issue : 16-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 10-02-2009

GCE Serial No. : WQM022009 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	486	499	-2.6	23.8
		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		09 Feb 2009 / 11:20		09 Feb 2009 / 11:10		09 Feb 2009 / 10:49			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.5	2.9	2.4	2.0	1.6	1.1		

TEST RESULTS	Sample ID		WE4	WE4 Duplicate	WE5	WE5 Duplicate	WE6	WE6 Duplicate		
	Sampling Date/Time		09 Feb 2009 / 11:00		09 Feb 2009 / 11:52		09 Feb 2009 / 11:35			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	9.2	9.2	8.1	7.9	2.4	2.6		

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

----- End -----

Tested By : K.L FONG

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200527 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:20 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		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	0.23
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.03
Phosphorus	mg/L	APHA 20ed 4500-P D	0.02
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200535 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:20 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
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	0.24
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.03
Phosphorus	mg/L	APHA 20ed 4500-P D	0.02
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200543 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:10 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE2

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST 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	0.19
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.30
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200551 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:10 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE2 Duplicate

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			Threshold Odour Number (TON) : --
pH Value at temperature [	] °C	APHA 20ed 4500-H^+ 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	0.20
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.29
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200569 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 10:49 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			Threshold Odour Number (TON) : --
pH Value at temperature [ ]	°C	APHA 20ed 4500-H^+ B	--
Colour	TCU	APHA 20ed 2120 B	--
Turbidity	NTU	APHA 20ed 2130 B	--
Conductivity at 25°C	µS/cm	APHA 20ed 2510 B	--
Salinity	g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia)	mg/L	APHA 20ed 4500-NH_3 D	0.11
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.28
Phosphorus	mg/L	APHA 20ed 4500-P D	0.05
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200577 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 10:49 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			Threshold Odour Number (TON) : --
pH Value at temperature [	] °C	APHA 20ed 4500-H^+ 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	0.12
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.28
Phosphorus	mg/L	APHA 20ed 4500-P D	0.05
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200585 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:00 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			Threshold Odour Number (TON) : --
pH Value at temperature [	] °C	APHA 20ed 4500-H^+ B	--
Colour	TCU	APHA 20ed 2120 B	--
Turbidity	NTU	APHA 20ed 2130 B	--
Conductivity at 25°C	µS/cm	APHA 20ed 2510 B	--
Salinity	g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia)	mg/L	APHA 20ed 4500-NH_3 D	0.21
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.16
Phosphorus	mg/L	APHA 20ed 4500-P D	0.05
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200593 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:00 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST 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	0.22
		APHA 20ed 4500-NH_3 E	--
		APHA 18ed 4500-NH_3 C	--
Nitrogen (Nitrate)	mg/L	APHA 20ed 4500-NO_3^- E	0.16
Phosphorus	mg/L	APHA 20ed 4500-P D	0.04
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200608 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:52 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE5

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			Threshold Odour Number (TON) : --
pH Value at temperature [	] °C	APHA 20ed 4500-H^+ B	--
Colour	TCU	APHA 20ed 2120 B	--
Turbidity	NTU	APHA 20ed 2130 B	--
Conductivity at 25°C	µS/cm	APHA 20ed 2510 B	--
Salinity	g/L	APHA 20ed 2520 B	--
Nitrogen (Ammonia)	mg/L	APHA 20ed 4500-NH_3 D	1.71
		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	0.27
Biochemical Oxygen Demand (BOD_5)	mg/L	APHA 20ed 5210 B	4
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200616 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:52 Sample Type* : River Water

GCE Reg. No. : GCE 081096 Test Unit No. : CH 08258 Sample I.D.* : WE5 Duplicate

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
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	1.70
		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	0.27
Biochemical Oxygen Demand (BOD_5)	mg/L	APHA 20ed 5210 B	4
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 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200624 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:35 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (In-House Method based on)	TEST RESULT
Appearance		APHA 20ed 2110	--
Odour		APHA 20ed 2150 B	Odour Characteristics : --
			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	0.02
Phosphorus	mg/L	APHA 20ed 4500-P D	0.03
Biochemical Oxygen Demand (BOD_5)	mg/L	APHA 20ed 5210 B	1
Chemical Oxygen Demand (COD)	mg/L	APHA 20ed 5220 D	--
Total Suspended Solid	mg/L	APHA 20ed 2540 D	--

* : Information provided by client

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

Sample received on 09 February 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER

Report No. : GCC090200632 Date of Issue : 23-02-2009

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

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

Project* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Contract No.* : -- Date Completed : 20-02-2009

GCE Serial No. : WQM022009 Sampling Date* : 09-02-2009 / 11:35 Sample Type* : River Water

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

Descripption : River Water

DESCRIPTION		TEST REFERENCE (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	0.02
Phosphorus	mg/L	APHA 20ed 4500-P D	0.03
Biochemical Oxygen Demand (BOD_5)	mg/L	APHA 20ed 5210 B	1
Chemical Oxygen Demand (COD)	mg/L	APHA 20ed 5220 D	--
Total Suspended Solid	mg/L	APHA 20ed 2540 D	--

* : Information provided by client

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

Sample received on 09 February 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

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		2009/2/2	
Measurement Start Time (hhmm)		13:00	13:40
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		0.6	1.0
Measurement Results	L_{90} (dB(A))	39.5	41.5
	L_{10} (dB(A))	49.1	51.7
	Leq (dB(A))	47.3	50.8
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No construction works are being carried out during measurement.
Other Noise Source(s) During Monitoring			
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/2

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	Façade
Date of Monitoring		2009/2/2	
Measurement Start Time (hhmm)		11:25	10:50
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		1.2	1.4
Measurement Results	L_{90} (dB(A))	44.9	42.8
	L_{10} (dB(A))	56.8	55.6
	Leq (dB(A))	54.0	53.3
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No major construction works are being carried out during measurement.
Other Noise Source(s) During Monitoring			
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/2

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		2009/2/9	
Measurement Start Time (hhmm)		15:00	13:10
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		0.6	0.7
Measurement Results	L_{90} (dB(A))	39.3	50.2
	L_{10} (dB(A))	43.6	52.4
	Leq (dB(A))	43.2	51.5
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	1. Power generator noise 2. Excavator noise
Other Noise Source(s) During Monitoring			
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/9

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	Façade
Date of Monitoring		2009/2/9	
Measurement Start Time (hhmm)		14:20	13:45
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		0.9	1.2
Measurement Results	L_{90} (dB(A))	41.5	43.6
	L_{10} (dB(A))	50.0	56.2
	Leq (dB(A))	48.7	54.5
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		1. Excavator noise	No construction works are being carried out during measurement.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic Noise (bicycle)	1. Public noise 2. Dog barking noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/9

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		2009/2/16	
Measurement Start Time (hhmm)		14:40	14:05
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		0.7	1.5
Measurement Results	L_{90} (dB(A))	39.9	58.8
	L_{10} (dB(A))	44.2	63.3
	Leq (dB(A))	43.5	61.8
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	1. Excavator noise 2.Power generator noise 3. Construction trucks noise
Other Noise Source(s) During Monitoring			
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/16

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	Façade
Date of Monitoring		2009/2/16	
Measurement Start Time (hhmm)		13:30	11:30
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		1.4	0.9
Measurement Results	L_{90} (dB(A))	44.3	39.8
	L_{10} (dB(A))	54.3	46.1
	Leq (dB(A))	50.5	44.9
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works are being carried out during measurement.	No construction works are being carried out during measurement.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise (bicycle)	
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/16

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		2009/2/23	
Measurement Start Time (hhmm)		14:50	14:10
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		0.6	0.9
Measurement Results	L_{90} (dB(A))	39.7	46.8
	L_{10} (dB(A))	45.8	53.5
	Leq (dB(A))	44.5	51.3
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		No construction works	1. Excavator noise 2. House keeping
Other Noise Source(s) During Monitoring			
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/23

