Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

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

December 2011

Environmental Pioneers & Solutions Limited
Flat A, 19/F, Chai Wan Industrial Centre Building,
20 Lee Chung Street, Chai Wan, Hong Kong
Tel: 2558 7699 Fax: 2856 2010

APPROVAL SHEET

Prepared and Certified by: ET Leader (Environmental Pioneers & Solutions Limited)

Signature: _____ Date: 6-3-2012

Miss Goldie Fung
(ET* Leader)

Signature: _____ Date: 6-3-2012

Mr. Vincent Lai
(Ecologist)

* ET – Environmental Team

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APPENDIXES

EXECUTIVE SUMMARY

This is the forty-first monthly environmental Monitoring and audit (EM&A) report for "Drainage Improvement in Southern Lantau Investigation". The environmental permit number is "EP-237/2005/B". The report concludes the impact monitoring for the activities undertaken during the period of 1 December 2011 to 31 December 2011. Landscaping works and railing installation were carried out within this reporting month.

Noise 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.

Refer to EPD memo received on 4 May 2011, post-construction phase water quality monitoring was completed on 1 June 2011.

According to the EM&A manual, the ecological water quality monitoring should be carried out every two months a year for 4 years after the completion of works. The post-construction phase ecological water quality monitoring was started in June 2011 and monitored bi-monthly. The result of post-construction ecological water quality monitoring (EWQM) was not presented in the report as it had been conducted in November 2011.

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

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

Future site activities to be carried out will be mainly landscaping works and railing installation. It is expected that environmental impact in different aspects will be resulted from the works. With reference to the EM&A manual and mitigation measure report, mitigation measures are proposed to be taken, if necessary.

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

1. Introduction

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

2. Project Information

2.1 Construction program

Majority of construction works of "Drainage Improvement in Southern Lantau Investigation" project were carried out in December 2011. The project comprises the following:

- Box A – Landscaping Establishments Works at LTT River
- Seawall landscaping at LTT River
- Landscaping Establishment Works at TTT River
- Landscaping Establishment Works of EVA Area at PNH River

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

2.2 Project organization

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

The environmental management structure and is shown in Fig 2.2.1.

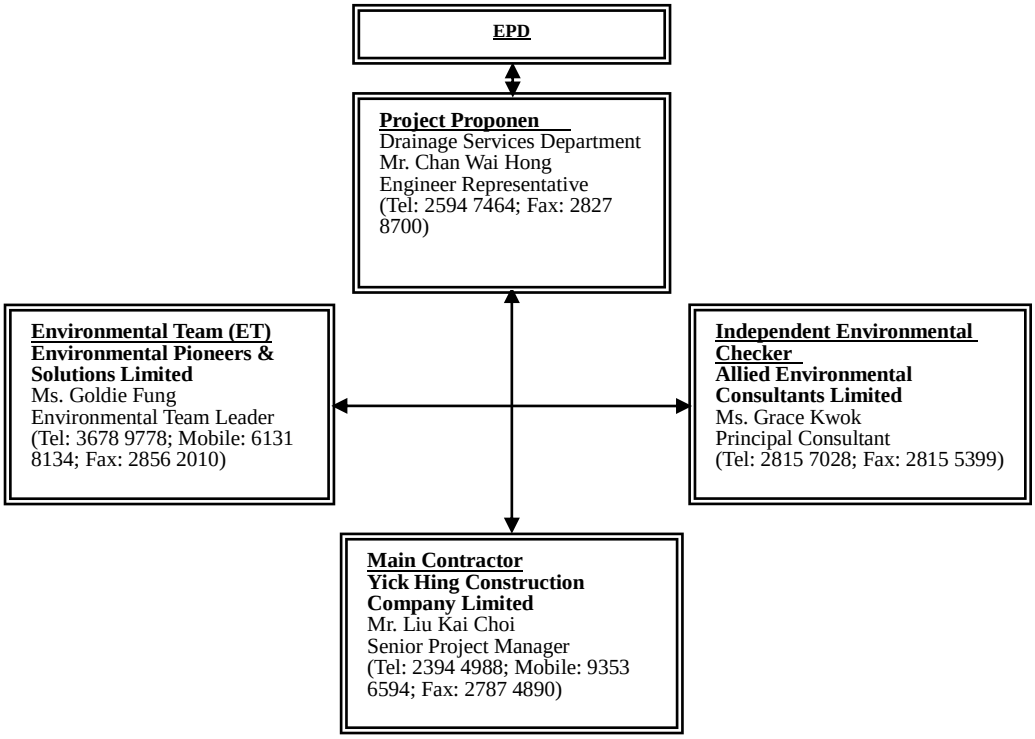


Figure. 2.2.1 Environmental Management structure for the project

2.3 Key personal contact information chart

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

3. Construction Stage

3.1 Construction activities in the reporting month

Major activities in the reporting month included the followings:

1. Landscaping works.
2. Railing installation.

3.2 Construction activities for the coming month

Proposed key construction works in the coming month will include:

1. Landscaping works.
2. Installation railing.

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
Digital sound level meter	Model 949 Serial No: 8569	IEC 651 Type 1 IEC 804 Type 1	1
Windscreen	Microtech gefell model W2	N/A	1
Sound level calibrator	Model: SV30A Serial No: 7908	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.

