

Contract No. : DC/2007/06
**River Improvement Works in Upper Lam Tsuen, She
Shan River and Upper Tai Po River**

ENVIRONMENTAL MONITORING AND AUDIT

MONTHLY EM&A REPORT of

UPPER TAI PO RIVER


for April 2010

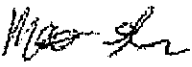
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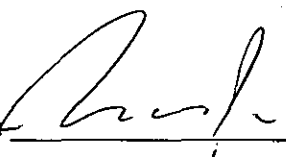
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Executive summary

This is the twentieth monthly Environmental Monitoring and Audit (EM&A) Report for the river improvement works at Upper Tai Po River under Drainage Services Department Contract No. DC/2007/06 entitled “River Improvement Works in Upper Lam Tsuen River, She Shan River and Tai Po River”. This report concludes the impact monitoring for the activities undertaken during the period from 1st April 2010 to 30th April 2010. The major site activities in this reporting month were mainly construction of footbridges, retaining walls and gabion walls. Removal of noise barriers, site clearance and evacuation of site equipments were then followed.

The Environmental Team (ET) is responsible for the EM&A works required in the EM&A manual. Site inspections were carried out on weekly basis to investigate and audit the equipment and work methodologies with respect to pollution control and environmental mitigation. The weekly inspections records and photos taken were kept.

The last ecological impact monitoring was carried out in January 2010 and the next ecological impact monitoring was arranged in July 2010. The summary of ecological site inspection findings and implementation status of environmental protection and mitigation for ecology, prepared by the Ecologist, are provided in table 6.2 and Appendix G respectively.

Environmental Team had carried out construction noise monitoring on weekly basis and no exceedance was found. Noise monitoring records for the reporting month and the data is presented in Section 4. The location plan and the graphical plots presenting the data are provided in Appendix D.

Piling works were not scheduled for this month. Therefore, no vibration monitoring was conducted by ET during the reporting month.

There was one non-compliance event recorded regarding pollution of river water due to mal-practice of site works on 19th April 2010. Details of findings, recommendation and outcome were shown in Section 6.2.

There was no breach of action and limit levels for this month.

There was one formal complaint recorded on 22 April 2010 regarding muddy effluent discharge from site activities to the river channel. For further details of the complaint please refer to Section 2.7 and Appendix J.

There was no reporting change for this month.

In accordance with the contractual requirements, no excavation works in river is allowed to be carried out during the wet season. Although major construction activities will be ceased, site condition should be still maintained well to minimize environmental impacts to the vicinity of sensitive receivers.

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

1.0 Introduction

This is the twentieth monthly Environmental Monitoring and Audit (EM&A) Report for the river improvement works at Upper Tai Po River under Drainage Services Department Contract No. DC/2007/06 entitled “River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River”. The site layout plan is shown in Figure 2.1. The Environmental Team, Environmental Pioneers & Solutions Limited appointed by Chiu Hing Construction and Transportation Company Limited, prepares the report. The report is to be submitted to the Contractor, the Engineer and the IEC.

This report presents the results of the environmental monitoring of the project activities for Upper Tai Po River conducted during the month of April 2010. This included regular site inspections once per week for verification of implementation of the mitigation measures as recommended in the Environmental Permit (EP-223/2005/A) (EP), EM&A Manual and the Contractor’s Environmental Management Plan (EMP).

2.0 Environmental status

2.1 Project area

The location of the project site – Upper Tai Po River starting from Ta Tit Yan of Yai Mo Shan, the Upper Tai Po River flows from southeast to northeast alongside Wilson Trail, turning northward before joining the Lam Tsuen River and then runs towards Tai Po Market. To the east of the river, there are active and abandoned cultivated lands. While the village settlements are mainly located on the west and northeast side of the river bank, where the San Uk Ka and Lai Chi Shan establishment also lie. The Project site is indicated in **Figure 2.1**.

2.2 Construction programme

Approximately 0.6km of Upper Tai Po River will be improved to enhance the hydraulic performance of the river. The improvement works comprise the following:

- (1) Re-profiling and realignment of the Channel;
- (2) Inclusion of gabions and retaining wall for bank protection whilst providing a natural channel bed; and
- (3) Re-provisioning of footbridges and footpaths along the channel

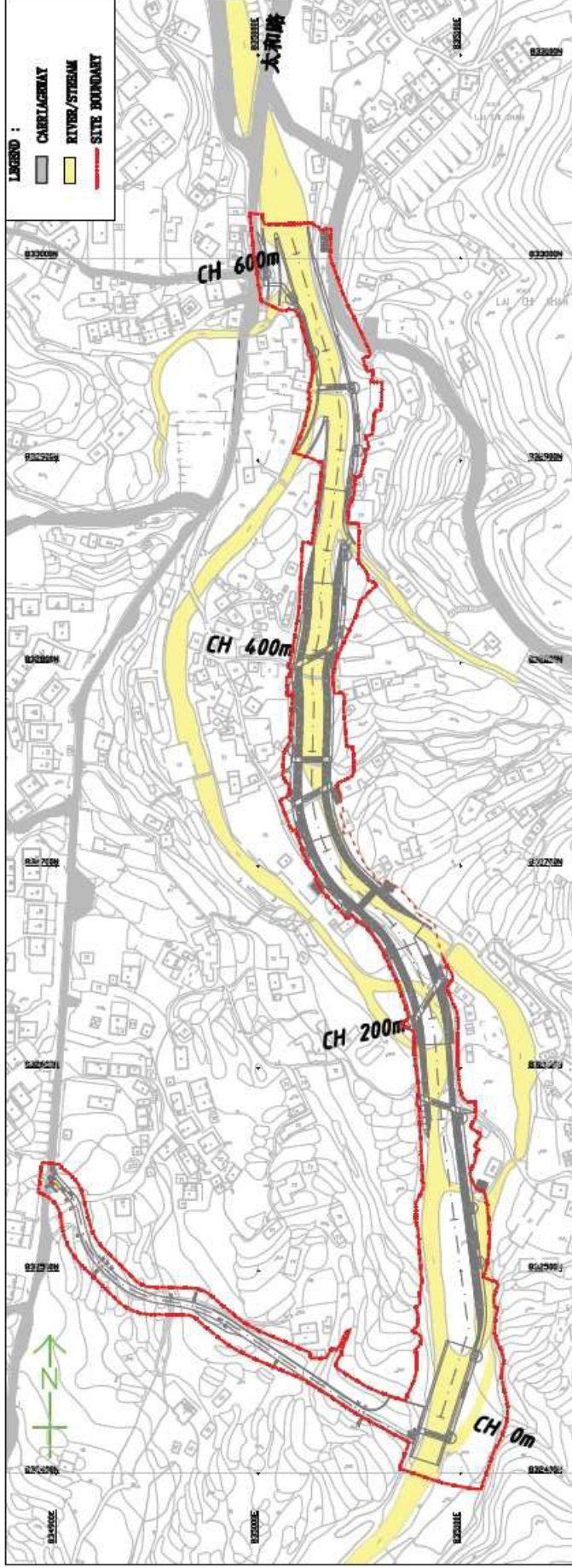
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in April 2011.

2.3 Proposed construction sequences

The proposed construction sequence is shown in the following sequences:

- (1) Site clearance and preparation works
- (2) Construction of the maintenance access which involves the construction of retaining walls
- (3) River channel construction and excavation, involving the excavation works, construction of retaining walls and gabion walls
- (4) Re-provisioning of footbridges
- (5) Construction of footpaths
- (6) Landscaping works

Fig 2.1 Layout of construction area



Upper Tai Po River

2.4 Construction activities for the reporting period

Major construction activities carried out by the contractor during the reporting month include:

- (1) Finishing works for footbridges
- (2) Construction of land-based retaining walls
- (3) Construction of land-based gabion walls
- (4) Removal of noise barriers
- (5) Site clearance and equipments evacuation

2.5 Construction activities for the next reporting period

According to the contractual requirement excavation activity was not allowed to be carried out during wet season. Therefore, river-based construction activities were ceased and no major construction activities will be carried out.

