Drainage Service Department

Monthly Environmental Monitoring & Auditing report for

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

Aug 2008

Revision 1

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APPENDIXES

EXECUTIVE SUMMARY

This is the first 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 construction activities undertaken during the period of August 18th 2008 to August 31st 2008. The major construction activities in this reporting month include preparation works for construction activities at Pak Ngan Heung River (PNHR).

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 checked.

Impact monitoring for construction noise was conducted in the reporting period. No exceedance of A/L was reported in the reporting period.
Impact monitoring for water was not conducted during the reporting period since only site clearing and preparation works for construction was carried out. The proposed water monitoring schedule for the subsequent monitoring period will be faxed to EPD on or before the first day of the monitoring month.
Impact monitoring for ecological status was conducted in the reporting period. There was no sign of disturbance to the watching tower, and on the flora and fauna in the river channels found caused by construction activities of the project.

During the reporting month, there was no complaint, notifications of any summons and successful prosecution against the project received. Contractor has started to establish the waste management plans to handle solid and chemical wastes produced on site. In general, waste management was satisfactory during the reporting month.
Key construction activity in the coming month will be construction of box culvert at PNHR. It is expected that noise impacts and waste disposal will be generated on-site. With reference to the EM&A manual and mitigation measure report, proper environmental mitigation measures will be implemented and inspected when corresponding construction works commence.

The environmental performance of the project was generally satisfactory.

1. Introduction

This is the first 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 E shows construction programme 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.

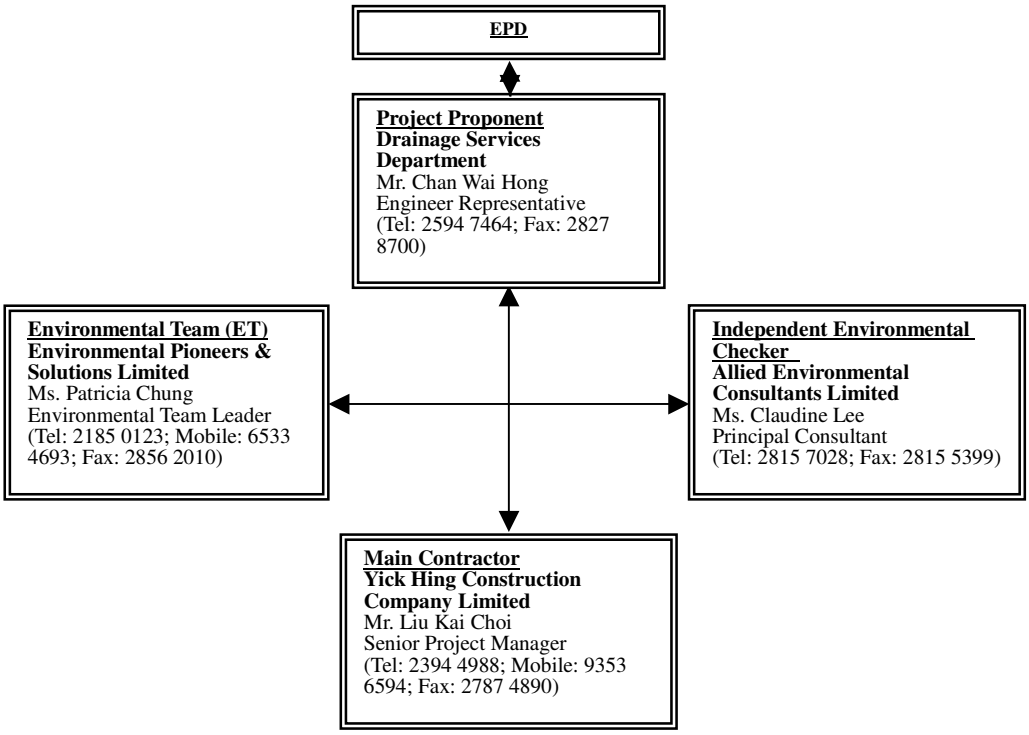

Fig. 2.2.1 Environmental Management structure for the project

2.3Key Personal Contact information chart

Detailed contact of key persons involved in environmental aspect of the project is shown in appendix A.

3 Construction Stage

3.1 Construction Activities in the reporting month

Major construction activities in the reporting month include site clearing and preparation works for Box culvert of PNHR. These activities will be continued in the coming month.

3.2 Construction Activities for the coming month

Key construction activity in the coming month will be construction of box culvert at PNHR.