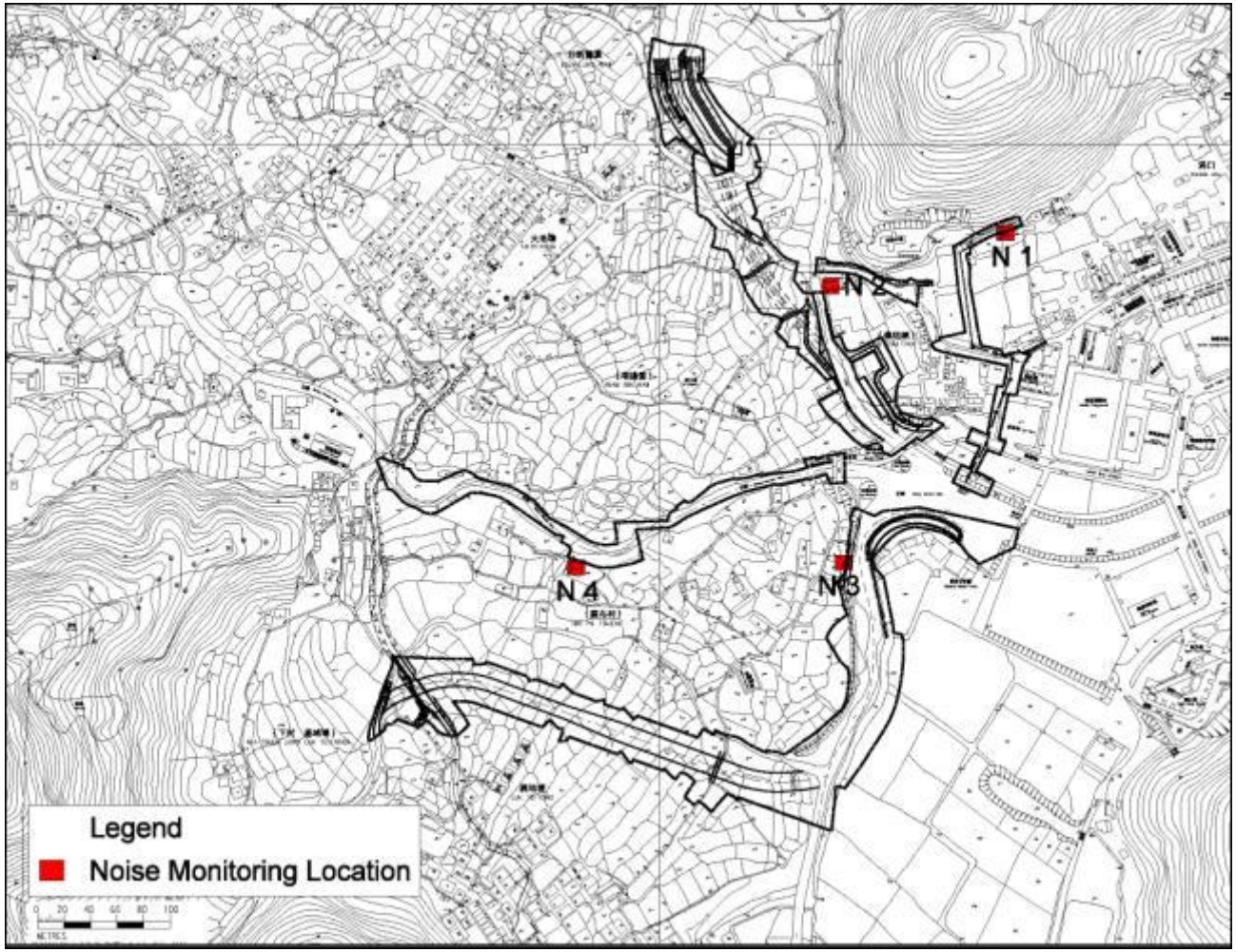


Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 4.4.1. The results, ranged between 40.9.dB (A) and 48.1dB (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	Leq30min	5-Dec-11	14:35	44.9	75	N	Sunny
N1	Leq30min	12-Dec-11	14:45	46.5	75	N	Sunny
N1	Leq30min	23-Dec-11	14:50	43.6	75	N	Sunny
N1	Leq30min	31-Dec-11	15:15	45.6	75	N	Sunny
N2	Leq30min	5-Dec-11	14:30	42.6	75	N	Sunny
N2	Leq30min	12-Dec-11	14:10	44.1	75	N	Sunny
N2	Leq30min	23-Dec-11	14:16	44.7	75	N	Sunny
N2	Leq30min	31-Dec-11	14:27	45.1	75	N	Sunny
N3*	Leq30min	5-Dec-11	13:07	41.7	75	N	Sunny
N3*	Leq30min	12-Dec-11	13:00	42.2	75	N	Sunny
N3*	Leq30min	23-Dec-11	13:02	42.6	75	N	Sunny
N3*	Leq30min	31-Dec-11	13:30	40.9	75	N	Sunny
N4	Leq30min	5-Dec-11	13:50	48.1	75	N	Sunny
N4	Leq30min	12-Dec-11	13:35	43.2	75	N	Sunny
N4	Leq30min	23-Dec-11	13:40	45.2	75	N	Sunny
N4	Leq30min	31-Dec-11	13:52	43.0	75	N	Sunny

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

4.5 Action and Limit level for Construction noise

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

There was no exceedance recorded in the reporting month.

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

Table 4.5.2 Event / Action Plan for Construction Noise

EVENT	**ACTION**			
	ET	**IC(E)**	**ER**	**Contractor**
Action Level	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

No noise sources were recorded from machines or construction works during the site inspection.

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.

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

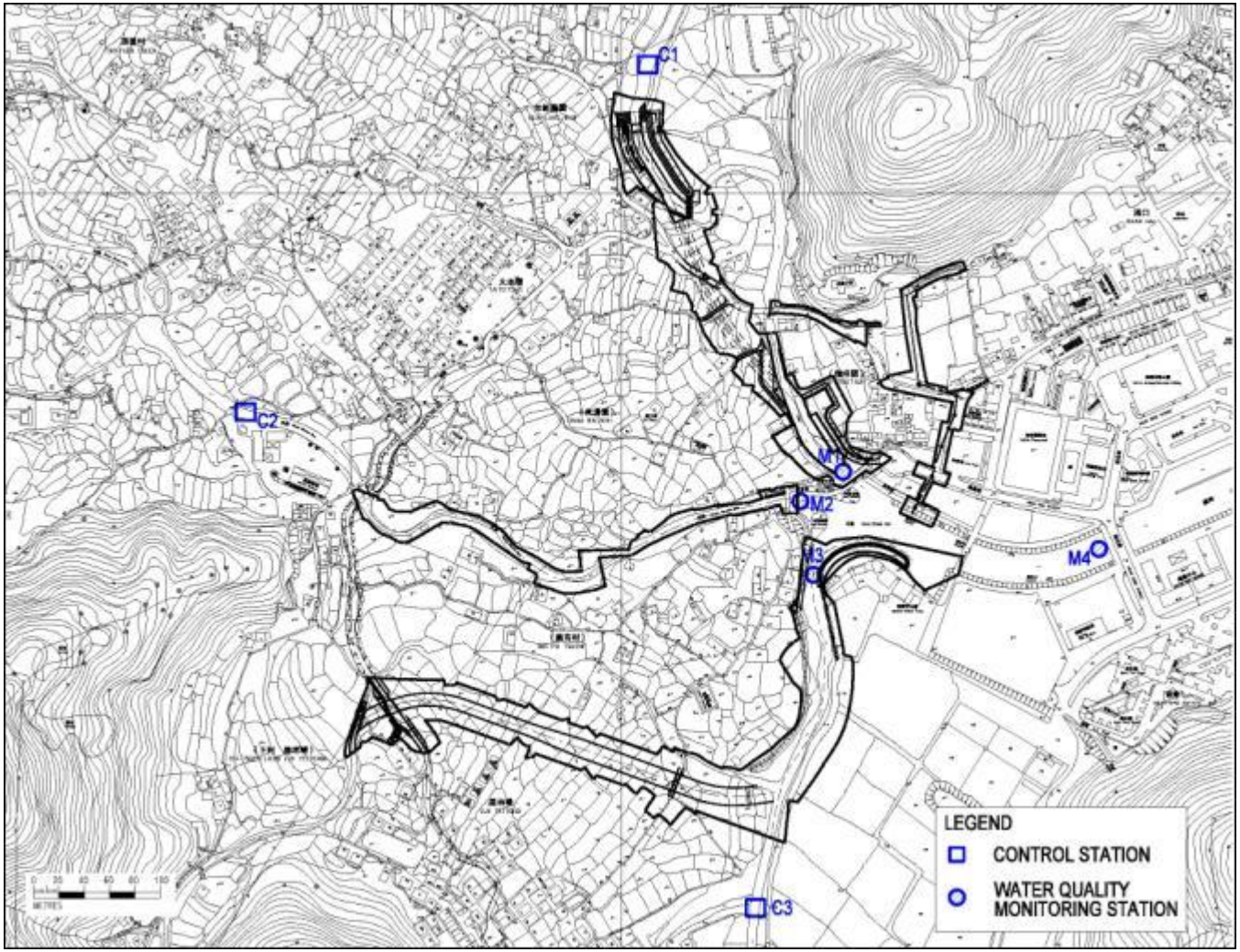


Figure 5.3.1 Water Quality Monitoring Locations

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

The water quality monitoring programme was completed on 1 June 2011. Therefore, no water quality results were presented in this report.

5.6 Action and limit level for Water Quality

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

Table 5.6.1 Water quality criteria for monitoring

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

Table 5.6.2 Action and Limit Levels established according to baseline data

Parameters	Monitoring locations							
	M1		M2		M3		M4	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
Turbidity (NTU)	15.2	16.9	5.3	6.5	16.8	26.0	16.2	18.0
DO (mg/L)	5.7	4.0	6.2	4.0	5.9	4.0	5.9	4.0
SS (mg/L)	12.2	12.8	3.1	4.2	12.4	17.7	13.9	15.2

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

Table 5.6.3 Event and action Plan for Water Quality

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

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

5.8 Water Monitoring Schedule for the Next reporting period

As water quality monitoring (WQM) programme for the project was completed, no WQM will be conducted at next month.

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 monitoring 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 post-construction phase monitoring was undertaken in the same place as the impact 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.

For post-construction phase, EWQM is also required to be conducted for LTT Bypass Channel and Reference Site.The proposed locations for LTT Bypass

Channel and Reference Site were submitted to EPD and AFCD for their approval. After receiving confirmation, the EWQM monitoring for LTT Bypass Channel and Reference Site will be started in accordance with EM&A manual Section 6.2.31 & 6.2.32 requirements.

The proposed EWQM monitoring locations for LTT Bypass channel and Reference Site is shown in Figure 6.3 for reference.