2.6 Non-compliance with the environmental performance limits

There was no non-compliance with the environmental performance limits for this reporting month. The event and action plan for Ecology is shown in Appendix A. The action and limit level for Noise is shown in Appendix B. The reference standards for vibration are shown in Appendix C.

2.7 Summary of complaints

There was one formal complaint recorded in this reporting month. A complaint regarding muddy effluent discharge from the project site was referred by EPD on 21st April 2010. ET was informed by the Resident Engineer (RE) on 22nd April 2010 about the complaint. Before the referral of the complaint a non-compliance event was identified on 19th April 2010 for mal-practice of site water discharge from the work site. As such, Contractor was requested to implement necessary corrective action and mitigation measures to stop further deterioration of river water quality.

To check the site condition and implementation of corrective actions and mitigation measures, three site investigations were conducted by ET on 21st, 23rd and 28th April 2010 respectively. The complaint investigation report and the complaint log with details of findings, recommendation and outcome were prepared and attached in Appendix J for information.

Totally, seven complaints had been received since the commencement of this project. The cumulative complaint log is shown in the Appendix F.

3.0 Ecological monitoring results

There was no ecological impact monitoring or capture survey scheduled within this reporting month and the upcoming month.

4.0 Noise monitoring results

In accordance with the EM&A Manual, monitoring locations were established at 11 N.S.R. locations. The description of all 11 N.S.R. are shown in Table 4.1.

TABLE 4.1 Description of Noise Sensitive Receivers

Sensitive Receiver No.	Location and Description
UTP1	54B, Sheung Wun Yiu
UTP2	Village House in Lai Chi Shan
UTP3	Village House near Upper Tai Po River
UTP4	Village House near Upper Tai Po River
UTP5	Village House near Upper Tai Po River
UTP6	Village House near Upper Tai Po River
UTP7	Village House near Upper Tai Po River
UTP8	Village House near Upper Tai Po River
UTP9	49A, Pun Shan Chau
UTP10	Village House near the proposed access road
UTP11	49G, San Uk Ka

Noise monitoring was carried out by the Environmental Team on weekly basis for this reporting month on 1st, 9th, 16th, 23rd, 30th April 2010.

Measured $L_{eq(30min)}$ results ranged from 47.0dB(A) to 74.0dB(A). And therefore, no exceedance was recorded within the reporting period.

For further details of the monitoring results, graphical plots and the location plan, please refer to the Appendix D.

5.0 Vibration monitoring results

There was no vibration monitoring results for this reporting month. Vibration monitoring will be started once the piling works start in Upper Tai Po River.

6.0 Environmental issues and actions

6.1 Site inspections and key environmental issues

Site inspections were undertaken routinely to inspect the construction activities in Upper Tai Po River to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. Implementation status of environmental protection and mitigation measures is shown in Appendix G.

Within this reporting month, site inspections were conducted on 7th, 14th, 19th, 21st, 23rd and 28th April 2010. A detailed checklist of each site inspection together with comments and relevant photos have been filed and kept. The findings from inspection were summarized in Table 6.1.

Ecological inspections by the Ecologist Dr. Mark Shea were carried out on 1st, 10th, 19th and 26th April 2010. Details of findings were summarized in Table 6.2.

Table 6.1 Summary results of site inspections findings

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
03 & 17 Mar 2010	Surface of Haul access D was found stained with oil leaked from idling roller	Observation	Contractor was requested to collect the contaminated soil and handled as chemical wastes for storage and disposal	Contractor took the advice and collect the contaminated soil prior to the inspection on 07 Apr.	07 Apr 2010	--
31 Mar 2010	Open stockpile of earth material was observed at the haul access D	Observation	Contractor was advised to provide tarpaulin coverings to the concerned stockpile as to prevent erosion and dust generation	As follow up action, the concerned earthy stockpile was compacted prior to the inspection on 28 Apr	28 Apr 2010	--
31 Mar 2010	The new formed diversion channel for river water at ch.50 was in unsatisfactory condition	Observation	Contractor was advised to provide proper bund walls and barriers at both sides of the diversion channel to prevent surface runoff and erosion from surround bare earth surface	Prior to the inspection on 07 Apr, the concerned diversion channel has been reformed. No site water seepage and runoff were observed at the concerned area.	07 Apr 2010	--
7 & 14 Apr 2010	Earth material was found stockpiled on the edge of haul access at approximate ch.300	Observation	Contractor was advised to relocate the concerned stockpile away from the river channel to prevent grit and soil from runoff	The earth materials were being removed from the concerned site area as backfilling materials during inspection on 28 Apr.	28 Apr 2010	--
19 & 21 Apr 2010	As reported by RE, Mal-practice of site water discharge at site ch.165 caused pollution to the river channel consecutively since 17 Apr	Non-compliance	Contractor was requested to provide proper silt removal facilities for muddy water arisen from construction works. Proper bund walls with geo-textile coverings should be provided to prevent site water seepage and runoff from entering into the river channel.	Site water was diverted to de-stilting then to the site ground for soak-away. Geo-textile coverings were provided to the earth bunds, temporary weir and junction that connecting with the river channel. No further seepage and discharge of site water were observed during inspection on 28 Apr	28 Apr 2010	--
28 Apr 2010	No particular findings	N/A	N/A	N/A	N/A	--

The summary of ecological inspection prepared by the Ecologist, Dr. Mark Shea is shown in Table 6.2.

Date	Observations	Advice from Ecologist	Action Taken	Closing Date
01 Apr 2010	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
10 Apr 2010	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
19 Apr 2010	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
26 Apr 2010	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A

6.2 Non-compliance

A non-compliance regarding mal-practice of muddy effluent discharge was recorded on 19th April 2010.

RE formally informed ET about substantial amount of muddy water was leaked consecutively from Contractor's work site at approximate ch.165 of Upper Tai Po River since 17th April 2010. Site water leakage caused pollution to the downstream area and Contractor was requested to implement corrective actions immediately.

To further check the condition of the concerned site and effectiveness of mitigation measures implemented. ET conducted a site investigation on 21st April 2010 and findings showed excavation activities were being carried out at site ch.165. As corrective actions, site water was diverted to a de-silting tank then to the site ground for soak-away. The temporary weir structure formed by Contractor, which connecting with the river channel, was covered with geo-textile materials to prevent seepage of muddy water to the river channel. As the river water was still observed to be turbid. Contractor was advised to pay serious attention to the effectiveness of mitigation measures implemented.

As a follow up investigation, ET has conducted another investigations on 23rd and 28th April 2010 respectively. No further direct discharge or seepage of site water was observed from the excavated site at ch.165. As reported by contractor the site will be backfilled with earth material and therefore accumulation of site water would be minimized. Water quality of the river channel was improved comparing with those observed from previous investigation.

6.3 Recommendations

Site water control was the main environmental concern found during the reporting period. To meet relevant requirements from the Water Pollution Control Ordinance (WPCO) and wastewater discharge license applied for the project. Prior to discharge to designate discharge point site water should be well treated by proper treatment facilities. Proper bund walls should be provided for work site where excavation was proposed to be carried out. Contractor should also well manage the temporary drainage system on site for site water diversion as to avoid any runoff and muddy effluent from entering into the public drainage and river channel.

6.4 Implementation status and effectiveness of the mitigation measures

Refer the previous table 6.1, contractor has implemented mitigation measures to address those problems as advised by ER, IEC and ET. Some of the measures taken by the contractor were considered as effective to minimize negative impact to the environment. Ongoing investigation will be carried out to observe performance and effectiveness of those measures. Outstanding environmental items will be inspected in the follow month.

As there were some ongoing follow up practices, contractor was reminded to regularly review and rectify the discrepancy once found and maintain good site condition.