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	Façade
Date of Monitoring		2009/2/23	
Measurement Start Time (hhmm)		13:05	13:00
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		SVAN 949	
Calibrator Model/ Identification		SVAN SV 30A	
Wind Speed (m/s)		1.2	0.8
Measurement Results	L_{90} (dB(A))	41.4	44.3
	L_{10} (dB(A))	57.1	52.8
	Leq (dB(A))	55.4	49.6
Weather condition:		Sunny	
Major Construction Noise Sourse(s) During Monitoring		1. Excavator noise	No construction works
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise (bicycle)	1. Public noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Jimmy Cheng		2009/2/23

Appendix F1

Water Quality
Monitoring Data Sheet

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/2 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1555			1600			1630			1615			1500			1515			1535		
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	8.43			8.33			8.31			7.96			6.75			6.61			6.39		
Temperature (oC)	22.0			21.8			21.4			20.8			18.5			20.3			21.1		
Salinity (ppt)	12.7			8.4			20.1			25.7			0.0			0.0			3.4		
Turbidity (NTU)	7.9	7.9	Average 7.9	4.0	4.0	Average 4.0	6.1	6.1	Average 6.1	11.0	11.0	Average 11.0	2.1	2.1	Average 2.1	0.6	0.6	Average 0.6	8.7	8.7	Average 8.7
DO (mg/l)	11.84	11.84	Average 11.84	12.85	12.85	Average 12.85	10.75	10.75	Average 10.75	7.60	7.60	Average 7.60	9.10	9.10	Average 9.10	8.90	8.90	Average 8.90	6.34	6.34	Average 6.34
DO Saturation (%)	146	146	Average 146	154	154	Average 154	138	138	Average 138	98	98	Average 98	102	102	Average 102	100	100	Average 100	77	77	Average 77

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/2

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/3 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1745			1740			1730			1755			1640			1655			1715		
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			0.9			< 1			0.8			< 1		
pH value	8.38			8.44			7.95			8.20			8.31			7.98			6.94		
Temperature (oC)	22.6			22.4			22.4			20.0			2.8			22.0			22.3		
Salinity (ppt)	8.5			3.3			22.1			23.2			0.3			0.1			1.8		
Turbidity (NTU)	11.4	11.4	Average 11.4	4.4	4.4	Average 4.4	7.4	7.4	Average 7.4	7.0	7.0	Average 7.0	2.0	2.0	Average 2.0	1.7	1.7	Average 1.7	15.1	15.1	Average 15.1
DO (mg/l)	11.73	11.73	Average 11.73	10.66	10.66	Average 10.66	9.48	9.48	Average 9.48	9.50	9.50	Average 9.50	10.43	10.43	Average 10.43	10.20	10.20	Average 10.20	10.75	10.75	Average 10.75
DO Saturation (%)	139	139	Average 139	128	128	Average 128	116	116	Average 116	117	117	Average 117	118	118	Average 118	110	110	Average 110	130	130	Average 130

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/3

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/4 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1635			1630			1620			1645			1545			1600			1610		
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	8.26			8.25			7.86			8.01			7.25			6.77			6.62		
Temperature (oC)	21.9			21.7			21.1			20.4			19.7			20.4			21.3		
Salinity (ppt)	13.5			19.8			20.9			29.0			0.0			0.0			4.9		
Turbidity (NTU)	12.0	12.0	Average 12.0	4.9	4.9	Average 4.9	11.8	11.8	Average 11.8	6.0	6.0	Average 6.0	0.9	0.9	Average 0.9	1.5	1.5	Average 1.5	5.7	5.7	Average 5.7
DO (mg/l)	9.21	9.21	Average 9.21	9.22	9.22	Average 9.22	8.44	8.44	Average 8.44	7.19	7.19	Average 7.19	11.52	11.52	Average 11.52	8.30	8.30	Average 8.30	6.53	6.53	Average 6.53
DO Saturation (%)	115	115	Average 115	117	117	Average 117	111	111	Average 111	95	95	Average 95	127	127	Average 127	99	99	Average 99	76	76	Average 76

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/4

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/9 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1049			1055			1100			1039			1120			1125			1148		
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	7.65			7.61			7.15			8.11			7.28			6.60			6.55		
Temperature (oC)	21.4			20.3			21.2			20.2			20.6			20.4			21.8		
Salinity (ppt)	6.5			1.6			19.8			27.8			0.2			0.0			2.9		
Turbidity (NTU)	2.7	2.7	Average 2.7	3.8	3.8	Average 3.8	7.1	7.1	Average 7.1	8.9	8.9	Average 8.9	2.1	2.1	Average 2.1	0.8	0.8	Average 0.8	7.2	7.2	Average 7.2
DO (mg/l)	8.26	8.26	Average 8.26	7.99	7.99	Average 7.99	6.59	6.59	Average 6.59	6.71	6.71	Average 6.71	9.46	9.46	Average 9.46	7.67	7.67	Average 7.67	4.41	4.41	Average 4.41
DO Saturation (%)	94	94	Average 94	96	96	Average 96	86	86	Average 86	86	86	Average 86	99	99	Average 99	85	85	Average 85	46	46	Average 46

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/9

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/11 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1350			1400			1410			1340			1425			1435			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		
pH value	8.13			7.67			7.12			8.14			6.56			7.52			6.54		
Temperature (oC)	25.7			23.3			25.4			23.1			22.2			22.1			24.7		
Salinity (ppt)	6.4			1.6			15.2			25.6			0.0			0.0			3.1		
Turbidity (NTU)	2.5	2.5	Average 2.5	1.2	1.2	Average 1.2	7.3	7.3	Average 7.3	9.2	9.2	Average 9.2	3.0	3.0	Average 3.0	0.8	0.8	Average 0.8	8.6	8.6	Average 8.6
DO (mg/l)	9.97	9.97	Average 9.97	9.69	9.69	Average 9.69	9.82	9.82	Average 9.82	8.49	8.49	Average 8.49	7.17	7.17	Average 7.17	9.25	9.25	Average 9.25	6.05	6.05	Average 6.05
DO Saturation (%)	127	127	Average 127	114	114	Average 114	130	130	Average 130	115	115	Average 115	83	83	Average 83	105	105	Average 105	73	73	Average 73

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/11

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/13 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1510			1500			1455			1520			1530			1540			1440		
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	7.25			7.26			7.07			8.16			6.23			6.41			6.88		
Temperature (oC)	22.6			22.1			22.8			21.7			20.4			21.5			21.5		
Salinity (ppt)	3.0			2.9			14.7			27.9			0.0			0.0			2.1		
Turbidity (NTU)	6.2	6.2	Average 6.2	3.8	3.8	Average 3.8	9.2	9.2	Average 9.2	9.2	9.2	Average 9.2	5.4	5.4	Average 5.4	2.3	2.3	Average 2.3	6.3	6.3	Average 6.3
DO (mg/l)	7.66	7.66	Average 7.66	7.63	7.63	Average 7.63	6.75	6.75	Average 6.75	8.14	8.14	Average 8.14	7.33	7.33	Average 7.33	8.01	8.01	Average 8.01	2.93	2.93	Average 2.93
DO Saturation (%)	90	90	Average 90	89	89	Average 89	85	85	Average 85	109	109	Average 109	87	87	Average 87	105	105	Average 105	35	35	Average 35

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/13

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/16 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1710			1650			1640			1700			1600			1615			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			< 1			< 1			< 1		
pH value	7.40			7.53			7.40			7.64			6.44			6.51			6.34		
Temperature (oC)	21.3			21.0			20.9			21.1			20.8			21.0			21.2		
Salinity (ppt)	15.1			11.1			20.8			20.3			0.3			0.0			3.8		
Turbidity (NTU)	7.2	7.2	Average 7.2	5.0	5.0	Average 5.0	6.3	6.3	Average 6.3	6.6	6.6	Average 6.6	4.5	4.5	Average 4.5	3.8	3.8	Average 3.8	7.6	7.6	Average 7.6
DO (mg/l)	6.18	6.18	Average 6.18	6.81	6.81	Average 6.81	7.77	7.77	Average 7.77	6.03	6.03	Average 6.03	7.53	7.53	Average 7.53	7.36	7.36	Average 7.36	3.99	3.99	Average 3.99
DO Saturation (%)	74	74	Average 74	82	82	Average 82	89	89	Average 89	72	72	Average 72	85	85	Average 85	83	83	Average 83	41	41	Average 41