3.3 Environmental Status

Appendix E shows the drawing of the project area.

Locations of the monitoring and control stations with environmental sensitive receivers are presented in Section 4.3 and 6.3 for noise 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 D) immediately after the measurement. As supplementary information for data auditing, statistical results L_{10} and L_{90} were also be recorded for reference.

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	SVAN Model 949	IEC 651 Type 1 IEC 804 Type 1	1
Windscreen	Microtech gefell model W2	N/A	1
Acoustical calibrator	SVAN SV-30A	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 B 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.

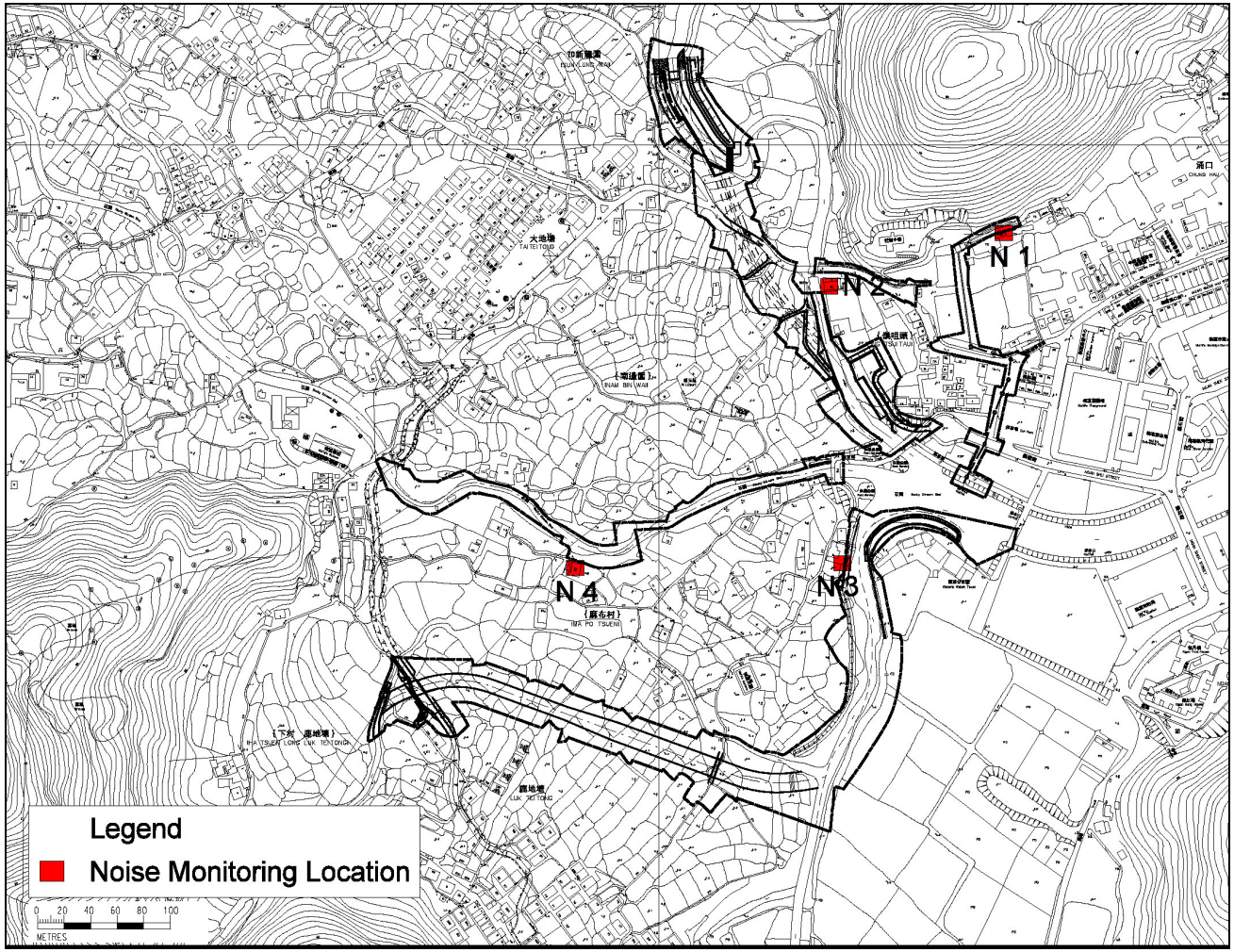

Figure 4.3.1 Impact noise monitoring locations

4.4 Monitoring Results

Relevant details of the noise monitoring results are presented in table 4.4.1. The results, ranged between 47.6 dB (A) and 58.8 dB (A), were within the limit levels and therefore, no exceedance was found.