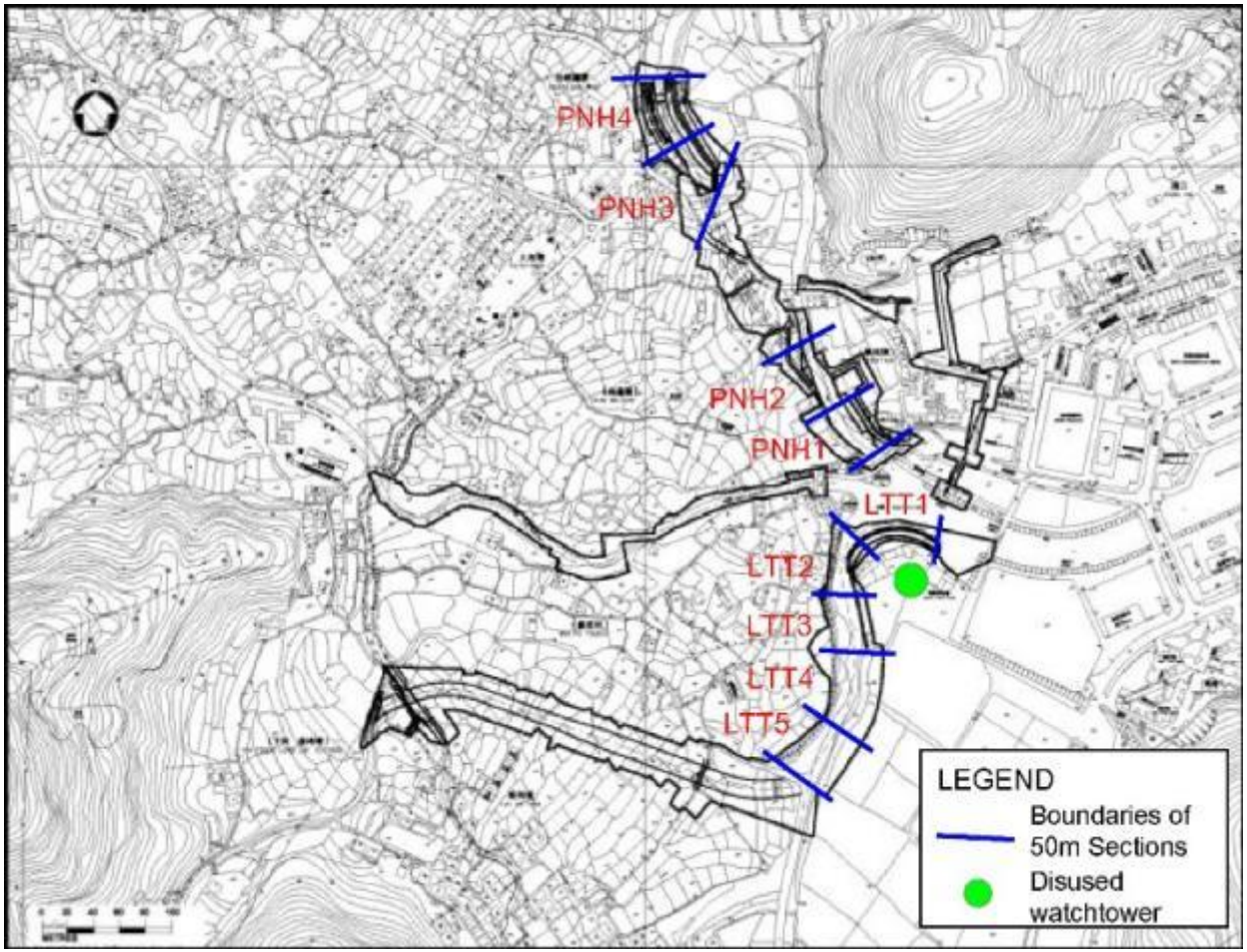


Figure 6.1 Ecological Monitoring Locations

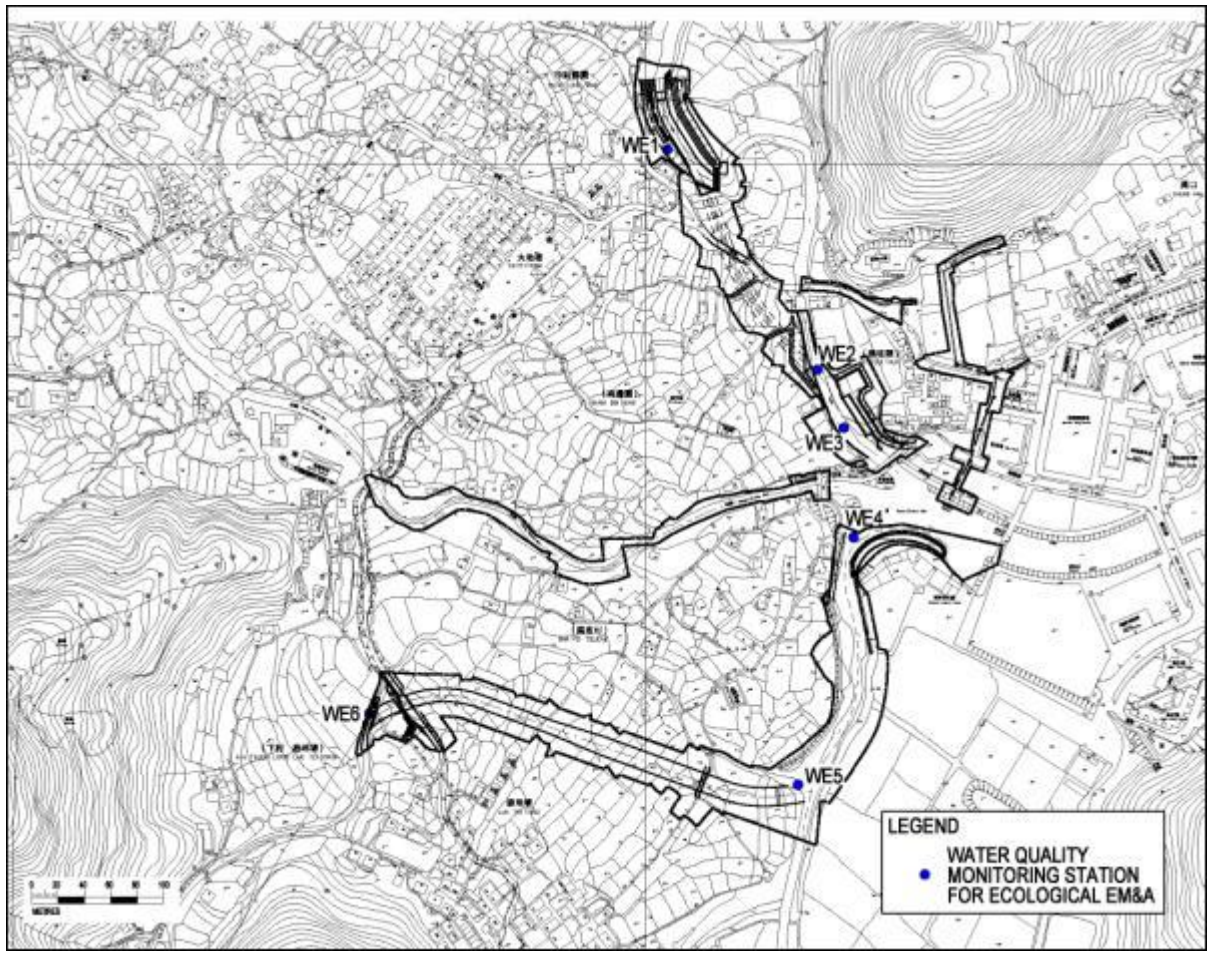


Figure 6.2 Ecological Water Quality monitoring locations

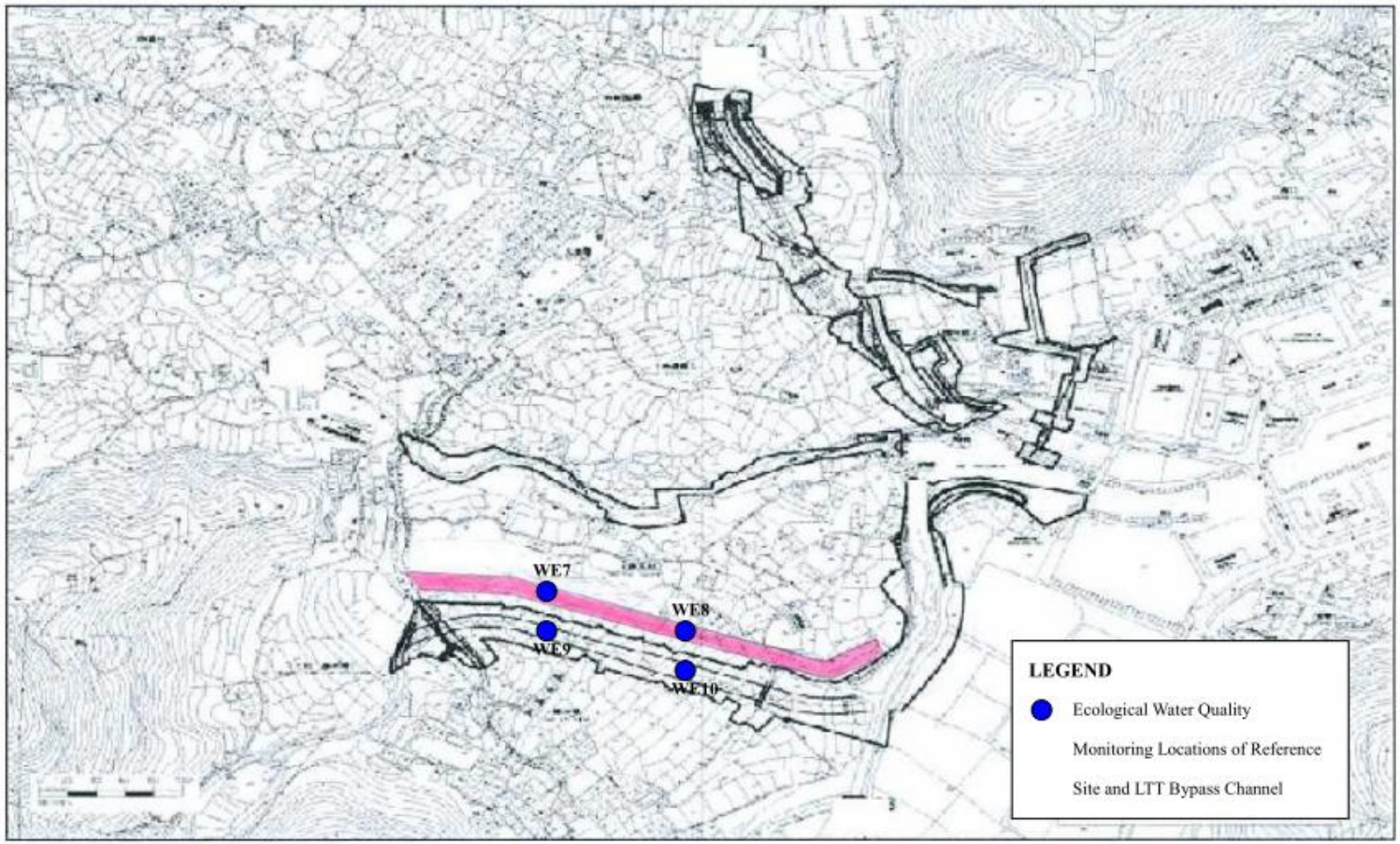


Figure 6.3 Proposed Ecological Water Quality Monitoring Locations for LTT Bypass Channel and Reference Site

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 28 December 2011. During the current monitoring session, construction of new rock gabion wall and soft landscape works were completed. Temporary works areas beyond both sides of gabions were planted with tree and shrub seedlings.

The walk through survey recorded a total of 32 species, including 13 tree, 1 shrub, 11 herb and 2 grass species (Appendix D1) on PNH N section. 23 of the species recorded are natives, while 9 were exotics. No species of conservation interest was recorded. During the current monitoring session, it was observed that Mikania along with some other colonised plants was cleared from the gabion wall bank and river bed. No quantitative surveys were carried out on both PNH3 and PNH4 due to sporadic occurrence of colonised vegetation and regular vegetation clearance as part of the maintenance work on the new gabion banks.

Vegetation was only found on remnants of the old concrete bank along PNH S section. A total of 4 species recorded, 3 of which were native and 1 were exotic. It was composed of exotic grass (*Panicum maximum*) and native trees (*Ficus supbera*) (Appendix D2). No species of conservation interest was recorded.

Terrestrial Fauna

Surveys were conducted on 30 December 2011.

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

Table 6.5.2 Avifauna in Pak Ngan Heung

Common names	Latin names	PNH 1	PNH 2	PNH 3	PNH 4	Commonness & distribution
Chinese Bulbul	*Pycnonotus sinensis*	1			1	CW
Japanese White-eye	*Zosterops japonica*				3	CW

CW = common and widespread

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

Aquatic fauna and fish

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

Table 6.5.4 Aquatic Invertebrates and fish in Pak Ngan Heung

Common names	Scientific names	PNH 1	PNH 2	PNH3	PNH4
Invertebrates					
Atyid shrimp	*Caridina elongata*			+++	+++
Palaemond shrimp	*Macrobrachium hainanensis*			+	++
Crab	*Varuna litterata*				+
Mitten Crab	*Eriocheir japonica*				
Fish					
Mosquito fish	*Gamusia affinis*			+++	+++
Goby	*Rhinogobius duospilus*			++	++
Barcheek Goby	*Rhinogobius giurinus*				
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 28 December 2011. During the current survey, construction of concrete channel bank and rock gabions and soft landscape works were completed. Some renmants of mangroves remained at LTT2, while a few grass, herb, climber and mangrove colonised the gabion of LTT4 to LTT5.

The walk through survey recorded a total of 23 species, including 6 tree, 7 herb and and 4 grass species (Appendix D3). 18 species recorded are natives, while 5 were exotics. No quantitative survey was carried out due to sporadic occurrence of colonised vegetation on the new gabion banks.

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 30 December 2011.

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

Table 6.5.6 Avifauna in Luk Tei Tong River

Common names	**Latin names**	**LTT 1**	**LTT 2**	**LTT 3**	**LTT 4**	**LTT 5**	**Commonness & distribution**
Little Egret	*Egretta garzetta*	3		1	1		CW
Great Egret	*Aredea alba*	1					CL
Grey Heron	*Ardea cinerea*	1					CW
Chinese Pond Heron	*Ardeola bacchus*			1			CW

Black-crowned Night Heron	*Nycticorax nycticorax*	1					CL
White Wagtail	*Motacilla alba*	1					CW
Spotted Dove	*Streptopelia chinensis*	1					CW
Chinese Bulbul	*Pycnonotus sinensis*				2		CW
Crested Myna	*Acridotheres cristatellus*					5	CW

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

No dragonfly was recorded in the Luk Tei Tong River.

Aquatic invertebrates and fish

3 species of fish, 2 species of crustaceans and 4 species of mollusks were recorded in the 5 sections at LTT. All are common and widespread in Hong Kong. The two fish species of conservation concern reported in the EIA report, i.e. Flagtail *Kuhlia marginata* and Predaceous Chub *Parazacco spilurus* were not recorded in LTT during the present monitoring as well as the baseline monitoring survey.

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