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/16

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/17 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1540			1535			1530			1550			1500			1510			1520		
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	7.81			7.82			7.66			7.86			6.14			6.54			6.81		
Temperature (oC)	20.9			20.4			20.5			20.6			20.7			21.1			20.8		
Salinity (ppt)	17.3			15.7			18.5			27.3			0.0			0.0			11.8		
Turbidity (NTU)	9.1	9.1	Average 9.1	2.9	2.9	Average 2.9	9.4	9.4	Average 9.4	9.6	9.6	Average 9.6	5.7	5.7	Average 5.7	4.6	4.6	Average 4.6	15.4	15.4	Average 15.4
DO (mg/l)	7.18	7.18	Average 7.18	7.53	7.53	Average 7.53	7.08	7.08	Average 7.08	6.18	6.18	Average 6.18	6.11	6.11	Average 6.11	8.78	8.78	Average 8.78	6.71	6.71	Average 6.71
DO Saturation (%)	89	89	Average 89	93	93	Average 93	88	88	Average 88	78	78	Average 78	71	71	Average 71	99	99	Average 99	81	81	Average 81

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/17

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/18 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1700			1650			1645			1705			1600			1610			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			< 1			< 1			< 1		
pH value	7.97			7.98			7.54			7.88			6.44			6.68			6.59		
Temperature (oC)	22.2			22.4			22.0			21.7			20.3			22.2			21.5		
Salinity (ppt)	19.4			23.0			18.0			27.3			0.3			0.0			7.8		
Turbidity (NTU)	4.2	4.2	Average 4.2	4.4	4.4	Average 4.4	4.5	4.5	Average 4.5	5.4	5.4	Average 5.4	3.4	3.4	Average 3.4	1.0	1.0	Average 1.0	5.3	5.3	Average 5.3
DO (mg/l)	7.85	7.85	Average 7.85	7.29	7.29	Average 7.29	7.81	7.81	Average 7.81	6.31	6.31	Average 6.31	7.97	7.97	Average 7.97	10.95	10.95	Average 10.95	6.87	6.87	Average 6.87
DO Saturation (%)	102	102	Average 102	96	96	Average 96	100	100	Average 100	81	81	Average 81	102	102	Average 102	126	126	Average 126	95	95	Average 95

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/18

remark or observation: _____

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/23 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	945			950			955			935			1010			1020			1035		
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	7.48			7.38			6.59			7.53			6.84			6.75			6.33		
Temperature (oC)	22.3			21.9			22.7			22.0			22.2			22.8			21.8		
Salinity (ppt)	4.4			1.6			12.3			23.2			0.0			0.0			0.4		
Turbidity (NTU)	4.3	4.3	Average 4.3	1.6	1.6	Average 1.6	9.6	9.6	Average 9.6	7.2	7.2	Average 7.2	2.9	2.9	Average 2.9	2.3	2.3	Average 2.3	3.8	3.8	Average 3.8
DO (mg/l)	7.35	7.35	Average 7.35	7.83	7.83	Average 7.83	7.13	7.13	Average 7.13	6.94	6.94	Average 6.94	5.47	5.47	Average 5.47	8.21	8.21	Average 8.21	4.77	4.77	Average 4.77
DO Saturation (%)	87	87	Average 87	90	90	Average 90	84	84	Average 84	81	81	Average 81	63	63	Average 63	96	96	Average 96	54	54	Average 54

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/23

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/25 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1050			1100			1110			1035			1125			1135			1145		
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	7.42			7.44			6.81			7.46			6.71			6.89			6.18		
Temperature (oC)	23.9			23.2			24.0			23.4			22.7			23.1			23.5		
Salinity (ppt)	6.7			1.4			16.2			25.7			0.0			0.0			1.3		
Turbidity (NTU)	4.7	4.7	Average 4.7	2.8	2.8	Average 2.8	11.3	11.3	Average 11.3	5.9	5.9	Average 5.9	3.8	3.8	Average 3.8	4.3	4.3	Average 4.3	3.1	3.1	Average 3.1
DO (mg/l)	7.33	7.33	Average 7.33	8.65	8.65	Average 8.65	6.69	6.69	Average 6.69	6.19	6.19	Average 6.19	6.31	6.31	Average 6.31	7.28	7.28	Average 7.28	4.33	4.33	Average 4.33
DO Saturation (%)	90	90	Average 90	103	103	Average 103	83	83	Average 83	72	72	Average 72	74	74	Average 74	89	89	Average 89	48	48	Average 48

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/25

remark or observation:

Environmental Pioneers & Solutions Limited

Water Quality Monitoring - Summary of On-site measurement results

Date of Sampling: 2009/2/27 Sunny

Monitoring Location	**M1**			**M2**			**M3**			**M4**			**C1**			**C2**			**C3**		
Time (hhmm)	1400			1410			1420			1350			1430			1445			1455		
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	8.08			7.84			7.49			7.73			6.45			7.21			6.34		
Temperature (oC)	25.3			24.4			26.0			24.5			23.2			23.7			24.7		
Salinity (ppt)	11.8			2.9			19.4			21.9			0.0			0.0			1.3		
Turbidity (NTU)	11.5	11.5	Average 11.5	4.3	4.3	Average 4.3	13.9	13.9	Average 13.9	5.9	5.9	Average 5.9	5.7	5.7	Average 5.7	4.9	4.9	Average 4.9	4.9	4.9	Average 4.9
DO (mg/l)	10.01	10.01	Average 10.01	9.21	9.21	Average 9.21	8.71	8.71	Average 8.71	7.15	7.15	Average 7.15	6.50	6.50	Average 6.50	8.76	8.76	Average 8.76	5.33	5.33	Average 5.33
DO Saturation (%)	130	130	Average 130	112	112	Average 112	119	119	Average 119	98	98	Average 98	76	76	Average 76	103	103	Average 103	61	61	Average 61

	Name	**Signature**	**Date**
Prepared By:	**Jimmy Cheng**		2009/2/27

remark or observation:

Appendix F2

Water Quality
Monitoring Lab report

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200030 Date of Issue : 11-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

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

W.O. No.* : -- Sample Type* : River Water Date Completed : 03-02-2009

GCE Serial No. : WQM022009 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	509	502	1.4	26.0
		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		02 Feb 2009 / 15:00		02 Feb 2009 / 15:15		02 Feb 2009 / 15:35			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.4	1.4	< 1.0	< 1.0	22.0	21.5		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		02 Feb 2009 / 15:55		02 Feb 2009 / 16:00		02 Feb 2009 / 16:30		02 Feb 2009 / 16:15	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	7.0	6.9	3.0	2.8	7.1	6.9	7.6	7.1

* : 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

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200048 Date of Issue : 11-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 03-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 04-02-2009

GCE Serial No. : WQM022009 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	496	499	-0.6	26.9
		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		03 Feb 2009 / 16:40		03 Feb 2009 / 16:55		03 Feb 2009 / 17:15			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.5	2.7	< 1.0	< 1.0	10.0	9.9		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		03 Feb 2009 / 17:45		03 Feb 2009 / 17:40		03 Feb 2009 / 17:30		03 Feb 2009 / 17:55	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	5.8	6.0	2.3	2.5	7.4	7.0	6.9	7.3

* : 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

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200056 Date of Issue : 11-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 05-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 06-02-2009

GCE Serial No. : WQM022009 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	493	490	0.6	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		04 Feb 2009 / 15:45		04 Feb 2009 / 16:00		04 Feb 2009 / 16:10			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	12.9	12.5		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		04 Feb 2009 / 16:35		04 Feb 2009 / 16:30		04 Feb 2009 / 16:20		04 Feb 2009 / 16:45	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	10.5	11.0	2.8	2.9	8.4	8.7	7.2	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 Approved Signatory :

Name : GU CHIN

Checked By : GU CHIN Post : Chemist

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

TEST SUMMARY ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200103 Date of Issue : 16-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 09-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 10-02-2009