Table 4.4.1 Noise monitoring results

Location	Parameter	Date	Time	L_{Aeq} dB(A)	Limit dB(A)	Exceedance	Wind speed (m/s)	Weather
N1	$L_{eq\ 30minutes}$	18 Aug 08	13:50	58.8	75	No	1.4	Sunny
N1	$L_{eq\ 30minutes}$	29 Aug 08	14:40	49.6	75	No	1.2	Sunny
N2	$L_{eq\ 30minutes}$	18 Aug 08	14:30	53.2	75	No	0.9	Sunny
N2	$L_{eq\ 30minutes}$	29 Aug 08	14:00	47.6	75	No	2.2	Sunny
N3*	$L_{eq\ 30minutes}$	18 Aug 08	15:10	49.9	75	No	1.8	Sunny
N3*	$L_{eq\ 30minutes}$	29 Aug 08	11:20	54.9	75	No	1.2	Sunny
N4	$L_{eq\ 30minutes}$	18 Aug 08	15:50	52.3	75	No	1.4	Sunny
N4	$L_{eq\ 30minutes}$	29 Aug 08	13:15	54.0	75	No	0.8	Sunny

Remarks: Raw datasheet for noise monitoring are attached in appendix D for reference.
Remark*: Equivalent noise level of location N3 is corrected by +3 dB from the raw data result due to the fact that free field measurement was undertaken 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 mitigation measures recommended in the EIA report include:

- Use of quiet powered mechanical equipment (PME)
- Adoption of movable noise barriers and temporary noise barriers
- 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 NSRs as possible;
  - 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;
  - Plant known to emit noise strongly in one direction should, wherever possible be oriented so that the noise is directed away from the nearby NSRs; and
  - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

Recommended mitigation measures have not been implemented yet as no construction works have been carried out on site during the reporting period. Those measures will be carried out and inspected in weekly site inspection when corresponding construction works commence.

5. Water Monitoring

Impact monitoring for water was not conducted during the reporting period since only site clearing and preparation works for construction were carried out. The proposed water monitoring schedule for the subsequent monitoring period will be faxed to EPD on or before the first day of the monitoring 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 (Luk Tei Tong) Rivers is recommended. The monitoring parameters required to measure in this project and survey methodology are described below:

(1) Avifauna species and abundances: 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 will be carried out in the next reporting month when corresponding construction works commence. 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: Conductivity, BOD, Suspended Sediments, Ammonia, Nitrate and Phosphate concentrations, Sediment Characteristics, pH and water

flow. Turbidity, DO 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, Conductivity, BOD, Suspended Sediments, Ammonia, Nitrate and Phosphate concentrations and Sediment Characteristics.

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 is shown in Figure 6.3.1 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 water quality monitoring for ecological purpose is shown in figure 6.3.2 for reference.