Common names	**Scientific names**	**LTT1**	**LTT2**	**LTT3**	**LTT4**	**LTT5**
Invertebrates						
Mangrove clam	*Geloina erosa*					
Rock oyster	*Saccostrea cuculata*	+++	+++			
Snail	*Melanoides tuberculata*				+++	+++
Snail	*Terebralia* sp.					
Snail	*Nerita* sp.	+++	+++			
Snail	*Littoraria articulata*	+++	+++			
Crab	*Varuna litterata*			+		
Fiddler crab	*Uca lactea*					
Fiddler crab	*Uca arcuata*					
Fiddler crab	*Uca crassipes*					
Crab	*Perisesarma bidens*					
Mangrove mud crab	*Scylla paramamosain*					
Mitten crab	*Eriocheir japonica*	+				
Fish						

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 30 December 2011.

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

White-shouldered Starling was not observed during the December 2011 monitoring. No bird of other species was observed entering the watchtower.

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

Ecological Water Quality Monitoring (EWQM)

The post-construction EWQM was started on 1 June 2011 and conducted in bi-monthly, which was carried out in November 2011. Therefore, post-construction EWQM was not carried during this reporting month. No EWQM results were presented in this report.

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 construction phase ecological monitoring was completed. The ecological surveys for operational phase are tentatively scheduled on February 2012, while ecological water quality monitoring is scheduled on 9 January 2012

7. Action taken in Event of Exceedence

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

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

8. Construction waste disposal

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

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

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

Table 8.1 Summary of Construction Waste Disposal

	Amount of Construction Waste disposed		
Month	**Inert Waste (to Public Fill)**	**Non-inert Waste (to Landfill)**	**Chemical Waste (to treatment plant)**
1st to 31st Dec11	0.0 (tons)	0(tons)	Nil
Total	36897.06 (tons)	247.43 (ton)	0

9. Status of Permits and Licenses obtained

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

Table 9 .1 Status of Permits and Licenses Obtained

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

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

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
Dec 2011	0	0	0	0	0
Total	0	1	0	0	1

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 5, 12, 21 and 31 December 2011.

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
4, 13, 20, 27 May 11, 4, 14 , 18 July 11, 1,8,15,25 August 11 1,5,12,19 & 26 Sep 11 3, 24, 28, 31 Oct 11 7, 14, 24, 28 Nov 11	C&D wastes, site materials and general wastes were observed within site area	Contractor should remove wastes and site materials from the concerned area as soon as possible as works finished	Construction waste, site materials and general wastes at the outlet of PNH river were removed by contractor. No other C&D wastes, site materials and general wastes were observed within the site area.	5 Dec 2011
18 Mar 11, 4 April 11, 4, 18, 25 July 11 1,5,12,19 & 26 Sep 11 3,10 17, 28 31 Oct 11 7, 14, 24, 28 Nov 11 21 Dec 2011	Stockpile of earthy Materials were observed without protective measure	Contractor should provide tarpaulin cover to the stockpiles to prevent dust generation	Earthy stockpile at the outlet of PHN River was removed by contractor on 5 December. Earthy Stockpile at site office area was covered with tarpaulin by contractor on 31 December 2011. No other uncovered earthy stockpiles were observed within the site area.	31 Dec 2011

11.2 Compliance with legal and Contractual requirement

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

11.3 Environmental Complaint and follow up actions

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

12. Future key issues

Landscaping and installation of railing would be major site activities to be carried out in the upcoming month. Although environmental impact arisen from those activities would be expected to be minimal, Contractor was still reminded to pay serious attention to the following key issues:

- Dust generation due to handling of earthy material and dusty site surface.
- Housekeeping of site, such as stockpiling of C&D waste and earthy material.
- Removal of wastes as part of site clearance and evacuation.