GCE Serial No. : WQM022009 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	486	499	-2.6	23.8
		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		09 Feb 2009 / 11:20		09 Feb 2009 / 11:25		09 Feb 2009 / 11:48			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.8	2.8	< 1.0	< 1.0	13.1	12.5		

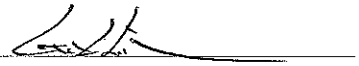
TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		09 Feb 2009 / 10:49		09 Feb 2009 / 10:55		09 Feb 2009 / 11:020		09 Feb 2009 / 10:39	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.6	1.1	1.4	1.2	9.2	9.2	6.1	6.6

* : 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 : 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200129 Date of Issue : 16-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 11-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 12-02-2009

GCE Serial No. : WQM022009 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	503	491	2.4	24.3
		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		11 Feb 2009 / 14:25		11 Feb 2009 / 14:35		11 Feb 2009 / 14:50			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	3.4	3.8	< 1.0	< 1.0	6.9	6.7		
TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		11 Feb 2009 / 13:50		11 Feb 2009 / 14:00		11 Feb 2009 / 14:10		11 Feb 2009 / 13:40	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.0	2.2	< 1.0	< 1.0	8.0	8.0	7.5	7.1

* : 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

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200137(A) Date of Issue : 23-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 13-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 14-02-2009

GCE Serial No. : WQM022009 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	494	491	0.6	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		13 Feb 2009 / 15:30		13 Feb 2009 / 15:40		13 Feb 2009 / 14:40			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.0	1.6	< 1.0	< 1.0	8.9	8.4		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		13 Feb 2009 / 15:10		13 Feb 2009 / 15:00		13 Feb 2009 / 14:55		13 Feb 2009 / 15:20	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	4.0	4.1	2.2	2.3	3.6	3.6	8.9	8.5

* : 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 : This report is an amendment of and supplement to report no. GCC090200137.

----- End -----

Tested By : K.L. FONG Approved Signatory :

Name : GU CHIN

Checked By : GU CHIN Post : Chemist

GEOTECHNICS & CONCRETE ENGINEERING (H. K.) LTD.
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TEL.: 852-2365 9123 FAX NO.: 852-2765 8034

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200438 Date of Issue : 23-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 16-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 17-02-2009

GCE Serial No. : WQM022009 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	489	493	-0.8	23.6
		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 Feb 2009 / 16:00		16 Feb 2009 / 16:15		16 Feb 2009 / 16:30			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.0	< 1.0	< 1.0	< 1.0	9.5	9.1		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		16 Feb 2009 / 17:10		16 Feb 2009 / 16:50		16 Feb 2009 / 16:40		16 Feb 2009 / 17:00	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	6.3	6.5	2.5	2.5	5.1	5.0	5.2	5.7

* : 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

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TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200446 Date of Issue : 23-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 18-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 19-02-2009

GCE Serial No. : WQM022009 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	505	-1.6	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		17 Feb 2009 / 15:00		17 Feb 2009 / 15:10		17 Feb 2009 / 15:20			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.3	2.4	1.1	1.2	9.2	9.6		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		17 Feb 2009 / 15:40		17 Feb 2009 / 15:35		17 Feb 2009 / 15:30		17 Feb 2009 / 15:50	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	5.8	5.4	2.9	3.0	4.9	4.7	6.3	6.3

* : 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 :

Name : GU CHIN

Checked By : GU CHIN Post : Chemist

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200454 Date of Issue : 23-02-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 19-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 20-02-2009

GCE Serial No. : WQM022009 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	488	484	0.8	25.8
		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		18 Feb 2009 / 16:00		18 Feb 2009 / 16:10		18 Feb 2009 / 16:30			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.3	1.0	1.2	1.7	3.5	3.5		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		18 Feb 2009 / 17:00		18 Feb 2009 / 16:50		18 Feb 2009 / 16:45		18 Feb 2009 / 17:05	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	5.1	5.6	2.3	2.6	3.9	3.8	4.1	4.6

* : 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

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

GEOTECHNICS & CONCRETE ENGINEERING (H. K.) LTD.
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TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200640 Date of Issue : 02-03-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 23-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 24-02-2009

GCE Serial No. : WQM022009 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	482	491	-1.8	24.7
		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		23 Feb 2009 / 10:10		23 Feb 2009 / 10:20		23 Feb 2009 / 10:35			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.1	1.9	< 1.0	< 1.0	1.3	1.6		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		23 Feb 2009 / 9:45		23 Feb 2009 / 9:50		23 Feb 2009 / 9:55		23 Feb 2009 / 9:35	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	4.0	4.3	1.2	1.0	6.9	7.3	9.2	8.8

* : 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

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

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200658 Date of Issue : 02-03-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 25-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 26-02-2009

GCE Serial No. : WQM022009 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	490	501	-2.2	23.2
		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		25 Feb 2009 / 11:25		25 Feb 2009 / 11:35		25 Feb 2009 / 11:45			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	2.9	2.5	1.1	< 1.0	< 1.0	< 1.0		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		25 Feb 2009 / 10:50		25 Feb 2009 / 11:00		25 Feb 2009 / 11:10		25 Feb 2009 / 10:35	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	7.7	7.3	1.5	1.7	9.6	10.1	6.2	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

Checked By : GU CHIN

Approved Signatory :

Name : GU CHIN

Post : Chemist

GEOTECHNICS & CONCRETE ENGINEERING (H. K.) LTD.
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TEL.: 852-2365 9123 FAX NO.: 852-2765 8034

TEST REPORT ON ENVIRONMENTAL ANALYSIS OF WATER AND WASTEWATER

Report No. : GCC090200666 Date of Issue : 02-03-2009

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* : DSD Contract No. DC/2006/11 - Drainage Improvement in Southern Lantau & Construction of Mui Wo Village Sewerage Phase 1

Test Location : G/F, 20 Pak Kung Street, Hung Hom, Kowloon. Date Started : 27-02-2009

W.O. No.* : -- Sample Type* : River Water Date Completed : 28-02-2009

GCE Serial No. : WQM022009 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	494	495	-0.2	25.8
		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 Feb 2009 / 14:30		27 Feb 2009 / 14:45		27 Feb 2009 / 14:55			
	LOD	Units								
Suspended Solids (SS)	1	mg/L	1.2	1.0	< 1.0	< 1.0	1.5	1.2		

TEST RESULTS	Sample ID		M1	M1 Duplicate	M2	M2 Duplicate	M3	M3 Duplicate	M4	M4 Duplicate
	Sampling Date/Time		27 Feb 2009 / 14:00		27 Feb 2009 / 14:10		27 Feb 2009 / 14:20		27 Feb 2009 / 13:50	
	LOD	Units								
Suspended Solids (SS)	1	mg/L	6.8	7.2	2.9	2.8	12.0	11.5	4.7	5.0

* : 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

Appendix G
Monitoring Schedule
for February 2009

Environmental Pioneers and Solutions Limited

DC/2006/11 - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

Master Schedule of EM&A works in Febuary 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2/1	2/2	2/3	2/4	2/5	2/6	2/7
	WQM at: 15:46 **Noise Monitoring**	**WQM at:** 17:14	**WQM at:** 16:08		**Site Inspection**	
2/8	2/9	2/10	2/11	2/12	2/13	2/14
	WQM, EWQM at: 10:18 **Noise Monitoring**	**Eco Survey**	**WQM at:** 13:35		**WQM at:** 14:43 **Eco Survey** **Site Inspection**	
2/15	2/16	2/17	2/18	2/19	2/20	2/21
	WQM at: 16:23 **Noise Monitoring**	**WQM at:** 15:40	**WQM at:** 16:15		**Site Inspection**	
2/22	2/23	2/24	2/25	2/26	2/27	2/28
	WQM at: 08:55 **Noise Monitoring**		**WQM at:** 10:11		**WQM at:** 13:52 **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