7.0 Waste management status

It is the contractor's responsibility to ensure that all wastes produced during 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 general reuse are recommended to be audited to ensure that proper storage, transportation and disposal practices are being implemented.

Table 7.1 is the Waste Disposal recorded by the Contractor in this month.

Table 7.1 Summary of Waste Disposal for the reporting month

Type of waste	Inert Waste	Non-Inert Waste	Chemical Waste
April 2010	0	0	0

The cumulative waste flow table is shown in Appendix H.

8.0 Status of environmental licensing and permit

This project requires different permits and licenses to be run legally. **Table 8.1** is the summary of permits/ licenses for this project.

Table 8.1 Summary of Environmental Licensing and Permit Status

Description	License / Permit No.	Date of Issue	Date of Expiry	Remarks
Environmental Permit	EP-223/2005	31 st Aug, 2005	N/A	Superseded
Amended Environmental Permit	EP-223/2005/A	18 th Nov, 2008	N/A	Issued
Construction Noise Permit	N/A	N/A	N/A	N/A
Effluent Discharge License	3678	14 th Mar, 2008	31 st Mar, 2013	Issued
Registration as a Chemical Waste Producer	5213-724-C3251-03	19 th Dec, 2007	Not applicable	Issued
Billing Account for Disposal of Construction Waste	7006101	N/A	N/A	N/A

9.0 Future key issues

Contractor proposed to cease major site activity during the upcoming wet season. But, contractor was still recommended to maintain good site condition as to minimize environmental impacts.

Bared soil surfaces should be avoided to prevent erosion and soil runoff from causing water quality impact. Hydroseeding and/or provisioning of tarpaulin coverings should be implemented as far as practicable.

10.0 Conclusion

Major site activities carried out by the Contractor in this reporting period included finishing works for footbridges, construction of land-based retaining walls and gabion wall and removal of noise barriers.

Regular site meetings and inspection audits led by the seniors for discussing environmental issues were held among project proponent, Contractor and the ET on weekly basis.

Environmental Team had carried out construction noise monitoring on weekly basis. All results obtained were within limit and therefore no exceedance was recorded in this reporting month.

Piling works were not scheduled for this month. Therefore, no vibration monitoring was conducted during the reporting month.

From the summary of ecological site inspection findings and implementation status of environmental protection and mitigation for ecology, prepared by the Ecologist Dr. Mark Shea, there is no abnormal finding observed in the reporting month. The ecologist has no further advice and no action suggested to the contractor.

A non-compliance regarding consecutive site water leakage was identified within the reporting. Corrective actions were taken by the Contractor as recommended. Contractor was advised to pay serious attention on not arising water quality impact to the river channel in the future.

A formal complaint regarding muddy effluent discharge from site was recorded on 21st April 2010. The complaint was logged and detailed complaint log as well as investigation report please refer to Appendix J

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: Event and action plan for ecology

Event and action plan for ecology

In the event of non-compliance, the Event / Action plan prepared by the ecologist shall be followed. Detailed Event/ Action plan was shown in **Appendix Table 1** for reference.

It is not proposed to set population size of the three species (i.e. Three-lined Chinese Stream Catfish, Predaceous and the Hong Kong Newt) or other faunal species for the Action Level and Limit Level in the revised EM&A manual in considering the following reasons:

- I. The schedule capture surveys would let to decrease in the populations of the target species; and
- II. The planned drainage works would also temporally de-fauna the stream habitat.

It is considered logical and appropriate to audit non-compliance events in relation with ecological mitigation measures, which were specified in the EP and the PS of the project.

APPENDIX TABLE 1 Event / Action plan table for Ecology

Event	Action			
	ET	ER	IEC	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify Source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures, 4. Advise the Contractor on effectiveness of proposed remedial measures 5. Check implementation of remedial measures 	<ol style="list-style-type: none"> 1. Ensure Remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non conformity	<ol style="list-style-type: none"> 1. Identify Source 2. Inform the IEC and the ER 3. Increase monitoring frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check monitoring report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the Contractor on effectiveness of proposed remedial measures 5. Check implementation of remedial measures 	<ol style="list-style-type: none"> 1. Ensure Remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake any necessary replacement

Appendix B: Action and limit level for construction noise

The Action and Limit levels for construction noise are defined in **Appendix Table 2**

Appendix Table 2: Action and Limit Levels for Construction Noise

Time Period	Action	Limit
0700 – 1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)*
0700 – 2300hrs on holidays; and 1900 – 2300 hrs on all other days		Subject to the control of Noise Control Ordinance
2300 – 0700 hrs of next day		Subject to the control of Noise Control Ordinance

*Limit level set in accordance with Particular Specification Section 26

Appendix C: Reference standards for vibration

Guidance regarding vibration limits is provided by the following British Standards (or their equivalent ISO standards):

BS 7385 - Measurement and evaluation of vibration in buildings. Part 2: Guide to damage levels from ground borne vibration.

BS 7385 suggests vibration levels, below which damage is unlikely to occur in 95% of buildings. For cosmetic damage, the level is 15 mm/s at 4 Hz, increasing to 20 mm/s at 15 Hz, increasing to 50 mm/s at 40 Hz and above. Minor structural damage is possible at vibration levels twice those given above, major damage at four times the levels given.

Appendix Table 3: Transient vibration guide values for cosmetic building damage (BS7385:Part 2 1993)

	Type of Building	Peak component particle velocity (mm/s) in frequency range of predominant pulse
1	Reinforced or framed structures	50 at 4 Hz and above
2	Un-reinforced or light framed structures	15 at 4 Hz, increasing to 20 at 15 Hz, increasing to 50 at 40 Hz and above.

The vibration magnitudes and frequencies refer to Peak Particle Velocities (PPV) occurring in any single direction, measured on the ground level of the building concerned.

Appendix D: Noise monitoring results, graphical plots and location plan

Location	L ₉₀ 30min	L ₁₀ 30min	Leq 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	54.1	71.5	68.0	1-Apr-10	15:20-15:50	Boulder breaking	Background noise from traffic	Sunny	Façade
UTP 2	54.3	70.1	66.9	1-Apr-10	15:57-16:27	Boulder breaking	Background noise from traffic	Sunny	Façade
UTP 3	56.6	78.8	74.0	1-Apr-10	14:42-15:12	Boulder breaking	N/A	Sunny	Façade
UTP 4	51.6	61.6	58.5	1-Apr-10	13:34-14:04	Boulder movement and excavation	N/A	Sunny	Façade
UTP 5	57.1	76.4	73.2	1-Apr-10	13:00-13:30	Boulder movement and operation of backhoe	N/A	Sunny	Façade
UTP 6	49.8	62.2	59.2	1-Apr-10	14:08-14:38	Boulder movement and operation of backhoe	N/A	Sunny	Façade
UTP 7	43.7	61.3	57.4	1-Apr-10	11:17-11:47	Boulder movement and operation of backhoe	N/A	Sunny	Façade
UTP 8	44.5	60.5	58.7	1-Apr-10	10:44-11:14	Boulder movement and operation of backhoe	N/A	Sunny	Façade
UTP 9	41.4	55.7	54.4	1-Apr-10	10:09-10:39	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 10	42.2	53.4	51.8	1-Apr-10	09:31-10:01	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 11	43.7	55.7	55.2	1-Apr-10	08:58-09:28	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	*Freefield