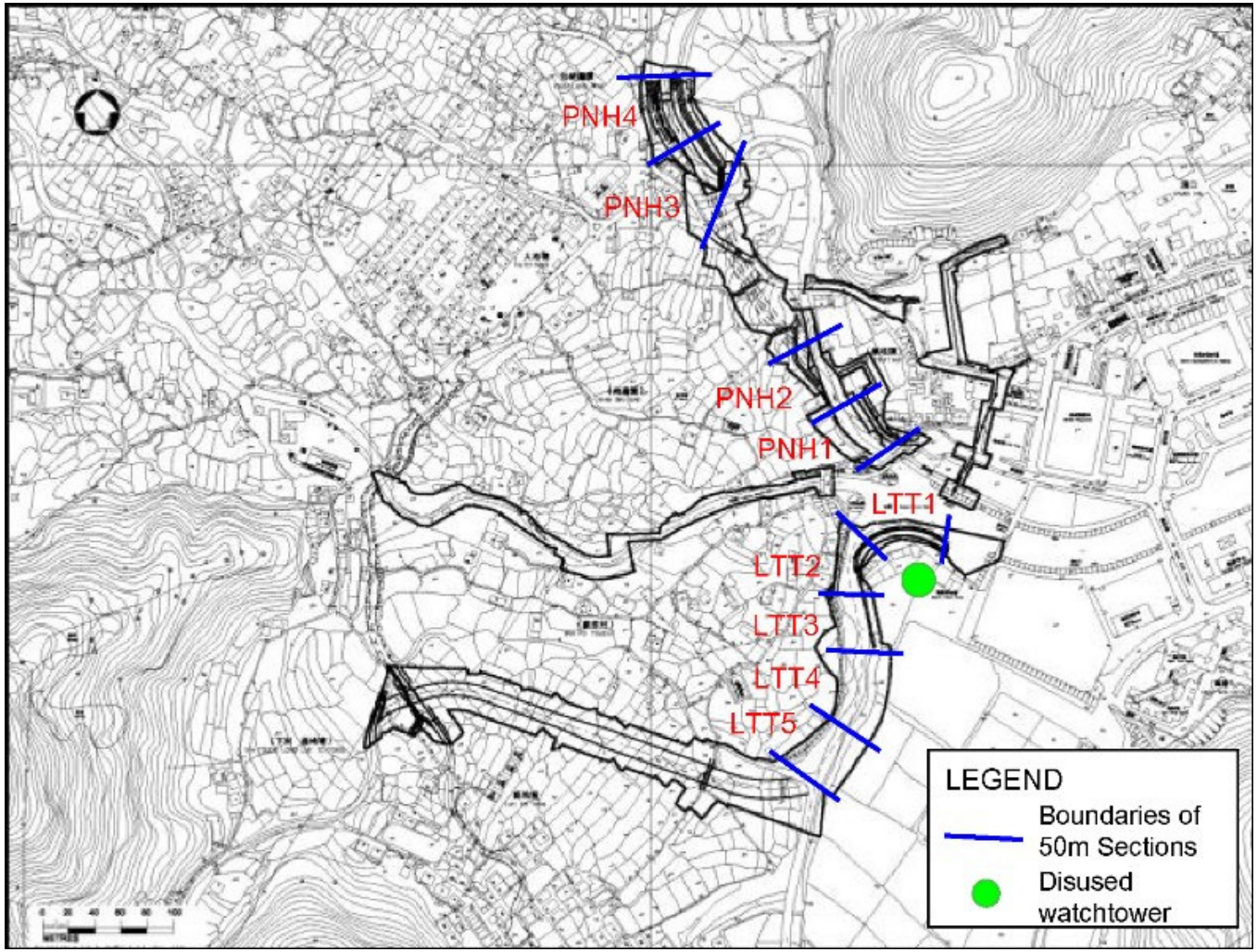

Figure 6.3.1 Ecological Monitoring Locations

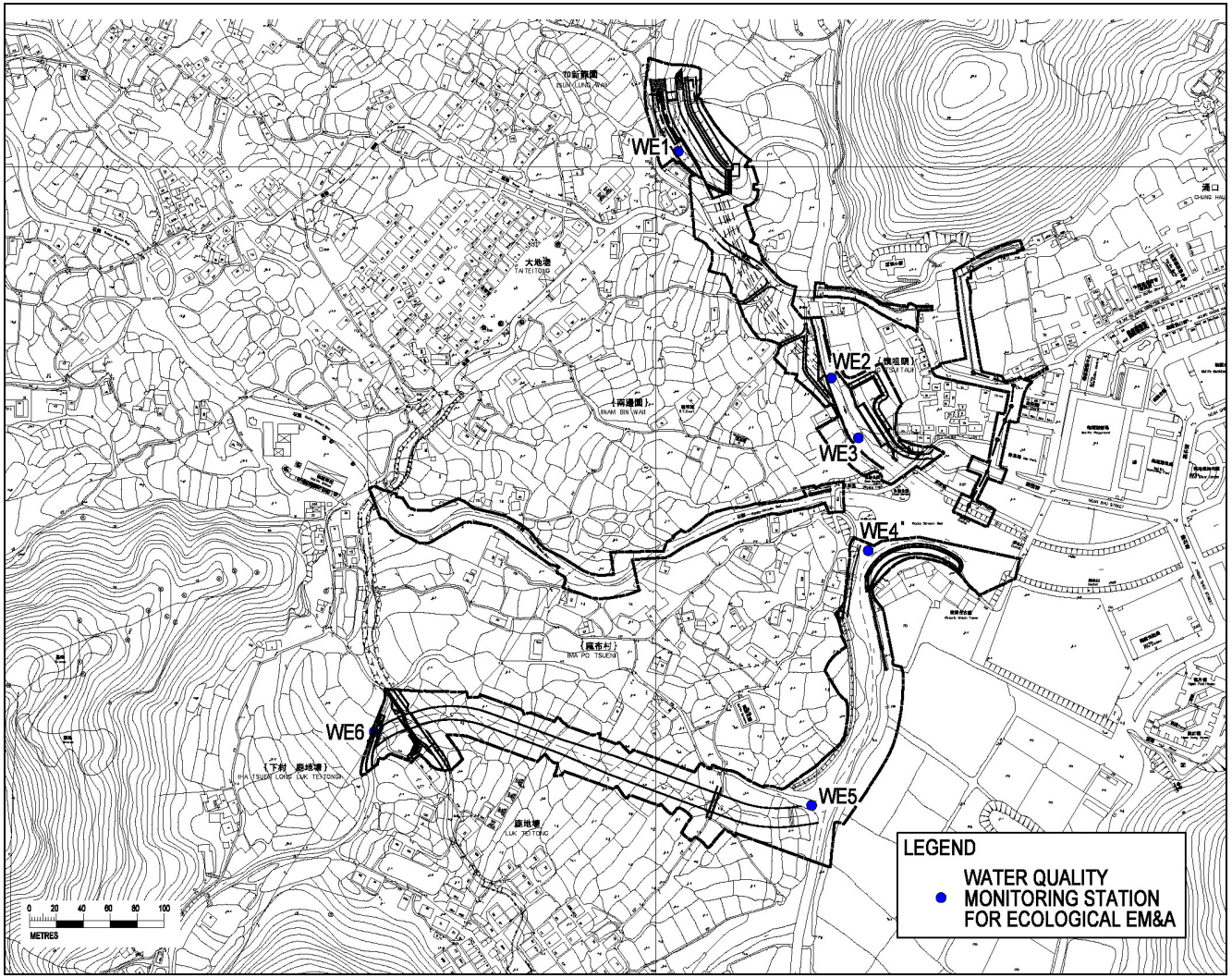

Figure 6.3.2 Water Quality monitoring locations for Ecology

6.4 Monitoring Frequency

Impact ecological monitoring has not been carried out in the reporting month since only site clearance and preparation works for construction was carried out. As proposed, impact ecological monitoring will be carried out monthly upon the river construction works commence.

6.5 Monitoring results

Pak Ngan Heung Stream N and S sections

Vegetation

Surveys were conducted on 26 August 2008. The north section of Pak Ngan Heung Stream was fairly modified. Part of the west bank was lined with rock gabion 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 47 species, including 16 trees, 10 shrub, 9 herb and 5 grass species (Appendix C1). 38 of the species recorded are natives, while 9 were exotics. The quantitative sampling recorded 15 species at the north section. Large native (e.g. *Celtis sinensis, Litsea glutinosa*) and exotic trees (*Acacia confusa*) dominated the transects. Other species recorded include common and typical native pioneer forest and streamside tree 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	**Section 1**	**Section 2**