Contractor was recommended to provide tarpaulin coverings to all earthy stockpiles on site. Dusty static area should be dampened regularly to avoid dust generation.

Contractor should also prevent excessive storage of wastes on site. Wastes should be collected and disposed to designated public fill.

13. Conclusions

Landscaping works and railing installation were major site activities being carried out within this reporting period.

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Project Proponent, Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties and IEC were carried out on 21 December 11.

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

For water quality monitoring, Post-construction WQM had been completed on 1 June 2011. The post-construction phase ecological water quality monitoring will be conducted bi-monthly. As the post-construction EWQM had been conducted in November 2011, no EWQM was carried out in the reporting period.

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

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

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

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

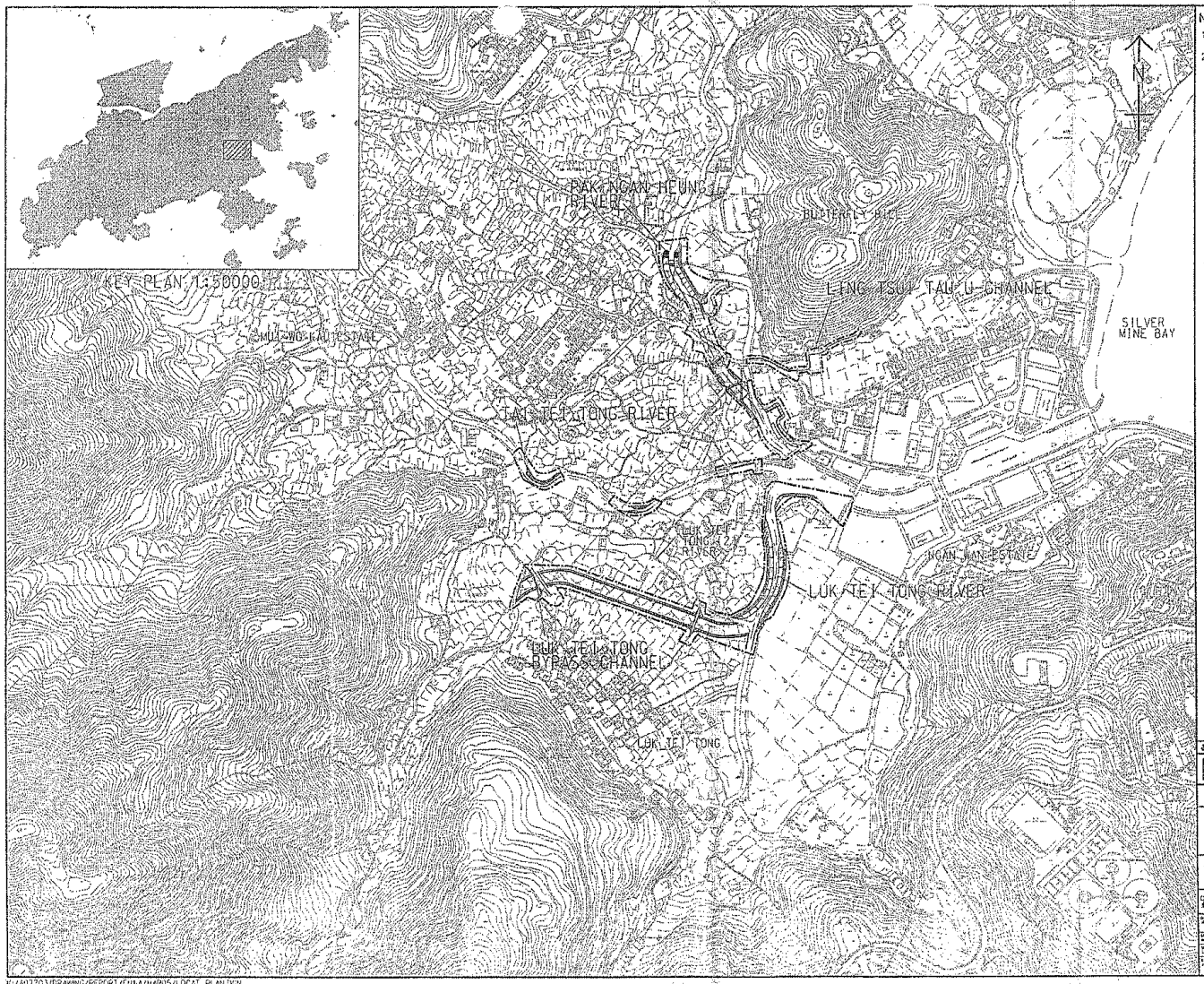
Construction Programme and Location Plan

Contract No.: DC/2006/11

Contract Name.: Drainage Improvement Works In Southern Lantau and Construction of Mui Wo Village Sewerage Phase I

Working Schedule of Outstanding Works for Dec 2011

		Dec 2011 *Month 1*				Jan 2012 *Month 2*				Feb 2012 *Month 3*			
a)	***LTT River***	w9	w10	w11	w12	w1	w2	w3	w4	w5	w6	w7	w8
	Major Item												
1	Box A - Landscaping Establishment Works												
	Minor Item												
2	Seawall landscaping												
b)	***TTT River***												
	Major works was completed including all VOs.												
	Minor Item												
1	Landscaping Establishment Works												
c)	***PNH River***												
	Major Works												
1	Landscaping Establishment Works - EVA Area												



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

ORIG NO. 1.1

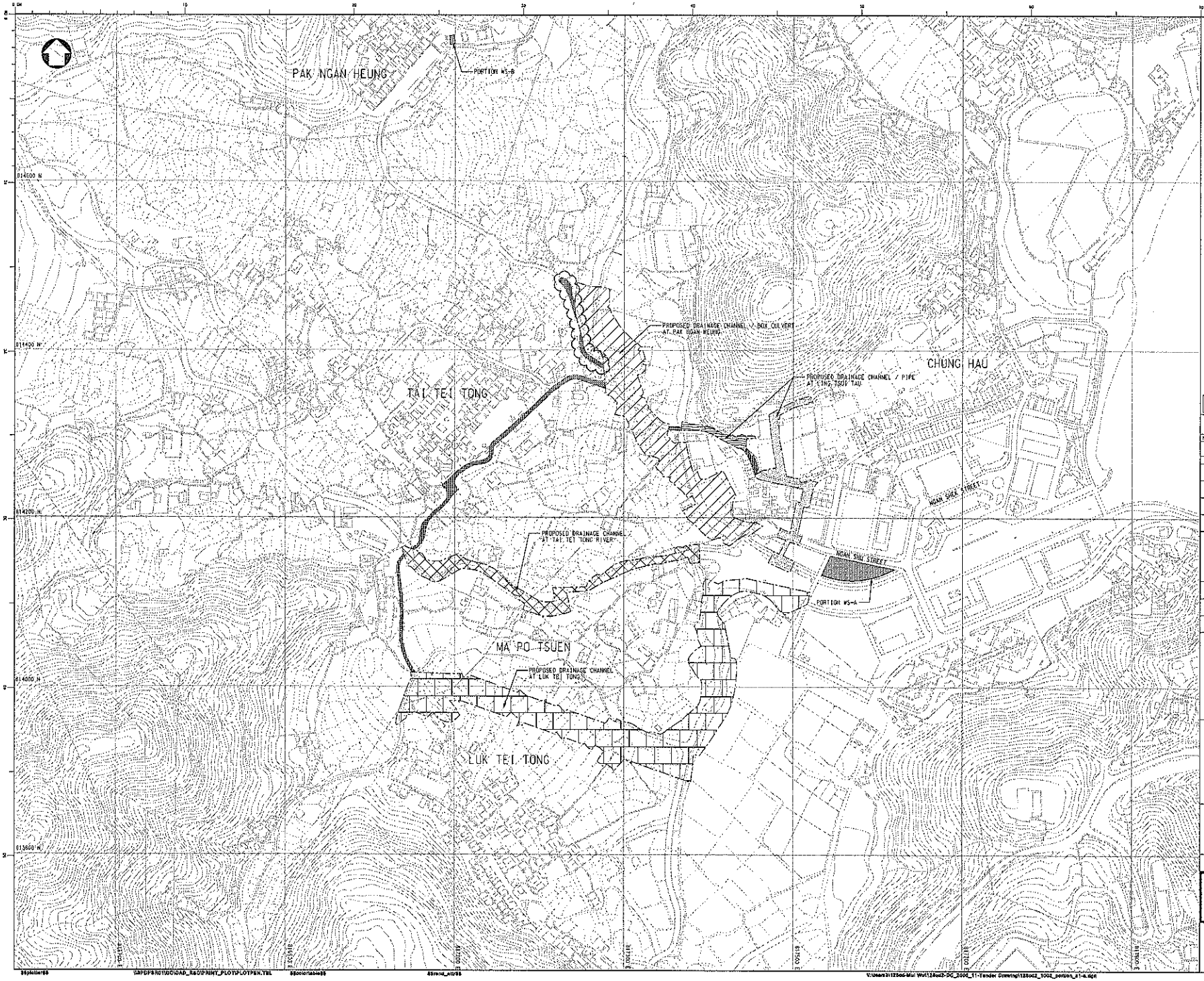
SEP 2004

PRELIMINARY

1:50000

METRES

K:/A02703/DRAWING/REPORT/EM&A/MAR05/LOCAT_PLAN.DGN



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. CHAN Ext4

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. Grace Kwok	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. Goldie Fung	3678 9778	2856 2010