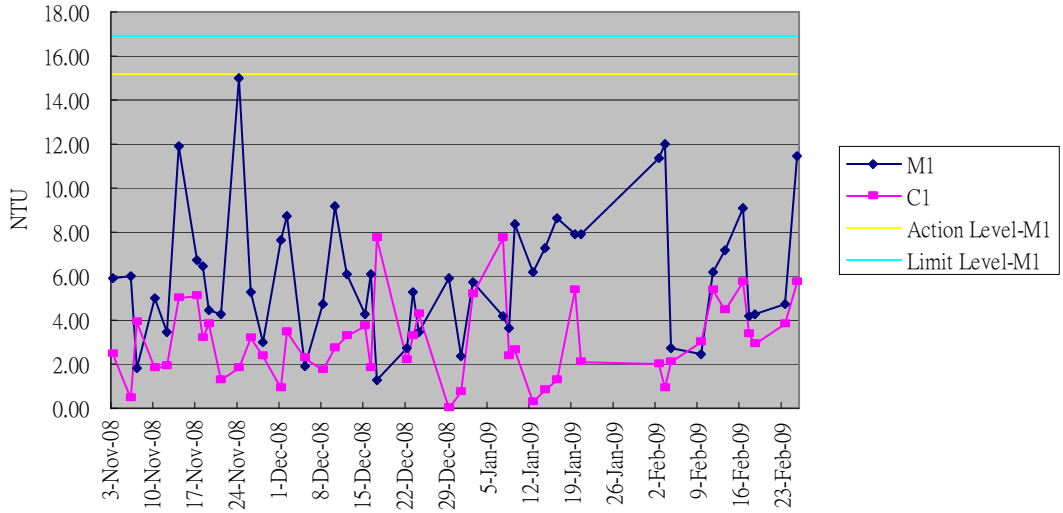
Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Implemented	
	Use of frequent watering for particular dusty static construction 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.	To be improved	-
	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.	Implemented	-
	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.	Not applicable	-
	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.	Implemented by natural soak-away at site ground	-
	Water pumped out from foundation excavations should be discharged into silt removal facilities.	Implemented by natural soak-away at site ground	-
	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.	Implemented	-
	Open stockpiles of construction materials or construction wastes on-site of more than $50m^3$should be covered with tarpaulin or similar fabric during rainstorms.	To be improved	-
	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 –4 00 m in length) and in dry condition.	Not applicable at this stage	-

Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
	Maintenance desilitng 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 desilitng 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.	Implemented	-
	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	-

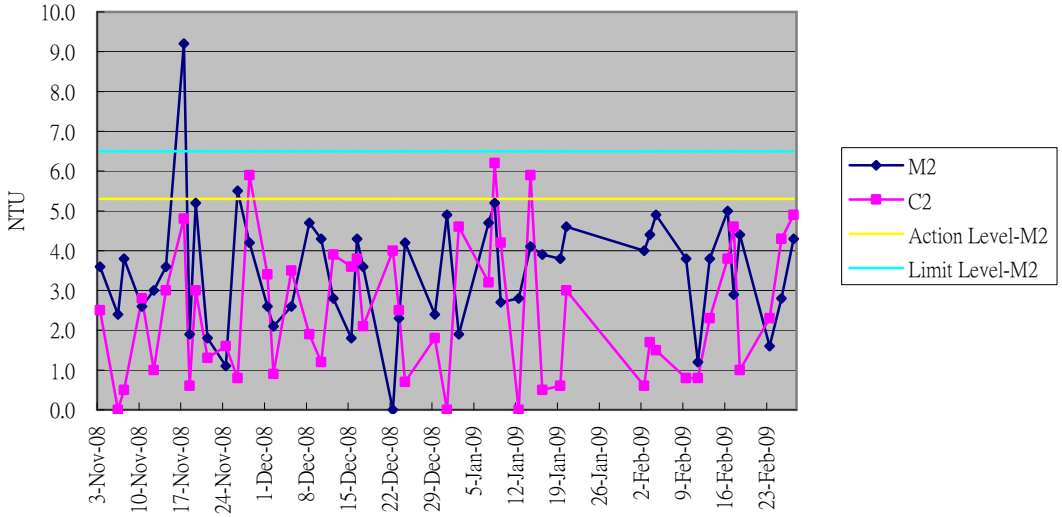
Appendix I

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

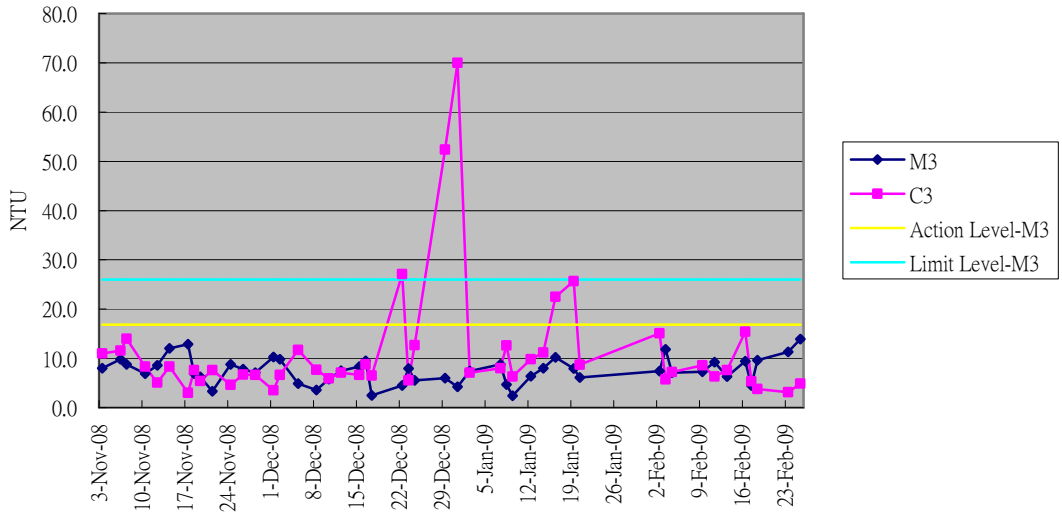
Graphical Plot of Turbidity Trend M1&C1 (Nov 08-Feb 09)



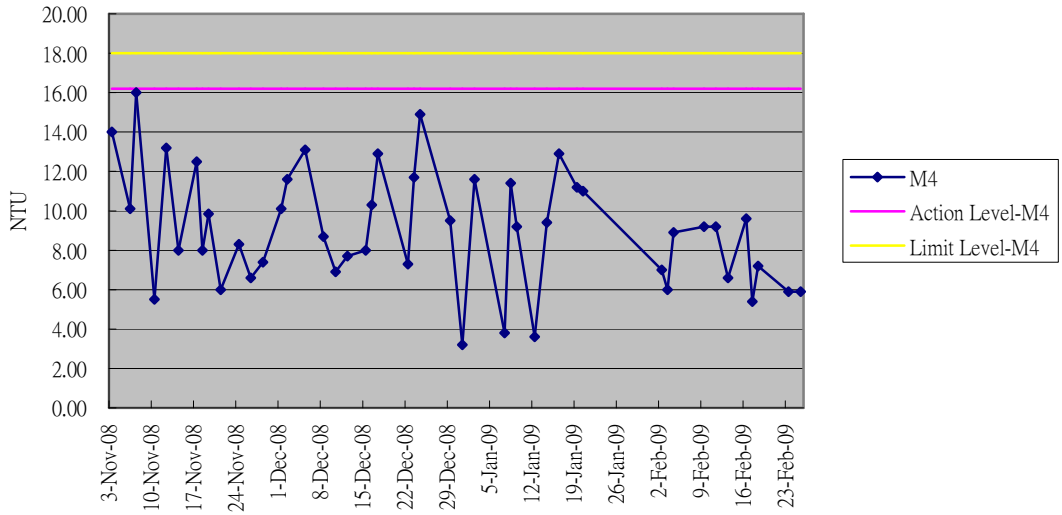
Graphical Plot of Turbidity Trend M2&C2 (Nov 08-Feb 09)