Acacia confusa		16.3
Aporosa dioica	8.9	0.9
Bamboo	6.8	
Breynia fruticosa		0.4
Celtis sinensis	37.2	28.5
Cleistocalyx operculata	28.3	
Ficus hispida		16.1
Litsea glutinosa		22.0
Microstegium ciliatum		7.8
Mikania micrantha		0.4
Psychotria asiatica	5.2	0.4
Pueraria phaseoloides	2.1	1.7
Sageretia thea		4.8
Sterculia lanceolata	11.5	
Syzygium jambos		0.8
	100.0	100.0
Total Transect Length (m)	19	34

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 13 species recorded, 8 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 C2). No species of conservation interest was recorded.

Terrestrial Fauna

All recorded avifauna and dragonfly species are common in Hong Kong.

A total of three species of birds were recorded in the proposed work area of the Pak Ngan Heung River.

Table 6.5.2 Avifauna in Pak Ngan Heung

Common names	Latin names	South section		North section		Commonness & distribution
		1	2	1	2	
Little Egret	*Egretta garzetta*		2			CW
Common Kingfisher	*Alcedo atthis*			1	2	CW
Crested Myna	*Acridotheres cristatellus*	2				

Two species of dragonfly, Black-banded Gossamerwing *Euphaea decorate* and Wandering Glider *Pantala flavescens*, were recorded in the proposed work area of the Pak Ngan Heung River.