Appendix C

Calibration Certificates for Measuring Equipments

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR ALLEN CHAN	**WORK ORDER:**	HK1125080
CLIENT:	ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	**LABORATORY:**	HONG KONG
ADDRESS:	FLAT 19A, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN, HONG KONG.	**DATE RECEIVED:**	24/10/2011
		DATE OF ISSUE:	02/11/2011
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Conductivity, Dissolved Oxygen, pH, Temperature and Turbidity
Description:	Multi-meter
Brand Name:	DKK-TOA
Model No.:	WQC-24
Serial No.:	617892
Equipment No.:	--
Date of Calibration:	26 October, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1125080
Date of Issue: 02/11/2011
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD

Description: Multi-meter
Brand Name: DKK-TOA
Model No.: WQC-24
Serial No.: 617892
Equipment No.: --
Date of Calibration: 26 October, 2011 Date of next Calibration: 26 January, 2012

Parameters:

Conductivity **Method Ref: APHA (21st edition), 2510B**

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	133	-9.5
6667	6660	-0.1
12890	12700	-1.5
58670	56700	-3.4
	Tolerance Limit (%)	10.0

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
5.04	5.00	-0.04
6.48	6.52	0.04
7.47	7.66	0.19
	Tolerance Limit (±mg/L)	0.20

pH Value **Method Ref: APHA 21st Ed. 4500H:B**

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.00	3.93	-0.07
7.00	7.06	0.06
10.0	10.01	0.01
	Tolerance Limit (±unit)	0.2

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1125080
Date of Issue: 02/11/2011
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD

Description: Multi-meter
Brand Name: DKK-TOA
Model No.: WQC-24
Serial No.: 617892
Equipment No.: --
Date of Calibration: 26 October, 2011 Date of next Calibration: 26 January, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
11.0	10.2	-0.8
25.0	24.1	-0.9
40.0	39.0	-1.0
	Tolerance Limit (°C)	2.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.00	0.0	--
4.00	4.3	7.5
40.0	43.6	9.0
80.0	86.3	7.9
400	420	5.0
800	853	6.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **11495** Page 1 of 2 Pages

Customer : Environmental Pioneers and Solutions Limited

Address : Flat B, 6/F., Hop Shi Factory Building, 29 Lee Chung Street, Chai Wan, Hong Kong.

Order No. : Q10260 **Date of receipt :** 15-Mar-11

Item Tested

Description : Sound Level Calibrator

Manufacturer : Svantek

Model : SV30A **Serial No. :** 7908

Test Conditions

Date of Test : 17-Mar-11 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	03926	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR
S041	Universal Counter	04461	SCL-HKSAR
S206	Sound Level Meter	04462	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : P. F. Wong

Approved by : Dorothy Cheuk

Date: 21-Mar-11

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.08	± 0.3 dB
114	114.18	

Uncertainty : ± 0.1 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.000 kHz	± 2 %

Uncertainty : $\pm 3.6 \times 10^{-6}$

3. Level Stability : 0.0 dB
IEC 942 Class 1 Spec. : ± 0.1 dB
Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 1.0 %
IEC 942 Class 1 Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test
2. The above measured values are the mean of 3 measurements.
3. The uncertainty claimed is for a confidence probability of not less than 95%.
4. Atmospheric Pressure : 1012 hPa.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **11218** Page 1 of 3 Pages

Customer : Environmental Pioneers and Solutions Limited

Address : Flat B, 6/F., Hop Shi Factory Building, 29 Lee Chung Street, Chai Wan, Hong Kong.

Order No. : Q10260 **Date of receipt :** 1-Mar-11

Item Tested

Description : Digital Sound Level Meter

Manufacturer : SVAN

Model : 949 **Serial No. :** 8569

Test Conditions

Date of Test : 14-Mar-11 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification after adjustment.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017A	Multi-Function Generator	07279	SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : P. F. Wong

Approved by : Dorothy Cheuk

Date: 15-Mar-11

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)	
Level Range	Octave Filter	Weight	Response		Before Adjust.	After Adjust.
105 dB	OFF	A	Fast	94.0	*92.2	93.9
			Slow		--	93.9
		C	Fast		--	93.9
130 dB	OFF	A	Fast	94.0	--	93.9
			Slow		--	93.9
		C	Fast		--	93.9
	OFF	A	Fast	114.0	--	113.9
			Slow		--	113.9
		C	Fast		--	113.9

IEC 651 Type 1 Spec. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (inside Primary)
130	114.0	113.9	0.0	± 0.7 dB
	104.0	103.9	0.0	
	94.0	93.9 (Ref.)	- -	
105	84.0	83.9	0.0	
	74.0	74.0	+0.1	
	64.0	64.1	-0.2	
	54.0	54.1	-0.2	

Uncertainty : ± 0.1 dB

Calibration Certificate

3.2 Differential level linearity

UUT Range	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
130	84.0	83.9	0.0	± 0.4 dB
	94.0	93.9 (Ref.)	- -	
	95.0	95.0	-0.1	± 0.2 dB

Uncertainty : ± 0. 1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.7	- 39.4 dB, ± 1.5 dB
63 Hz	-26.5	- 26.2 dB, ± 1.5 dB
125 Hz	-16.5	- 16.1 dB, ± 1 dB
250 Hz	-9.0	- 8.6 dB, ± 1 dB
500 Hz	-3.5	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.5	+ 1.2 dB, ± 1 dB
4 kHz	+1.4	+ 1.0 dB, ± 1 dB
8 kHz	-0.7	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.6	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq. Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	- -	--
1/10	40.0	40.1	± 0.5 dB
$1/10^2$	40.0	40.0	
$1/10^3$	40.0	40.2	± 1.0 dB
$1/10^4$	40.0	40.0	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 010 hPa.
4. *Out of Specification

---------- END ----------

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

			Relative	Occurrence	
Species	Habit	Native	Abundance	PNH3	PNH4
Acacia confusa	tree	no	occasional		+
Achyranthes aspera	herb	yes	scarce		+
Alangium chinense	tree	yes	scarce		+
Alocasia odora	herb	yes	occasional		+
Alternanthera phyloxoides	herb	no	scarce	+	
Amaranthus viridus	herb	yes	scarce		+
Annona squamosa	tree	no	scarce		+
Bidens pilosa	herb	no	occasional		+
Bridelia tomentosa	tree	yes	scarce		+
Celtis sinensis	tree	yes	scarce		+
Christella parasitca	fern	yes	scarce		+
Commelina sp.	herb	yes	scarce		+
Conyza sumatrensis	herb	no	scarce		+
Desmodium heterocarpon	herb	yes	scarce		+
Dimocarpus longan	tree	no	occasional		+
Ficus hirta	herb	yes	scarce		+
Ficus microcarpa	tree	yes	scarce		+
Ficus superba	tree	yes	occasional		+
Hedychium coronarium	herb	no	occasional		+
Lemna minor	tree	yes	scarce	+	
Liquidambar formosana	tree	yes	occasional		+
Lygodium japonicum	fern	yes	scarce		+
Macaranga tanarius	tree	yes	occasional		+
Mallotus paniculatus	tree	yes	occasional		+
Microstegium ciliatum	grass	yes	common		+
Mikania micrantha	climber	no	abundant	+	+
Paedaria tomentosa	climber	yes	scarce	+	+
Panicum maximum	grass	no	scarce	+	+
Phyllanthus sp.	shrub	yes	scarce		+
Polygonum hydropiper	herb	yes	scarce		+
Pueraria phaseoloides	climber	yes	scarce		+
Sterculia lanceolata	tree	yes	scarce		+