Note*: An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

Location	L ₉₀ 30min	L ₁₀ 30min	Leq 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	53.4	71.0	68.3	9-Apr-10	11:01-11:31	Boulder breaking	Background noise from traffic	Cloudy	Façade
UTP 2	51.3	68.8	65.6	9-Apr-10	10:24-10:54	Boulder breaking	Background noise from traffic	Cloudy	Façade
UTP 3	59.1	78.4	69.4	9-Apr-10	15:07-15:37	Boulder breaking	N/A	Cloudy	Façade
UTP 4	43.4	57.0	55.2	9-Apr-10	15:44-16:14	Boulder movement	N/A	Cloudy	Façade
UTP 5	53.8	65.7	63.0	9-Apr-10	14:05-14:35	Boulder movement	N/A	Cloudy	Façade
UTP 6	49.4	63.8	61.4	9-Apr-10	13:32-14:02	Boulder movement	N/A	Cloudy	Façade
UTP 7	41.8	54.0	53.4	9-Apr-10	16:19-16:39	Operation of backhoe	N/A	Cloudy	Façade
UTP 8	49.0	55.9	54.6	9-Apr-10	13:00-13:30	Operation of backhoe	N/A	Cloudy	Façade
UTP 9	42.5	54.1	53.0	9-Apr-10	10:02-10:32	Operation of backhoe	N/A	Cloudy	Façade
UTP 10	40.2	54.7	54.3	9-Apr-10	09:25-09:55	Operation of backhoe	N/A	Cloudy	Façade
UTP 11	43.7	54.7	54.6	9-Apr-10	08:50-09:20	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Cloudy	*Freefield

Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

Location	L ₉₀ 30min	L ₁₀ 30min	Leq 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	51.4	65.8	61.7	16-Apr-10	15:57-16:27	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Background noise from traffic	Cloudy	Façade
UTP 2	52.8	66.7	65.5	16-Apr-10	15:18-15:48	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Background noise from traffic	Cloudy	Façade
UTP 3	61.3	63.8	63.0	16-Apr-10	14:43-15:13	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Cloudy	Façade
UTP 4	45.5	58.3	56.9	16-Apr-10	11:15-11:45	Boulder movement and excavation	N/A	Cloudy	Façade
UTP 5	56.8	73.3	72.8	16-Apr-10	14:08-14:38	Boulder movement and excavation	N/A	Cloudy	Façade
UTP 6	50.7	66.9	63.5	16-Apr-10	13:35-14:05	Boulder movement and excavation	N/A	Cloudy	Façade
UTP 7	41.3	55.0	54.3	16-Apr-10	13:01-13:31	Boulder movement and excavation	N/A	Cloudy	Façade
UTP 8	40.4	53.4	51.8	16-Apr-10	10:40-11:10	Boulder movement and excavation	N/A	Cloudy	Façade
UTP 9	43.3	57.3	56.4	16-Apr-10	10:07-10:37	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Cloudy	Façade
UTP 10	40.6	51.4	51.6	16-Apr-10	09:28-09:58	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Cloudy	Façade
UTP 11	44.7	56.2	56.2	16-Apr-10	08:54-09:24	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Cloudy	*Freefield

Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

Location	L ₉₀ 30min	L ₁₀ 30min	Leq 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	55.4	70.1	67.4	23-Apr-10	15:57-16:27	Boulder breaking	N/A	Sunny	Façade
UTP 2	57.9	80.4	74.0	23-Apr-10	15:22-15:52	Boulder breaking	N/A	Sunny	Façade
UTP 3	58.8	79.6	73.7	23-Apr-10	14:44-15:14	Boulder breaking	N/A	Sunny	Façade
UTP 4	44.6	58.7	56.9	23-Apr-10	15:18-15:48	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 5	45.9	59.2	56.7	23-Apr-10	14:07-14:37	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 6	45.9	59.9	57.0	23-Apr-10	13:32-14:04	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Innovation works from the village house (Drilling)	Sunny	Façade
UTP 7	43.1	56.3	53.7	23-Apr-10	10:49-11:19	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 8	50.2	60.9	58.0	23-Apr-10	13:00-13:30	Excavation works by Backhoe	N/A	Sunny	Façade
UTP 9	51.1	65.6	63.7	23-Apr-10	10:17-10:47	Excavation works by Backhoe	N/A	Sunny	Façade
UTP 10	42.0	51.7	52.0	23-Apr-10	09:36-10:06	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 11	43.3	54.6	54.4	23-Apr-10	09:03-09:33	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	*Freefield

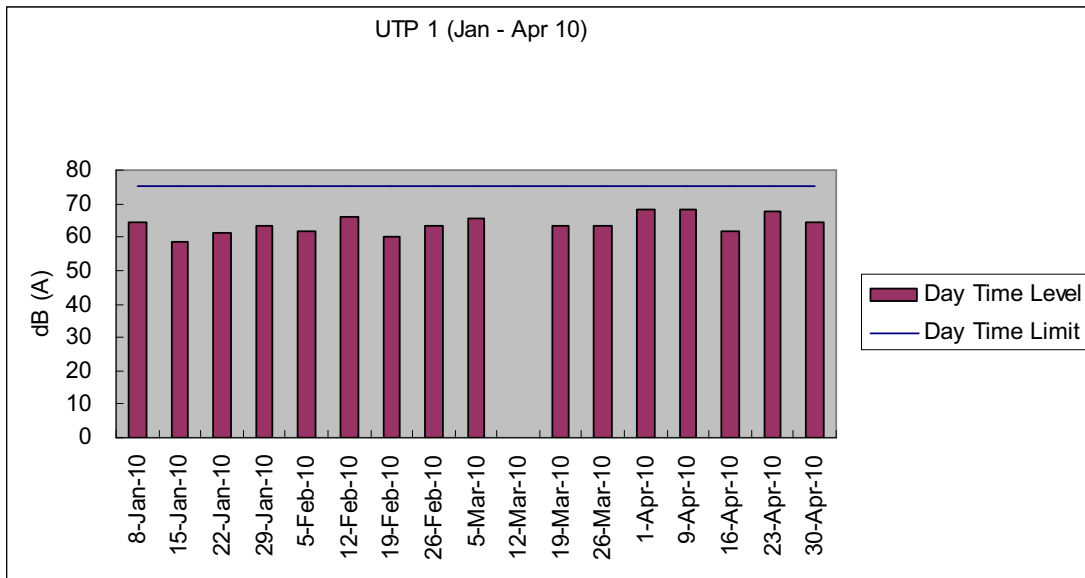
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

Location	L ₉₀ 30min	L ₁₀ 30min	Leq 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	53.6	66.0	64.6	30-Apr-10	14:07-14:37	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Background noise from traffic	Sunny	Façade
UTP 2	47.8	59.0	57.1	30-Apr-10	13:00-13:30	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Background noise from traffic	Sunny	Façade
UTP 3	64.0	65.4	64.6	30-Apr-10	13:35-14:05	Operation of Backhoe	N/A	Sunny	Façade
UTP 4	43.7	53.3	52.8	30-Apr-10	15:54-16:24	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 5	41.1	49.0	47.0	30-Apr-10	15:22-15:52	Housekeeping works	N/A	Sunny	Façade
UTP 6	46.6	59.2	57.5	30-Apr-10	11:15-11:45	Operation of Backhoe	N/A	Sunny	Façade
UTP 7	48.2	55.6	53.5	30-Apr-10	14:48-15:18	Operation of Backhoe	N/A	Sunny	Façade
UTP 8	50.0	54.7	52.7	30-Apr-10	10:43-11:13	No construction was being carried out during measurement	N/A	Sunny	Façade
UTP 9	42.2	52.2	49.3	30-Apr-10	10:10-10:40	Housekeeping works	N/A	Sunny	Façade
UTP 10	41.4	49.2	47.3	30-Apr-10	09:32-10:02	No construction was being carried out during measurement	N/A	Sunny	Façade
UTP 11	43.4	51.1	49.3	30-Apr-10	08:58-09:29	No construction was being carried out during measurement	N/A	Sunny	*Freefield