Table 6.5.3 Dragonfly in Pak Ngan Heung

Common names	Latin names	South section		North section		Commonness & distribution
		1	2	1	2	
Black-banded Gossamerwing	*Euphaea decorata*			1	1	A
Wandering Glider	*Pantala flavescens*				1	A

Aquatic fauna and fish

6 species of fish and four crustacean were recorded in the 4 sections at PNH. All are common and widespread in Hong Kong. Though Predaceous Chub was observed, the other 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	N Section		S Section	
		1	2	1	2
Atyid shrimp	*Caridina elongata*	+++	++		
Palaemond shrimp	*Macrobrachium hainanensis*	+	++	+	+

Crab	*Varuna litterata*			+	+
Mitten Crab	*Eriocheir japonica*	+	+		
Goby	*Rhinogobius duospilus*	++			
Six-banded Barb	*Puntius semifasciolatus*	++			
Unidentified Cichlid fish		++			
Predaceous Chub	*Parazacco spilurus*			+	
Tropical Sand Goby	*Papillogobius reichei*		+	++	
Jarbua Terapon	*Terapon jarbua*			++	++
Mullet	*Mugil cephalus*			++	++

+ = 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 26 August 2008. The Luk Tei Tong Stream Section was highly modified. The stream bank from Section 1 to 4 were largely lined with rock gabions or concrete while stream bank of section 5 were fully lined with wired rock gabions and was little vegetated. Vegetation only established on isolated muddy patches at the estuary and remaining semi-natural bank which was fairly narrow and steep in gradient. 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 36 species, including 9 tree, 5 shrub, 11 herb and 4 grass species (Appendix C3). 26 of the species recorded are natives, while 10 were exotics. The quantitative sampling recorded 22 species at the middle section. Section 2 was dominated by *Terminalia catappa* and *Wollastonia biflora*, while Section 3 and 4 was dominated by *Hibiscus tiliaceus* and *Clerodendrum inerme* respectively.

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	**Section 2**	**Section 3**	**Section 4**
Acanthus ilicifolius	12.4	31.8	
Artemisia sp.			1.6
Clerodendrum inerme			39.5
Cyperus malaccensis	1.2		
Excoecaria agallocha	4.5		3.1
Fimbristylis ferruginea			31.1
Fimbristylis sp.	5.7		0.8
Henslowia frutescens			2.7
Hibiscus tiliaceus		57.4	0.8
Ischaemum sp.			4.4
Kandelia obovata	6.4	10.8	
Lantana camara			2.7

	Relative % cover		
Species	**Section 2**	**Section 3**	**Section 4**
Mimosa pudica			1.6
Paedaria scandens			0.3
Panicum maximum			5.5
Paspalum paspaloides	7.8		
Premna serratifolia	4.0		
Pueraria phaseoloides			5.5
Scoparia dulcis			0.5
Terminalia catappa	32.6		
Toxocarpus wightianus	9.3		
Wollastonia biflora	16.1		
Total	100.0	100.0	100.0
Total Transect Length (m)	11.0	16.0	22.0

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

A total of ten species of birds were recorded in these sections. These included some species forage in estuarine habitat, e.g., Little Egret *Egretta garzetta*, Common Sandpiper *Actitis hypoleucos*.

Table 6.5.6 Avifauna in Luk Tei Tong River

Common names	**Latin names**	**1**	**2**	**3**	**4**	**5**	**Commonness & distribution**
Little Egret	*Egretta garzetta*	1					CW
Black-crowned Night Heron	*Nycticorax nycticorax*	1					CL
Common Sandpiper	*Actitis hypoleucos*	1					CW
Common Kingfisher	*Alcedo atthis*	1					CW
Spotted Dove	*Streptopelia chinensis*	1					CW
Common Koel	*Eudynamis scolopacea*			1			CW
Chinese Bulbul	*Pycnonotus sinensis*						CW
Oriental Magpie Robin	*Copsychus saularis*		1				CW
Long-tailed Shrike	*Lanius schach*					2	CW
Japanese White-eye	*Zosterops japonica*					1	CW

Only one species of dragonfly, Crimson Dropwing *Trithemis aurora*, was recorded in the Luk Tei Tong River.