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

			Relative	Occurrence	
Species	Habit	Native	Abundance	PNH1	PNH2
Ficus microcarpa	tree	yes	scarce		+
Ficus superba	tree	yes	occasional		+
Ipomoea cairica	climber	yes	occasional		+
Panicum maximum	grass	no	common		+

Appendix D3 Plant species recorded at Luk Tei Tong River

			Relative	Occurrence				
Species	Habit	Native	Abundance	LTT1	LTT2	LTT3	LTT4	LTT5
Acanthus ilicifolius	shrub	yes	scarce		+			
Bidens pilosa	herb	no	scarce	+			+	+
Cannavalia maritima	climber	yes	scarce					+
Celtis sinensis	tree	yes	scarce	+				
Clerodendrum inerme	shrub	yes	scarce					+
Commelina diffusa	herb	yes	scarce				+	
Mariscus javanicus	herb	yes	scarce					+
Ficus hispida	tree	yes	scarce	+				
Ficus microcarpa	tree	yes	scarce	+				
Fimbristylis ferruginea	herb	yes	scarce					+
Hibiscus tiliaceus	tree	yes	scarce	+				
Kandelia obovata	tree	yes	occasional		+			+
Ipomora triloba	climber	yes	scarce					+
Mikania micrantha	herb	no	scarce	+			+	
Neyraudia reynaudiana	grass	no	scarce				+	+
Panicum maximum	grass	yes	scarce	+				
Phragmites australis	grass	yes	scarce					+
Rhynchelytrum repens	herb	no	scarce	+				
Saccharum arundinaceum	grass	yes	scarce	+				
Scolopia chinensis	tree	yes	scarce					+
Severinia buxifolia	shrub	yes	scarce					+
Solanum nigrum	herb	yes	scarce				+	
Widelia triloba	climber	no	scarce				+	+

Appendix E

Construction Noise Monitoring Data Sheet

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		5/12/2011	
Measurement Start Time (hhmm)		14:35	14:30
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.1	0.4
Measurement Results	L_{90} (dB(A))	38.2	37.6
	L_{10} (dB(A))	46.7	48.2
	Leq (dB(A))	44.9	42.6
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoirng.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise	1. Public noise 2. Traffic noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	5/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		5/12/2011	
Measurement Start Time (hhmm)		13:07	13:50
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.4	0.2
Measurement Results	L_{90} (dB(A))	38.1	44.2
	L_{10} (dB(A))	40.1	45.2
	Leq (dB(A))	38.7	48.1
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Background noise	1. Background noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	5/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		12/12/2011	
Measurement Start Time (hhmm)		14:45	14:10
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.2	0.3
Measurement Results	L_{90} (dB(A))	41.8	40.1
	L_{10} (dB(A))	48.0	46.9
	Leq (dB(A))	46.5	44.1
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise	1. Public noise 2. Traffic noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	12/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		12/12/2011	
Measurement Start Time (hhmm)		13:00	13:35
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.4	0.2
Measurement Results	L_{90} (dB(A))	38.1	42.6
	L_{10} (dB(A))	39.7	46.7
	Leq (dB(A))	39.2	43.2
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Background noise	1. Background noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	12/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
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Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		23/12/2011	
Measurement Start Time (hhmm)		14:50	14:16
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.2	0.2
Measurement Results	L_{90} (dB(A))	39.6	39.2
	L_{10} (dB(A))	44.2	48.2
	Leq (dB(A))	43.6	44.7
Weather condition:		Cloudy	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise	1. Public noise 2.Traffic noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	23/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
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Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		23/12/2011	
Measurement Start Time (hhmm)		13:02	13:40
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.3	0.1
Measurement Results	L_{90} (dB(A))	38.6	43.1
	L_{10} (dB(A))	41.2	43.8
	Leq (dB(A))	39.6	45.2
Weather condition:		Cloudy	
Major Construction Noise Sourse(s) During Monitoring		No construction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Background noise	1. Background noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen Chan	23/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N1	N2
Description of Location		Façade	Façade
Date of Monitoring		31/12/2011	
Measurement Start Time (hhmm)		15:15	14:27
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.1	0.2
Measurement Results	L_{90} (dB(A))	41.6	39.6
	L_{10} (dB(A))	49.6	49.7
	Leq (dB(A))	45.6	45.1
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No contruction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Public noise 2. Traffic noise	1. Public noise 2. Traffic noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	31/12/2011

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 Subsidiary of FSE Engg Group
豐盛創建企業成員 Member of Fung Seng Enterprises

Construction Noise Monitoring Data Sheet

Monitoring Location		N3	N4
Description of Location		Freefield	Facade
Date of Monitoring		31/12/2011	
Measurement Start Time (hhmm)		13:30	13:52
Measurement Time Length (mins.)		30 mins	
Noise Meter Model/ Identification		ACO Japan, model 949,Serial No: 8569	
Calibrator Model/ Identification		7908	
Wind Speed (m/s)		0.3	0.1
Measurement Results	L_{90} (dB(A))	37.1	41.6
	L_{10} (dB(A))	38.9	43.1
	Leq (dB(A))	37.9	43.0
Weather condition:		Fine	
Major Construction Noise Sourse(s) During Monitoring		No contruction work has been carried out during monitoring.	No construction work has been carried out during monitoring.
Other Noise Source(s) During Monitoring		1. Background noise	1. Background noise
Remarks			

	Name & Designation	Signature	Date:
Prepared by:	Allen Chan	Allen	31/12/2011

Appendix F

Monitoring Schedule

for December 2011

Environmental Pioneers and Solutions Limited

DC/2006/11 - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU

Master Schedule of EM&A works in December 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				12/1	12/2	12/3
12/4	12/5	12/6	12/7	12/8	12/9	12/10
	Noise Monitoring					
12/11	12/12	12/13	12/14	12/15	12/16	12/17
	Noise Monitoring					
12/18	12/19	12/20	12/21	12/22	12/23	12/24
					Noise Monitoring	
12/25	12/26	12/27	12/28	12/29	12/30	12/31
						Noise Monitoring

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

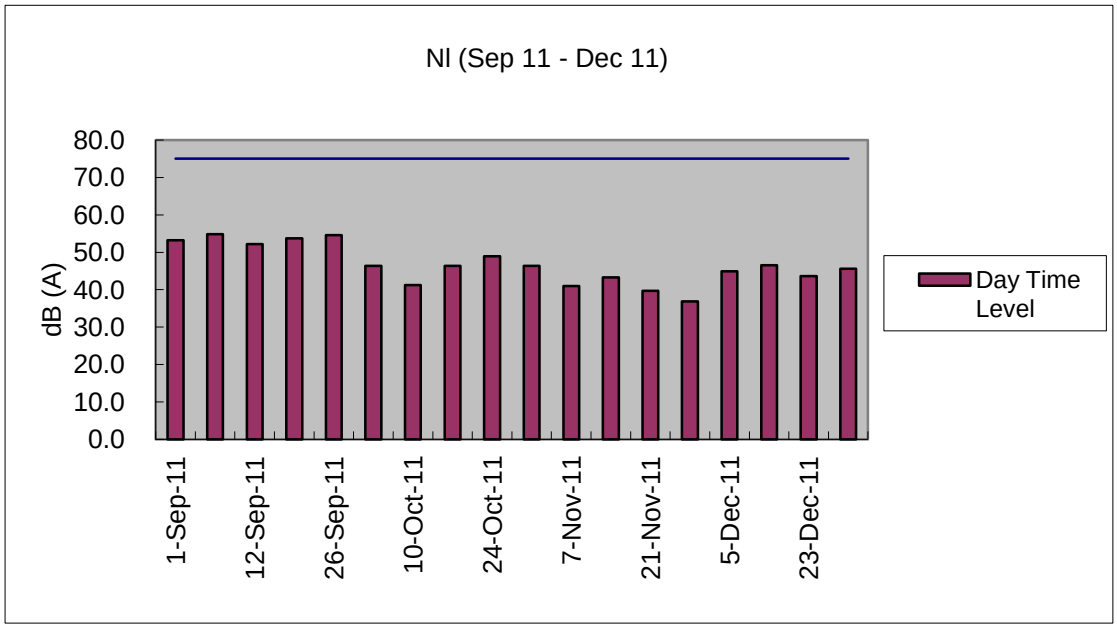
Appendix G Implementation Status of environmental protection / mitigation measures