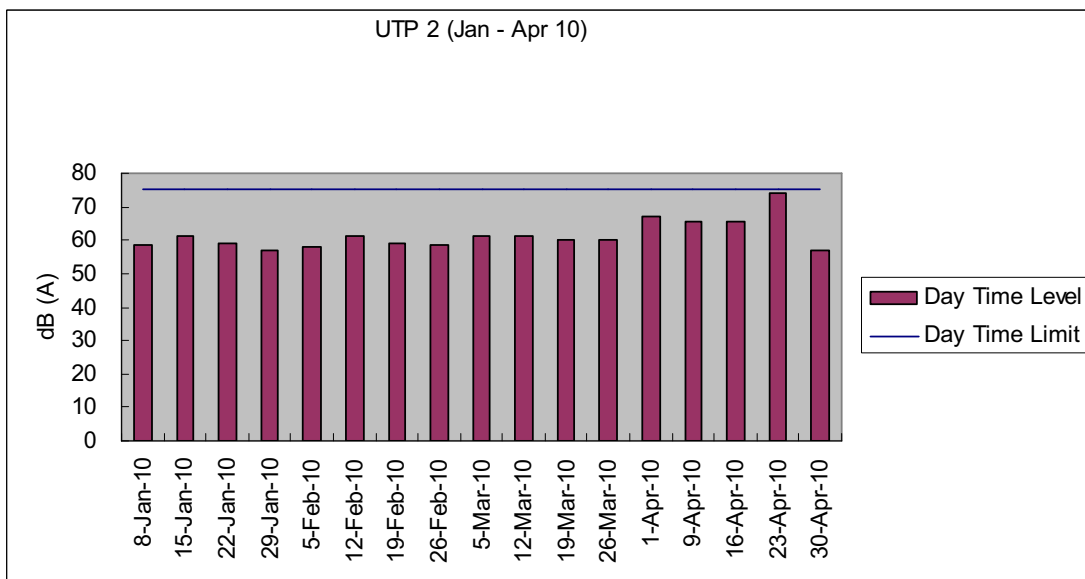
Note*: An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

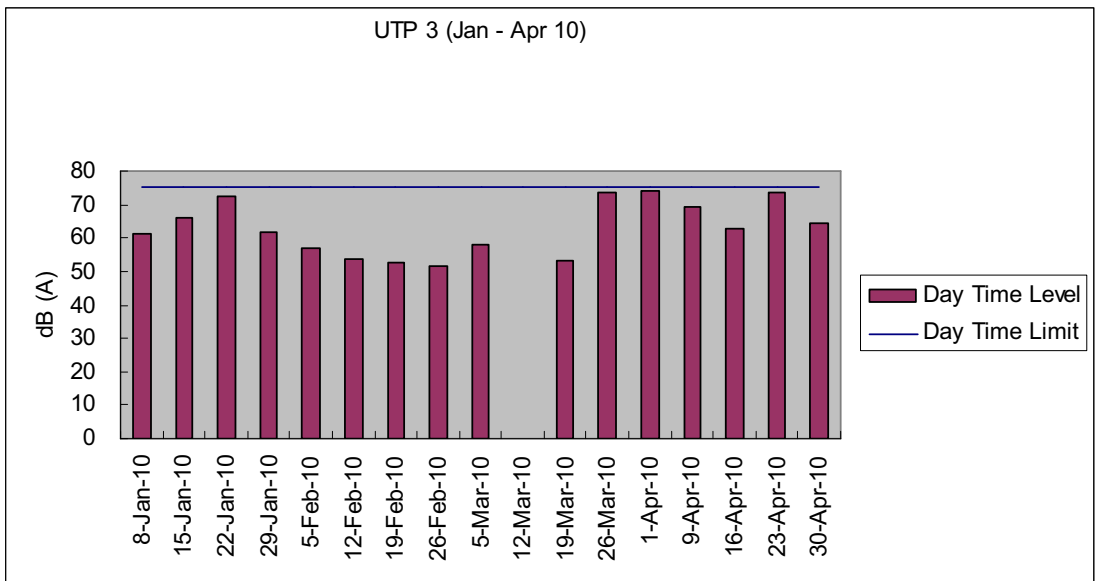
Graphical plot for noise measurements

The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from January 2010 to April 2010.