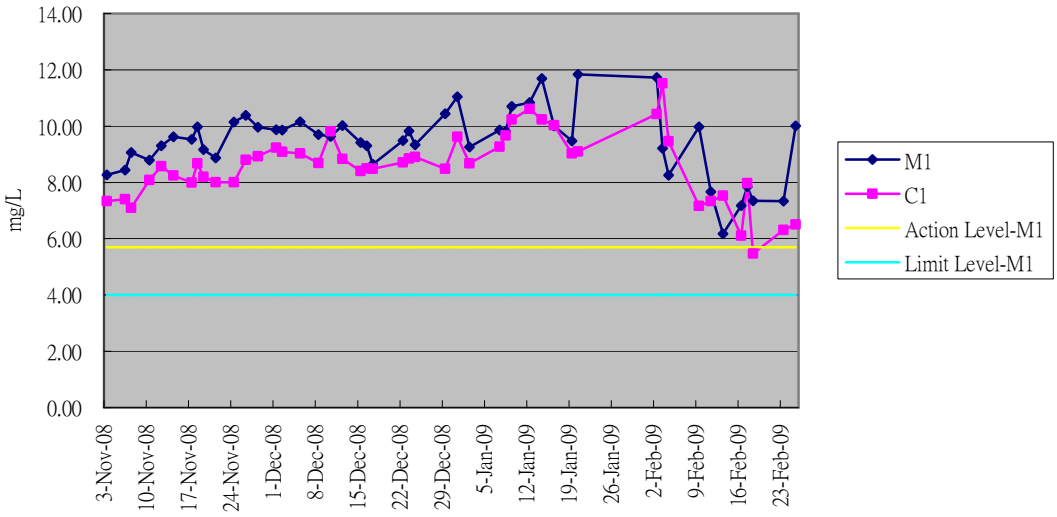
Graphical Plot of Turbidity Trend M3&C3 (Nov 08-Feb 09)



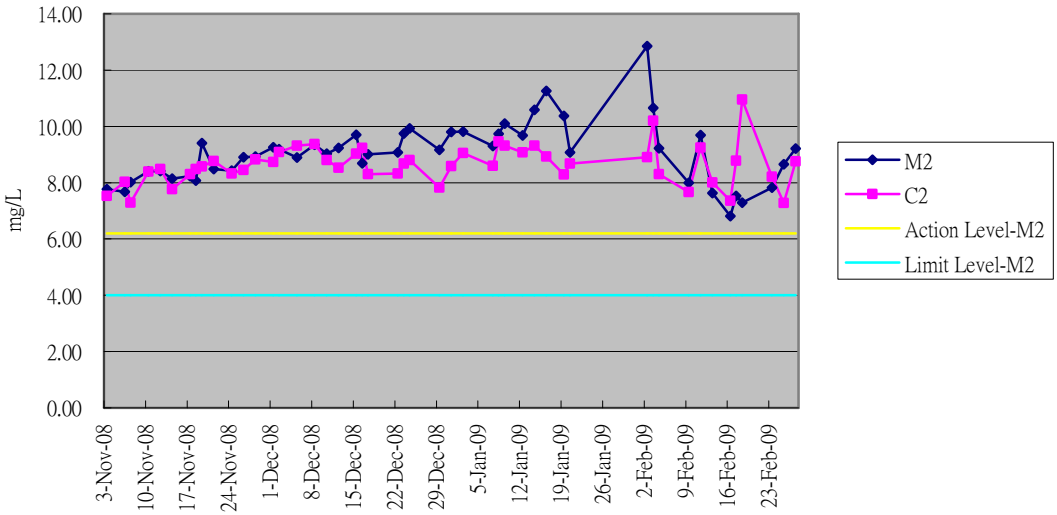
Graphical Plot of Turbidity Trend M4 (Nov 08-Feb 09)



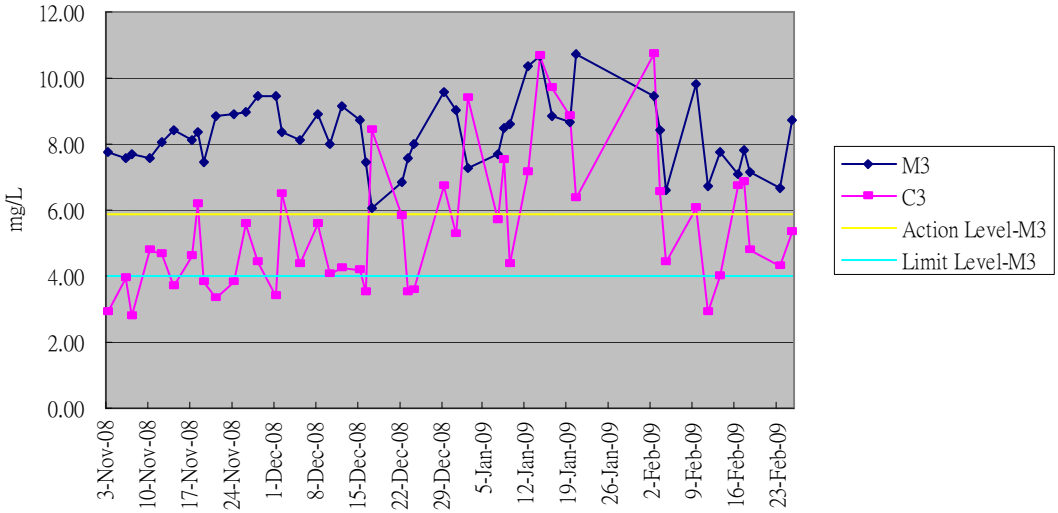
Graphical Plot of Dissolved Oxygen Trend M1&C1 (Nov 08-Feb 09)



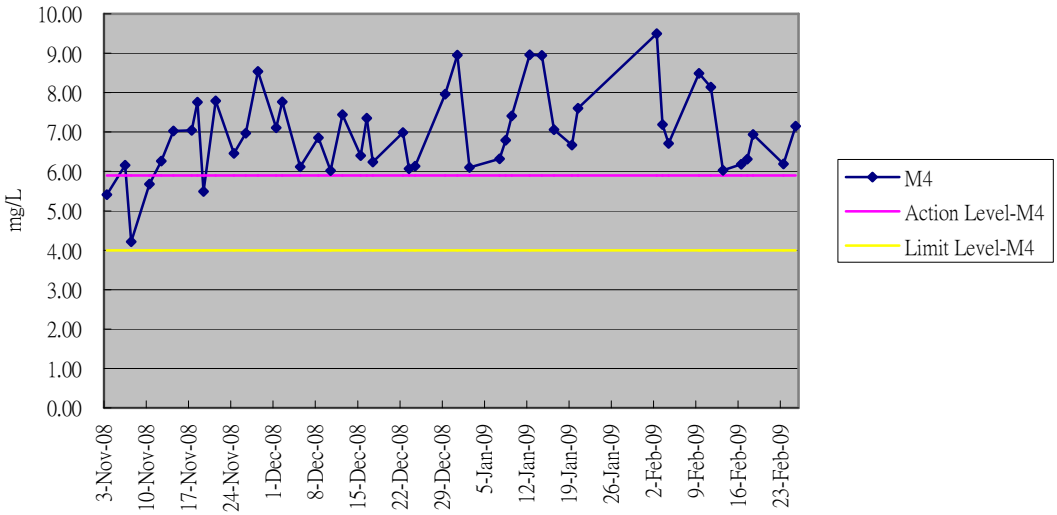
Graphical Plot of Dissolved Oxygen Trend M2&C2 (Nov 08-Feb 09)



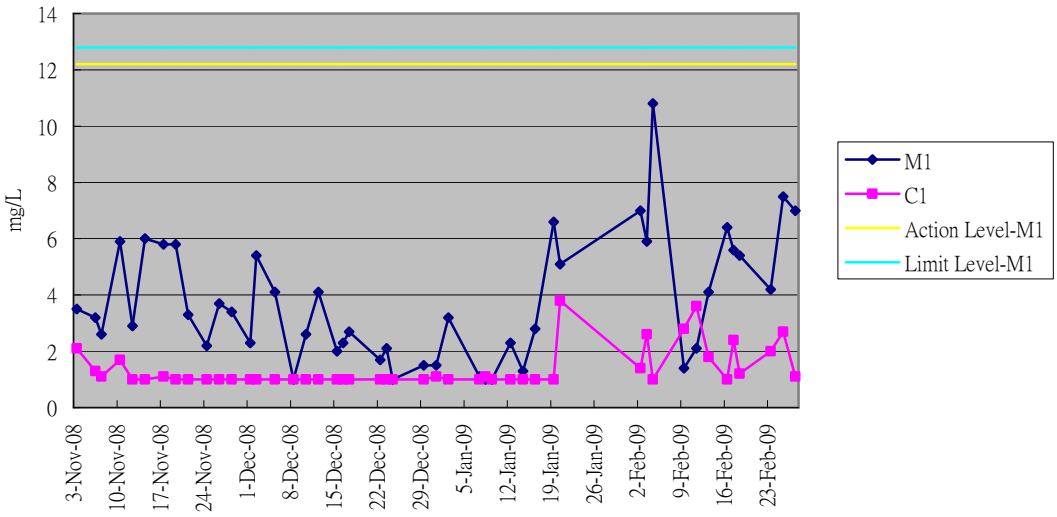
Graphical Plot of Dissolved Oxygen Trend M3&C3 (Nov 08-Feb 09)