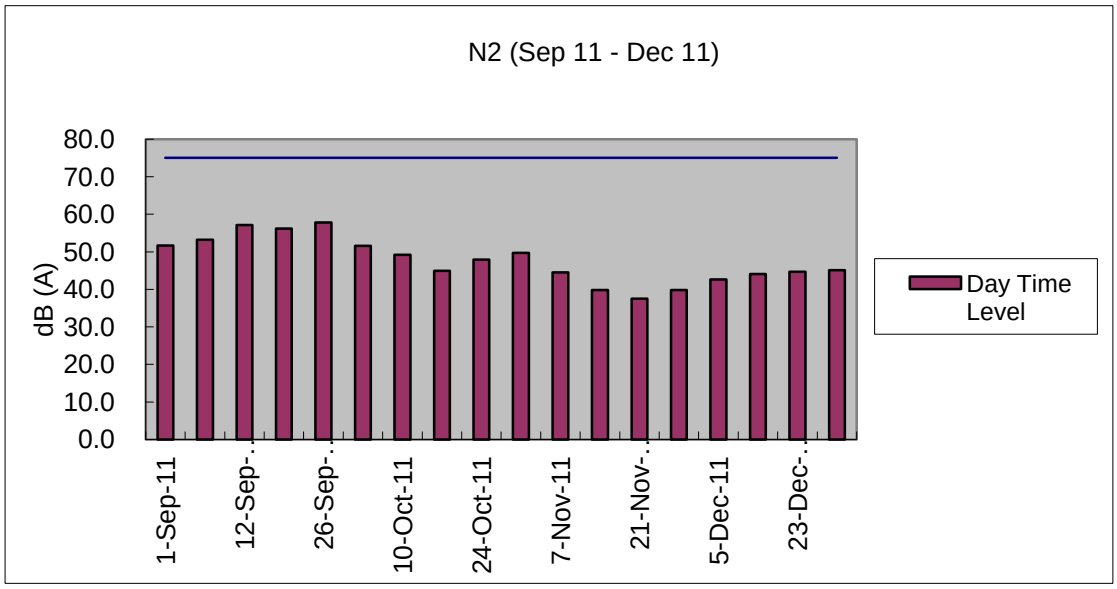
Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Air Quality	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage.	Inplemented	-
	Use of frequent watering for particular dusty static construction areas and areas close to ASRs.	Implemented	-
	Tarpaulin covering of all dusty vehicle loads transported to and from and between site location;	Ipmplemeted	-
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	Implemented	-
	Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	Implemented	-
Noise	Use of quiet powered mechanical equipment (PME)	Implemented	-
	Adoption of movable noise barriers and temporary noise barriers	Implemented	-
	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.	Implemented	-
	Sand/ silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove sand/ silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance.	Implemented	-
	Water pumped out from foundation excavations should be discharged into silt removal facilities.	Implemented	-
	During rainstorms, exposed slope surface should be covered by a tarpaulin or the means.	Implemented	-
	Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.	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.	Implemented	-
	Oils and fuels should only be used and stored on designated areas which have pollution prevention facilities.	Implemented	-
	Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site.	Not available	-
	The excavation and widening works for the drainage improvements to the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei Tong River and Luk Tei Tong By-pass Channel should be carried out in sections (approximately 300–400 m in length) and in dry condition.	Implemented	-

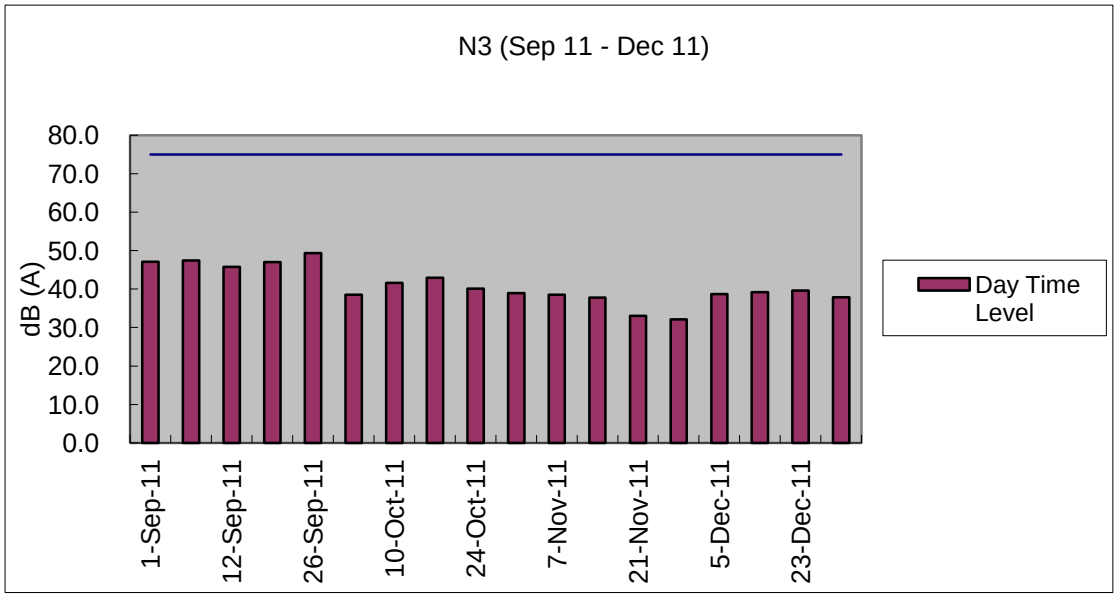
Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
	Maintenance desiltng of the re-profiled river channels of the Pak Ngan Heung River, Tai Tei Tong River, Luk Tei tong River and Luk Tei Tong By-pass Channel, temporary barrier walls should be used to provide a dry zone for desiltng 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	-

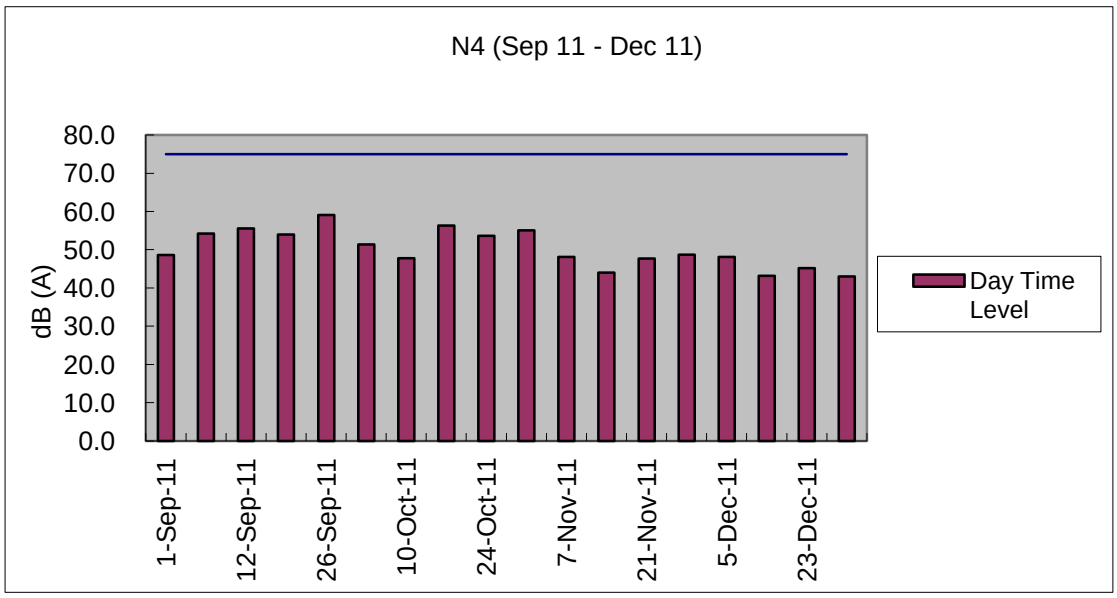
Appendix H

Graphical plot of noise monitoring results


Nl (Sep 11 - Dec 11)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
dB (A)
1-Sep-11
12-Sep-11
26-Sep-11
10-Oct-11
24-Oct-11
7-Nov-11
21-Nov-11
5-Dec-11
23-Dec-11
Day Time Level


N2 (Sep 11 - Dec 11)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
dB (A)
1-Sep-11
12-Sep-...
26-Sep-...
10-Oct-11
24-Oct-11
7-Nov-11
21-Nov-...
5-Dec-11
23-Dec-...
Day Time Level


N3 (Sep 11 - Dec 11)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
dB (A)
1-Sep-11
12-Sep-11
26-Sep-11
10-Oct-11
24-Oct-11
7-Nov-11
21-Nov-11
5-Dec-11
23-Dec-11
Day Time Level


N4 (Sep 11 - Dec 11)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
dB (A)
1-Sep-11
12-Sep-11
26-Sep-11
10-Oct-11
24-Oct-11
7-Nov-11
21-Nov-11
5-Dec-11
23-Dec-11
Day Time Level