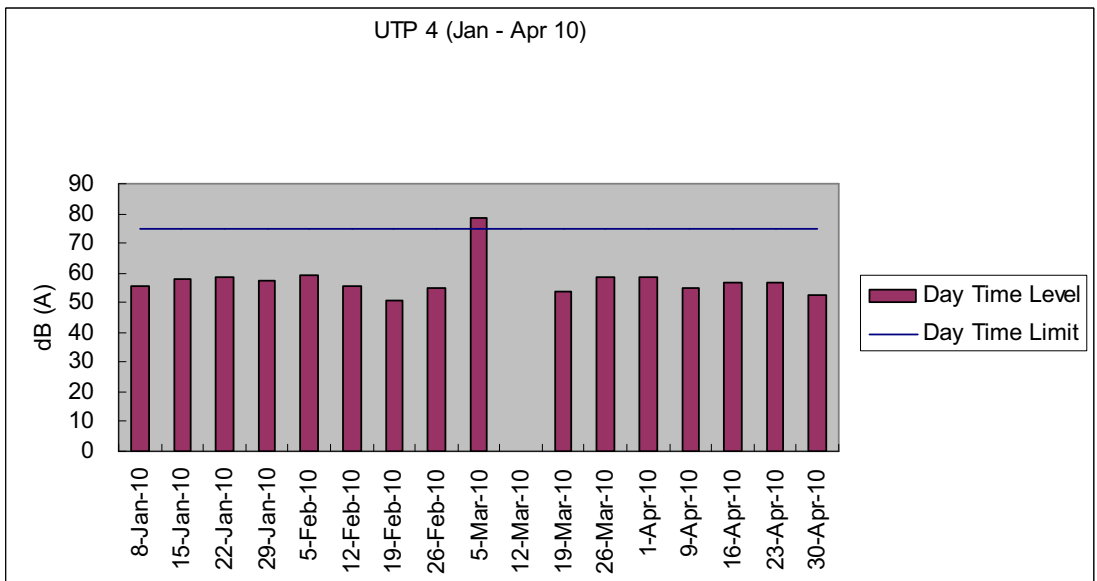


Noise monitoring for 12th March 2010 was cancelled due to heavy rain

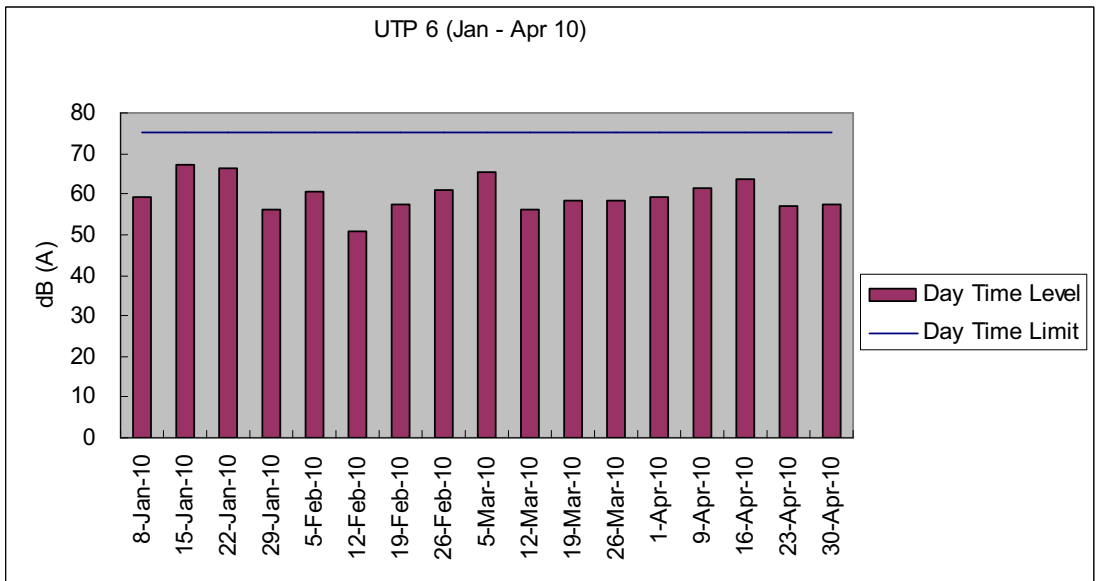
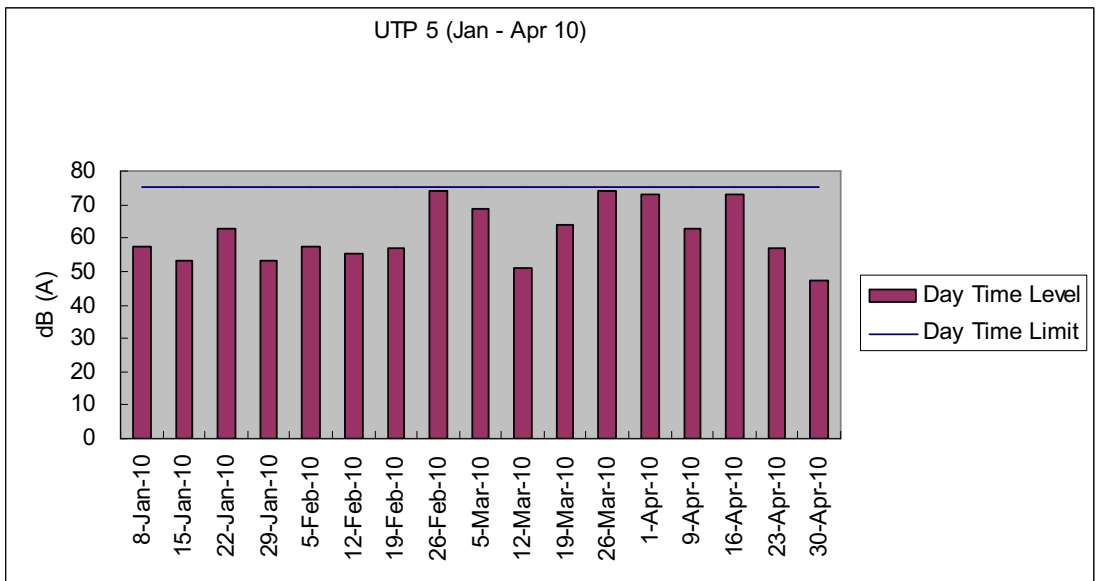


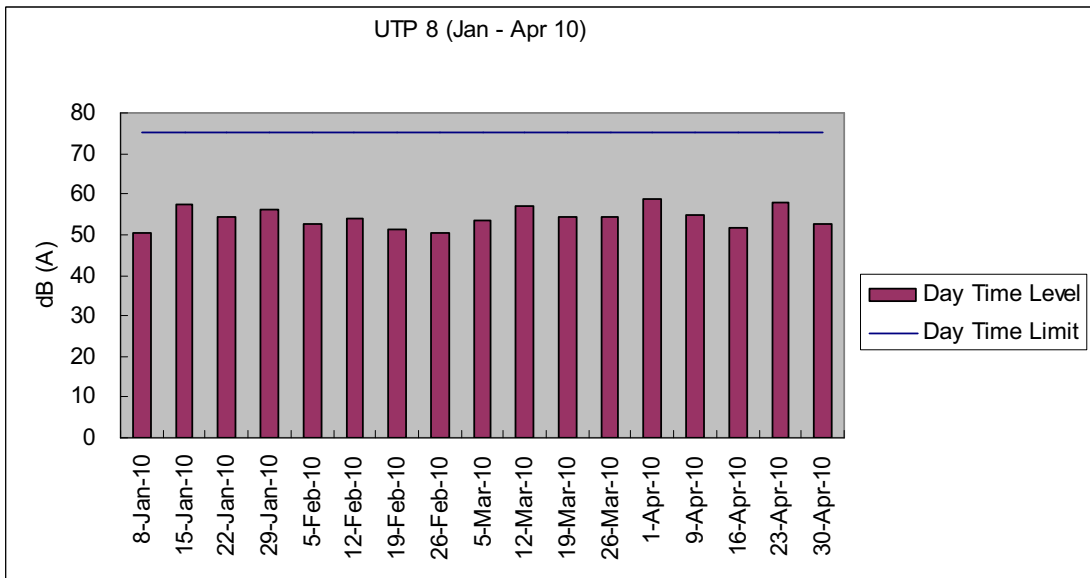
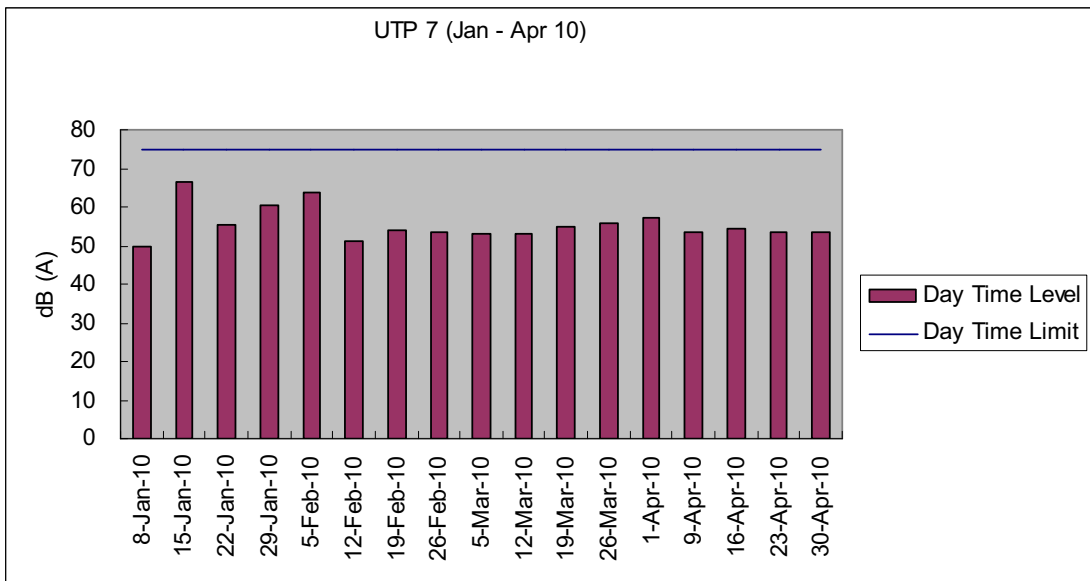


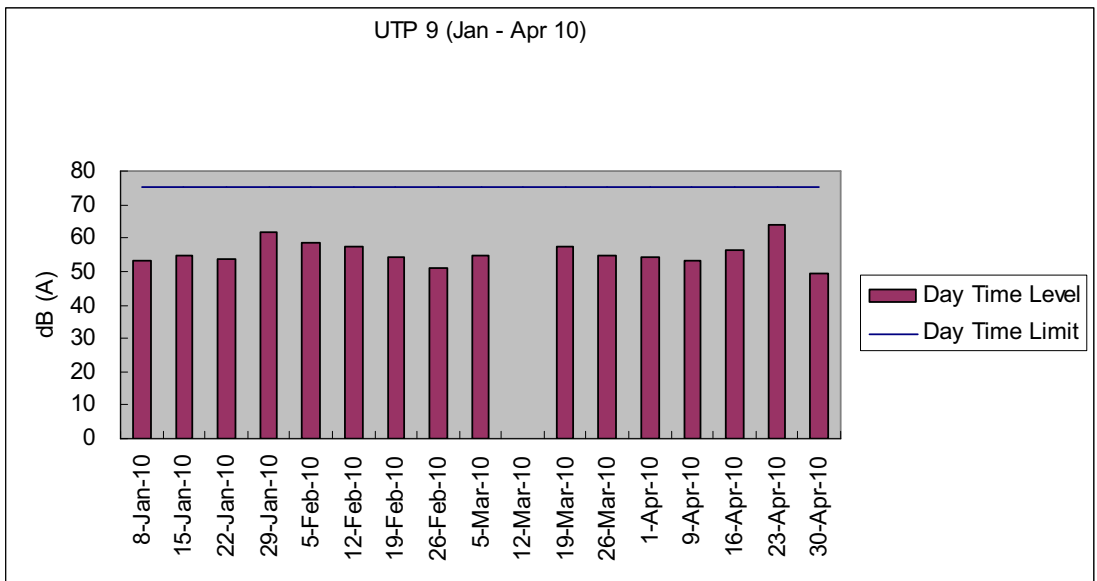
Noise monitoring for 12th March 2010 was cancelled due to heavy rain