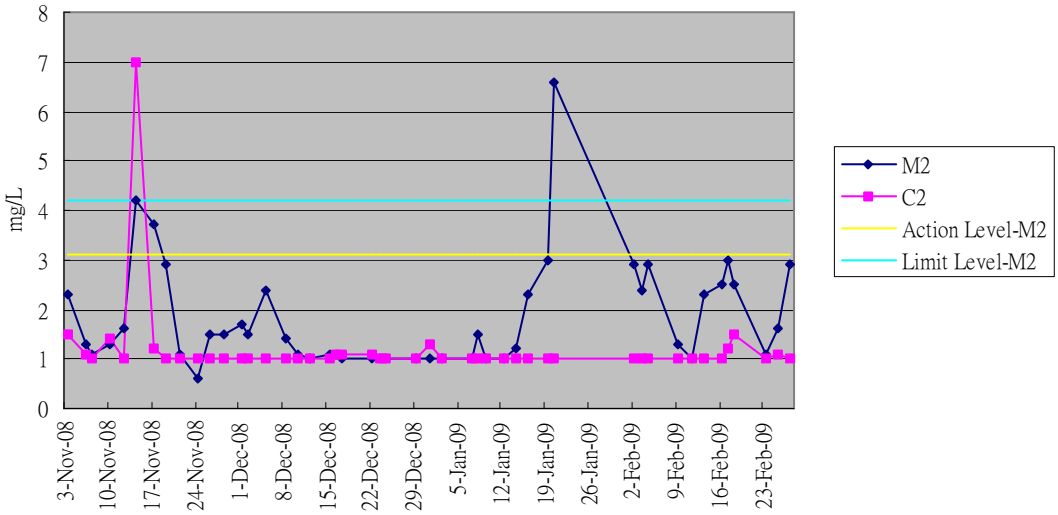
Graphical Plot of Dissolved Oxygen Trend M4 (Nov 08-Feb 09)



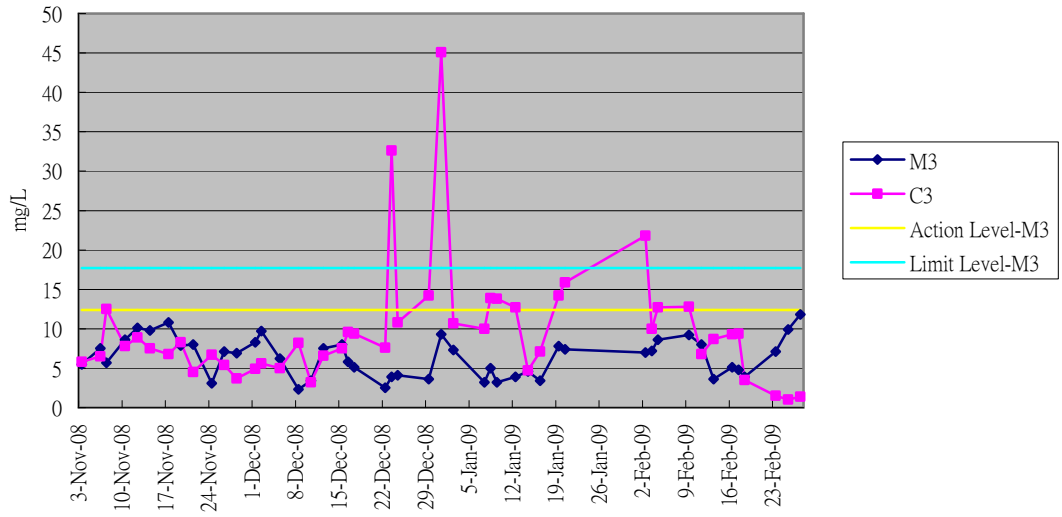
Graphical Plot of Suspended Soild M1&C1 (Nov 08 - Feb 09)



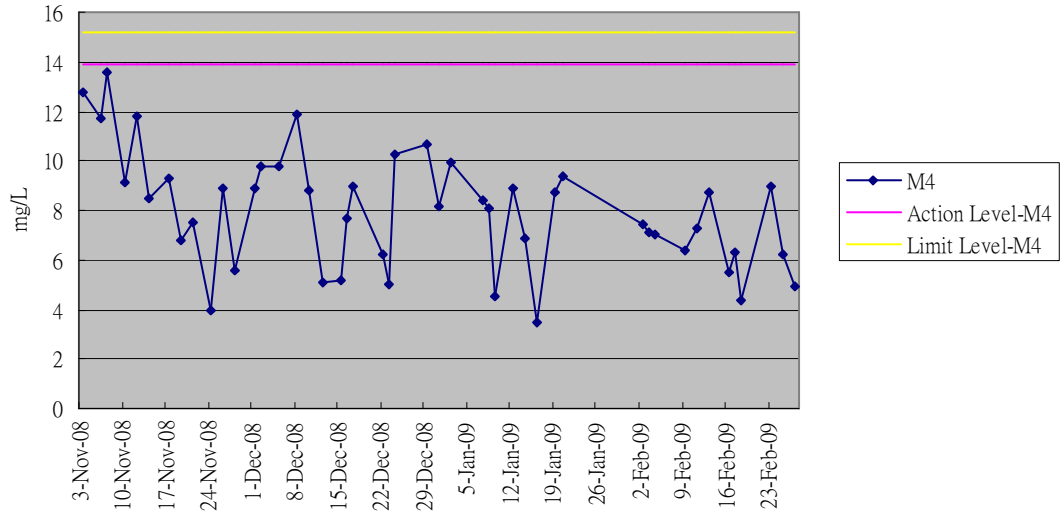
Graphical Plot of Suspended Soild M2&C2 (Nov 08 - Feb 09)



Graphical Plot of Suspended Soild M3&C3 (Nov 08 - Feb 09)