Table 6.5.7 Dragonfly in Luk Tei Tong River

Common names	**Latin names**	**1**	**2**	**3**	**4**	**5**	**Commonness & distribution**
Crimson Dropwing	*Trithemis aurora*			1	1		A

Aquatic invertebrates and fish

3 species of fish, 5 species of crustacean and 2 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 baseline monitoring survey.

Table 6.5.8 Aquatic invertebrates and fish in Luk Tei Tong River

Common names	Scientific names	Section				
		1	2	3	4	5
Mangrove clam	*Geloina erosa*			+	+	
Snail	*Melanoides tuberculata*	+	+	+++	+++	+++
Crab	*Varuna litterata*	+		+	+	
Fiddler crab	*Uca lactea*	+	++	+++		
Fiddler crab	*Uca arcuata*		++			
Fiddler crab	*Uca crassipes*	++	+			
Crab	*Perisesarma bidens*	+	++	+		
Common mudskipper	*Periophthalmus cantonensis*	++	++	++	++	
Tilapia		++	++			
Jarbua terapon	*Terapon jarbua*	+	+	+		
Mullet	*Mugil cephalus*	++	++			

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

Discussed Watchtowers

White-shouldered Starling was not observed during the August 2008 monitoring. There was no sign (e.g., adults carrying food or nesting materials) of use of the watchtower as nesting habitat by White-shouldered Starling.

During the survey conducted in evening, Crested Myna *Acridotheres cristatellus*, Magpie Robin *Copsychus saularis* and Eurasian Tree Sparrow *Passer montanus* landed on the top of the watchtower. None of these birds, however, entered the windows of the watchtower.

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 were 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 water monitoring Schedule

The next Ecological water monitoring date is scheduled on 5th September 2008.
The next ecological monitoring date is set on 23rd, 29th September 2008

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:

No exceedance was recorded for construction noise.
No exceedance was recorded for ecological monitoring.

There was no exceedance for noise and ecological measurements recorded during this reporting period, 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 updated figures of the construction wastes disposal provided by the Contractor.

Table 8.1 Summary of Waste Disposal in Aug 2008 (18 Aug to 31 Aug)

Type of waste	Disposal Site	Quantity	Remarks
Inert Waste	Public Fill	0 (Ton)	- -
Non-inert waste	Landfill	0 (Ton)	- -
Chemical waste	Treatment plant	0 (trip)	- -

9 Status of permits/Licenses Obtained and environmental mitigation/protection measures implementation

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	5th March 08	--	Issued
Registration of C&D Waste Producer	7006521	--	--	Issued
Chemical Waste Producer	5213-950-Y2443-03	12th Aug., 08	--	Issued
Construction Noise Permit	N/A	N/A	N/A	N/A
Effluent Discharge License	N/A	N/A	N/A	In progress

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

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
18 August 2008 to 31 August 2008	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 18, 29 and 31 August 2008.

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	Outcome	Closing Date
18 Aug 08	Stockpile of excavated soil was found in the site area of PNH river.	Contractor was advised to cover the stockpile with tarpaulin to prevent runoffs.	Action taken as advised by ET.	31 Aug 08

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 are not any complaints. Therefore, follow up actions for the Environmental Complaint is not required

12 Future key issues

Key construction activity in the coming month will be construction of box culvert at PNHR. It is expected that noise impacts and waste disposal will be generated on-site. With reference to the EM&A manual and mitigation measure report, the following mitigation measures are proposed to be taken, if necessary.

- Adoption of movable noise barriers and temporary noise barriers.
- Application of good site practices mentioned in EM&A manual Clause 3.8.1.
- Construction wastes, such as construction and demolition (C&D) material, chemical waste and general refuse, should be managed and disposed to the designated public fill and landfill areas in acceptable manner. Wastes are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented.

13 Conclusions

In this reporting month, construction activities for this project "Drainage Improvement in Southern Lantau Investigation" included preparation works for construction activities in PNHR.

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.

Noise levels recorded during the monitoring period were within limits (non-compliance). Water quality monitoring was not carried out since only site clearing and construction preparation works have been conducted.

Ecologically, though no white-shouldered starling was recorded in the watching tower, there was no sign of disturbance from the project to the watching tower found, and 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.

Stockpile of excavated soil was found in the site area of PNH River during one of our inspection and contractor covered the stockpile with tarpaulin to prevent runoffs, as advised. In general, waste management was considered satisfactory. The contractor will implement proper waste management plan in the coming future.

The environmental pollution control measures provided by the Contractor were considered satisfactory.

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