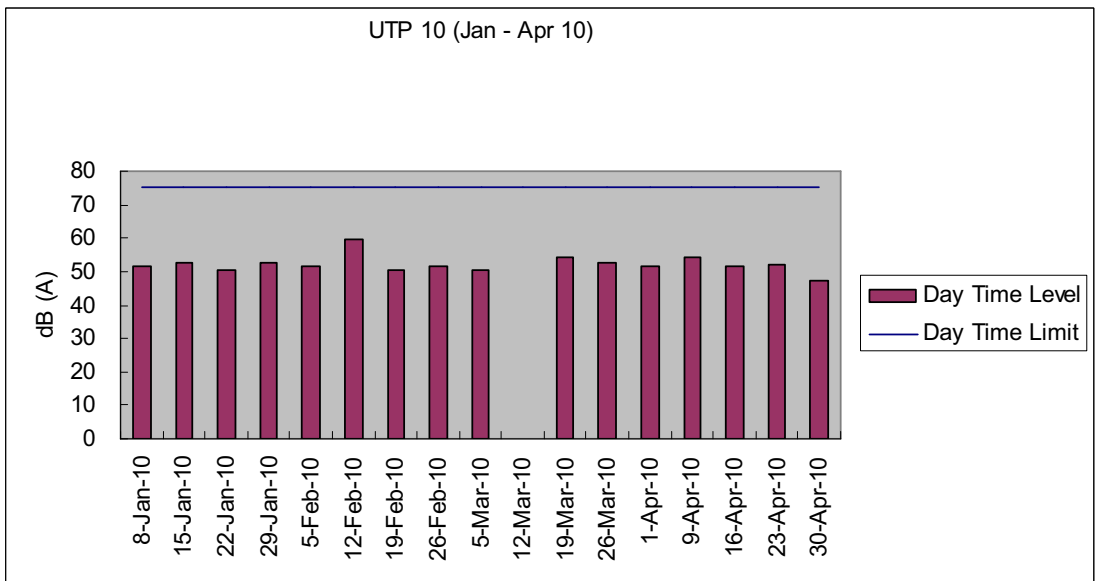
Noise monitoring for 12th March 2010 was cancelled due to heavy rain



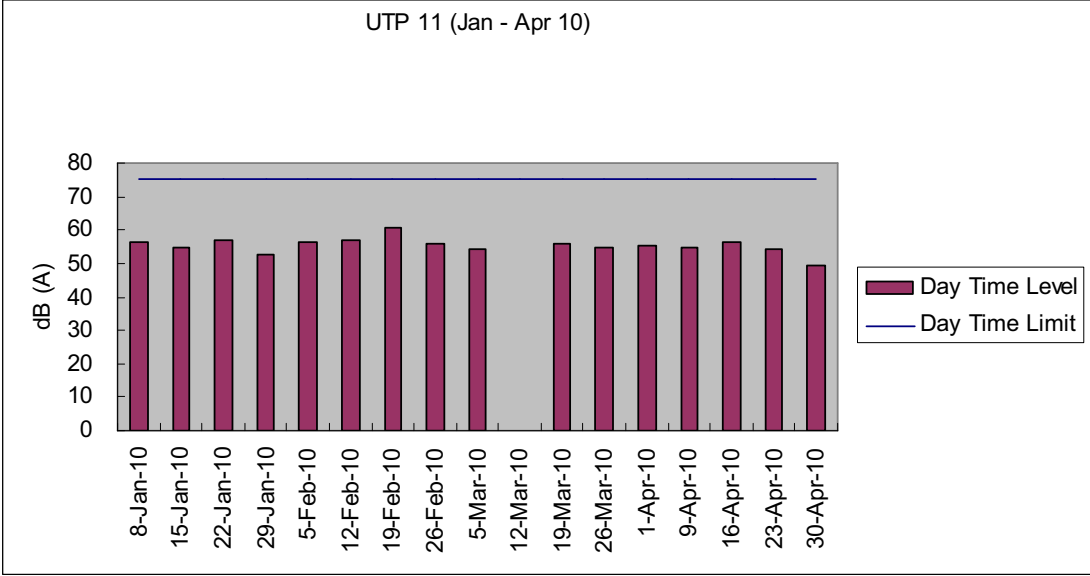




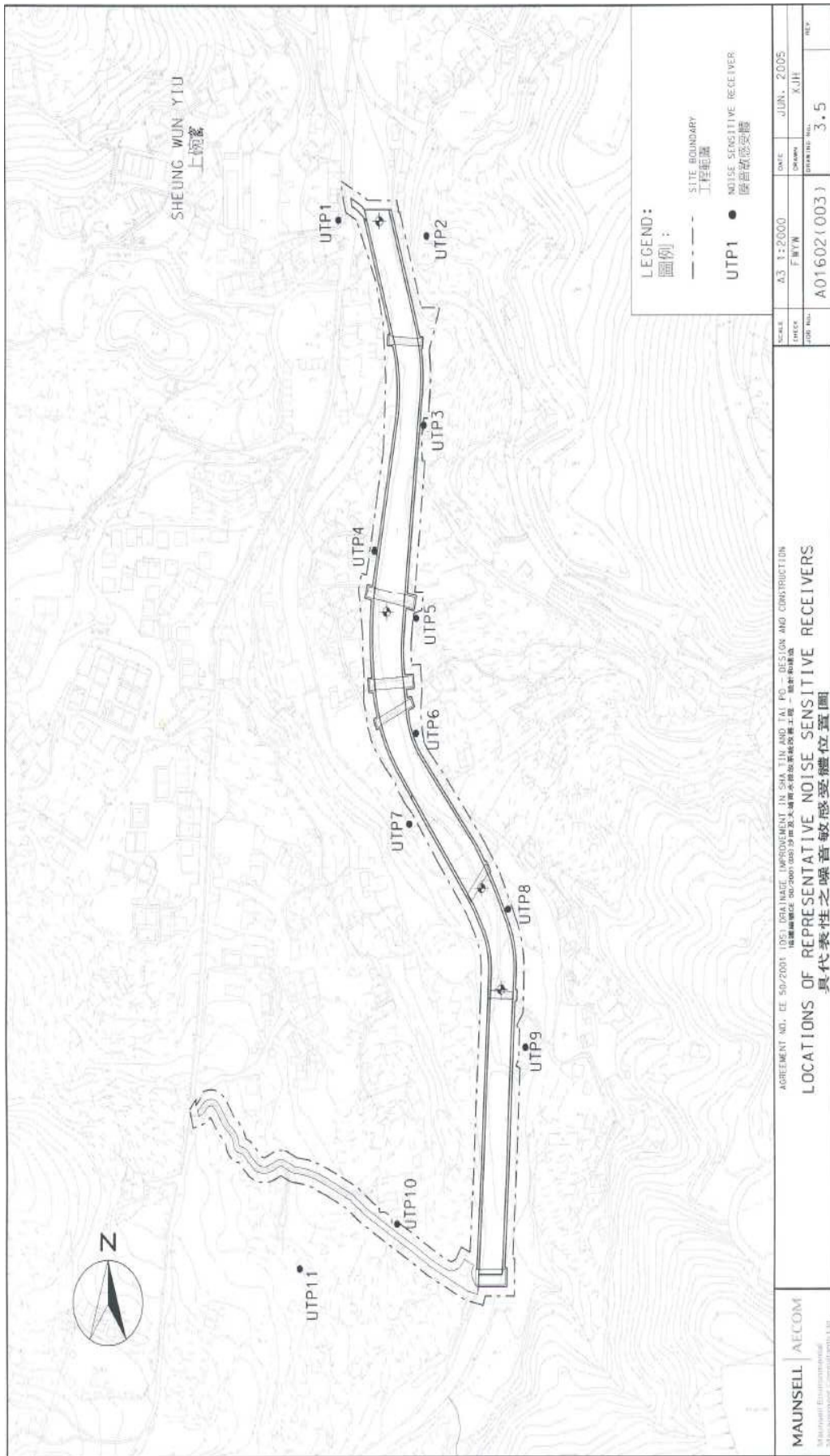
Noise monitoring for 12th March 2010 was cancelled due to heavy rain