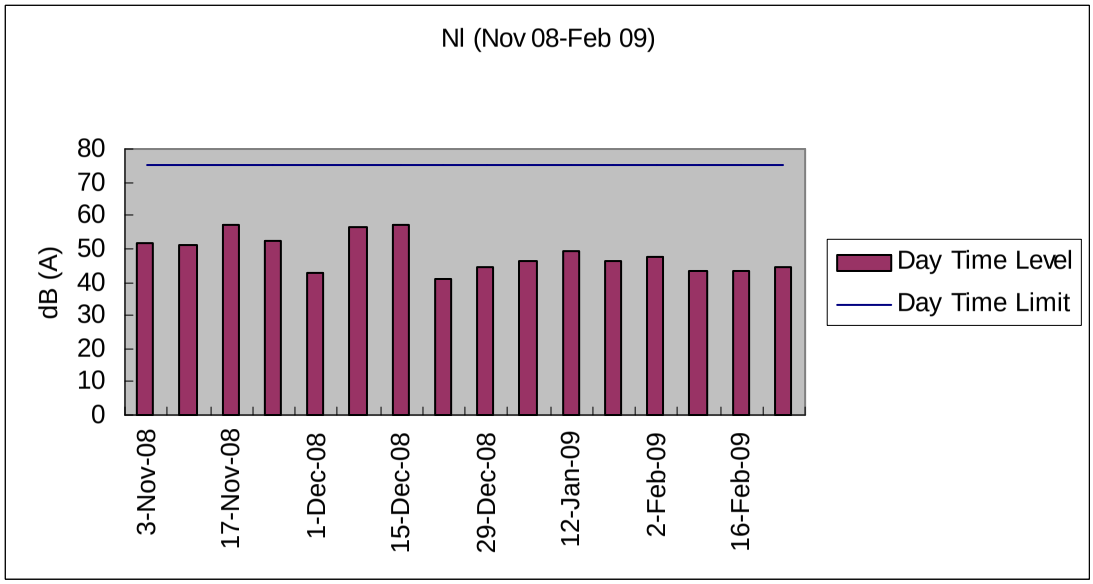


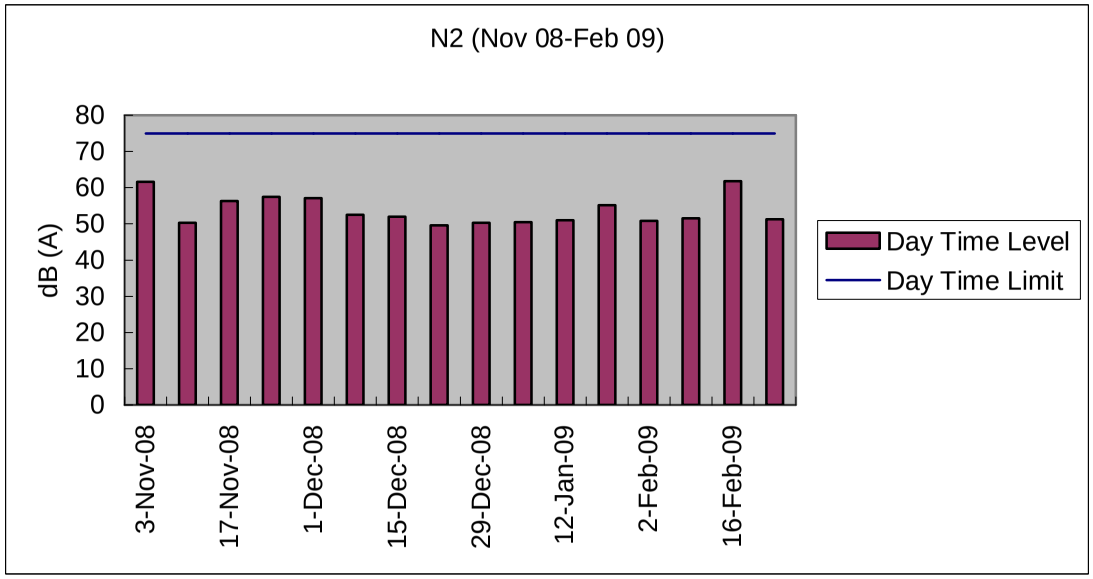
Graphical Plot of Suspended Soild M4 (Nov 08 - Feb 09)

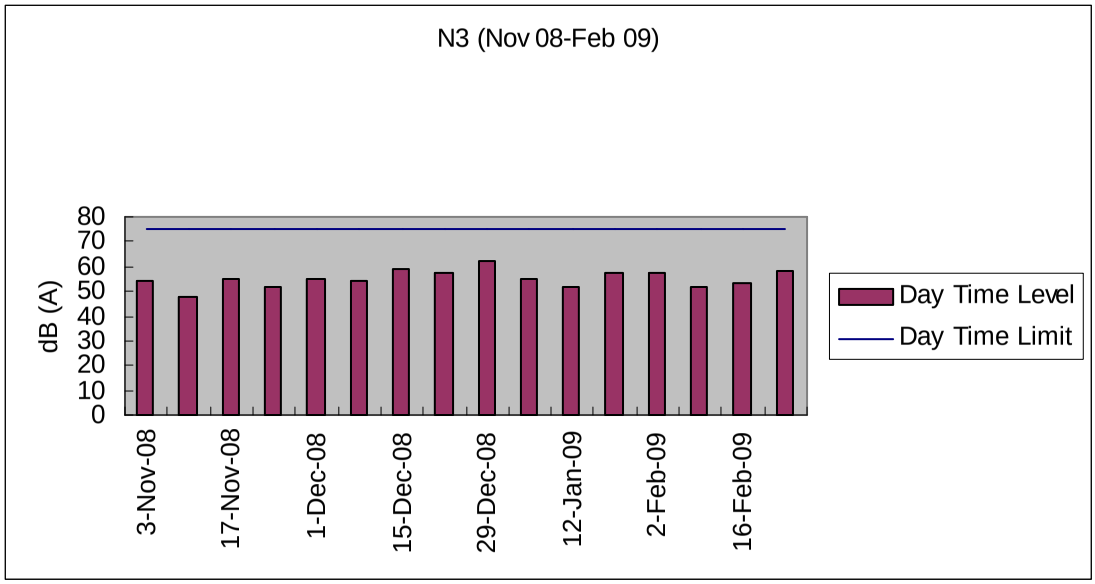


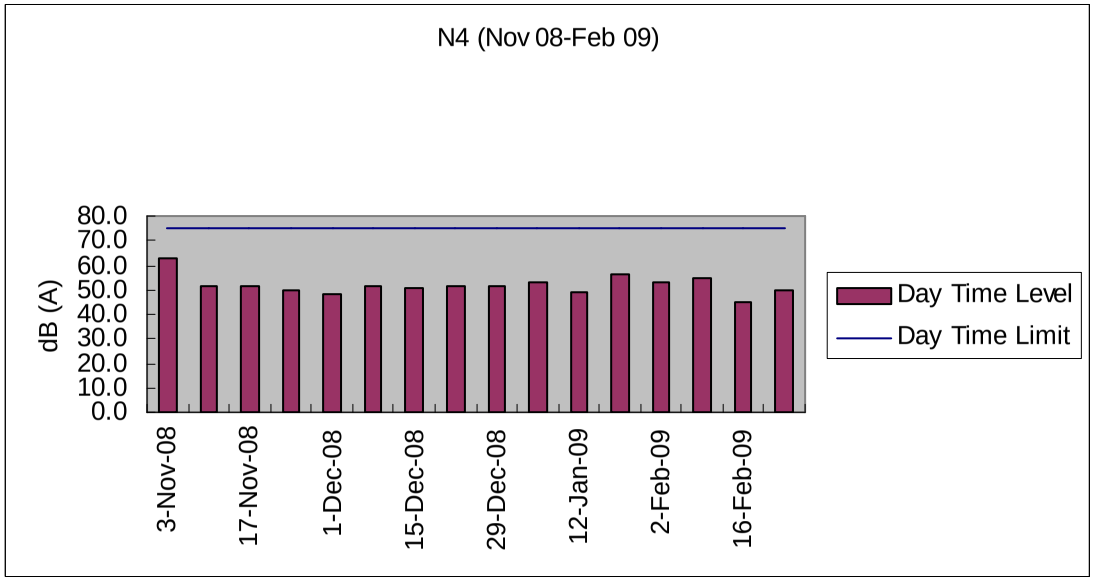
Appendix J

Graphical plot of noise monitoring results


Nl (Nov 08-Feb 09)
dB (A)
80
70
60
50
40
30
20
10
0
3-Nov-08
17-Nov-08
1-Dec-08
15-Dec-08
29-Dec-08
12-Jan-09
2-Feb-09
16-Feb-09
Day Time Level
Day Time Limit


N2 (Nov 08-Feb 09)
dB (A)
80
70
60
50
40
30
20
10
0
3-Nov-08
17-Nov-08
1-Dec-08
15-Dec-08
29-Dec-08
12-Jan-09
2-Feb-09
16-Feb-09
Day Time Level
Day Time Limit


N3 (Nov 08-Feb 09)
dB (A)
80
70
60
50
40
30
20
10
0
3-Nov-08
17-Nov-08
1-Dec-08
15-Dec-08
29-Dec-08
12-Jan-09
2-Feb-09
16-Feb-09
Day Time Level
Day Time Limit


N4 (Nov 08-Feb 09)
dB (A)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
3-Nov-08
17-Nov-08
1-Dec-08
15-Dec-08
29-Dec-08
12-Jan-09
2-Feb-09
16-Feb-09
Day Time Level
Day Time Limit