Noise monitoring for 12th March 2010 was cancelled due to heavy rain



Noise monitoring for 12th March 2010 was cancelled due to heavy rain



Appendix E: Monitoring schedule for the present and next reporting period

Master Schedule of EM&A works in April 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01/04	02/04	03/04
			Site inspection at afternoon	Noise monitoring		
04/04	05/04	06/04	07/04	08/04	09/04	10/04
			Site inspection at afternoon		Noise monitoring	
11/04	12/04	13/04	14/04	15/04	16/04	17/04
			Site inspection at afternoon		Noise monitoring	
18/04	19/04	20/04	21/04	22/04	23/04	24/04
	Ad-hoc inspection		Site inspection and SSEMC at morning		Ad-hoc inspection and Noise monitoring	
25/04	26/04	27/04	28/04	29/04	30/04	
			Site inspection at afternoon		Noise monitoring	

Master Schedule of EM&A works in May 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
02/05	03/05	04/05	05/05	06/05	07/05	08/05
			Site inspection at afternoon		Noise monitoring	
09/05	10/05	11/05	12/05	13/05	14/05	15/05
			Site inspection at afternoon		Noise monitoring	
16/05	17/05	18/05	19/05	20/05	21/05	22/05
			Site inspection at afternoon	Noise monitoring		
23/05	24/05	25/05	26/05	27/05	28/05	29/05
			Site inspection and SSEMC at morning		Noise monitoring	
30/05	31/05					01/05

Appendix F: Cumulative complaint log

Environmental Parameters	Cumulative no. Brought forward	No. of complaint April 2010	Overall Total
Air/Dust	1	0	1
Noise	2	0	2
Water	3	1	4
House Keeping Hygiene	0	0	0
Chemical waste	0	0	0
Total	6	1	7

* ET received a public enquiry referred by EPD, regarding river water quality and loss of vegetation within construction site, on 3rd July 2009.

Appendix G: Implementation status of environmental protection and mitigation measures

Implementation status of environmental protection and mitigation

Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Construction Noise	No percussive piling shall be carried out	Implemented	Not required
	-Use well maintained construction plant	Implemented	Not required
	-Shut down plants between work periods	Implemented	Not required
	-Install silencers on construction equipment	Implemented	Not required
	-Locate mobile plant far away from NSRs	Implemented	Not required
	-Quiet plants should be used	Implemented	Not required
	-2m high temporary noise barriers, as stipulated in EP condition 2.9, shall be installed	Implemented	Not required
Fugitive Dust Emission	-Implement regular watering and vehicle washing facilities	Improvement required	Rectified
	-Cover excavated or stockpile of dusty material by impervious sheeting or sprayed with water	Improvement required	Ongoing
	-Use tarpaulin to cover dusty materials on vehicles	Implemented	Not required
Water Quality	Excavation works within the Tai Po River within the Project shall be carried out in stages and excavation area for each stage shall be limited to section of half width of the channel and less than 100m long at any one time in order to maintain water flow within the river during construction stage	Non-compliance recorded on 19 Apr 10	Settled on 28 Apr 10
	Land-based plant shall be employed and site run-off shall be directed towards regularly cleaned and maintained silt traps and oil / grease separators to minimize leakage and loss of sediments during excavation	Implemented	Not required
	Large boulders removed from the Tai Po River within the Project during excavation shall be re-instated upon completion of works A section of 150m long natural riverbank on the western side of the river channel (Ch0 –Ch150) shall be retained	Implemented	Not required
	The excavation area shall be enclosed with bunds or barriers and dewatered prior to excavation to minimize the impacts upon the downstream of the Tai Po River	Implemented	Not required

	Provide silt trap and oil interceptor to remove the oil, lubricants, grease, silt, grit and debris from the wastewater before pumped to the public storm water drainage system	Improvement required	Rectified
	Provide site toilet facilities	Implemented	Not required
Waste Management	Reuse excavated material as far as possible	Implemented	Not required
	Recycle scrap metals or abandoned equipment	Implemented	Not required
	Adopt a trip ticket system for the disposal of C&D materials	Implemented	Not required
	All general refuse should be segregated and stored in enclosed bins or compaction units	Implemented	Not required
Vibration	Percussive piling is to be replaced by bore-hole piling to minimize vibration impacts to the two identified Declared monuments	Not applicable at this stage	Not required
	Carrying out of vibration monitoring to ensure that vibration associated with the construction phase do not exceed the threshold limit otherwise contractor have to review the work method and construction activities have to be slow down or rescheduled to reduce the impacts	Not applicable at this stage	Not required
	Close monitoring and measurement on the cracks of the external wall of Fan Sin Temple during construction works will be carried out. Any changes on the cracks will be recorded for the contractor to slow down the construction activities accordingly; and to review the work methods and equipments immediately	Not Applicable at this stage	Not required

Implementation status of environmental protection and mitigation for ecology,
 prepared by the Ecologist, Dr. Mark Shea.

Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Ecology	Large boulders will be returned to the riverbed following the excavation works.	Not applicable	Not required
	Construction works from Ch. 0.0m – Ch. 150m would be along one side of the river only	Not applicable	Not required
	Approximately 150m of the existing natural riverbank on the western side of the river would be retained.	Implemented	Not required
	Excavation works within the river channel should be restricted to an enclosed dewater section of the river, and would be limited to sections 50-100m long at any one time.	Implemented	Not required
	Flows to the area downstream shall be maintained at all times during the construction phase	Implemented	Not required
	Capture survey shall be conducted within the Tai Po River before commencement of works. The captured target species shall be relocated to areas of the watercourse upstream of the watercourse upstream of the Tai Po River	Capture surveys had been conducted at the beginning of the Contract, during the wet season July/August 2008, 4 th November 2008 and 27 th , 28 th October 2009	Not required
	Temporary noise barriers should be constructed to control noise impacts to habitats and associated wildlife within and adjacent to the proposed works area	Implemented	Not required
	Excavation works shall be carried out by land based plant within enclosed dry section of river channel.	Implemented	Not required
	Compensatory planting of trees and other vegetation along the banks of the newly improved drainage channel should be provided to compensate for the loss of riparian vegetation.	Not applicable	Not required
Operation phase activities in the improved drainage channel would be limited to periodic channel maintenance such as de-silting.	Not applicable	Not required	

Appendix H: Cumulative waste flow tableCumulative waste flow table since 15th September 2008

Type of waste	Inert Waste	Non-Inert Waste	Chemical Waste
September 2008	0	0	0
October 2008	0	2 tonnes	0
November 2008	36m ³	0	0
December 2008	0	0	0
January 2009	0	0	0
February 2009	0	0	0
March 2009	0	0	0
April 2009	0	0	0
May 2009	0	0	20kg*
June 2009	0	0	0
July 2009	0	0	0
August 2009	0	0	0
September 2009	0	0	0
October 2009	0.9m ³	0	0
November 2009	0	0	0
December 2009	0	0	0
January 2010	0	0	0
February 2010	0	0	0
March 2010	0	0	0
April 2010	0	0	0
Total	36.9m ³	2 tonnes	20kg

Remark*: Chemical wastes generated from the project sites including Upper Tai Po River, Lam Tsuen River and She Shan River were centralized for disposal.

Appendix I: Construction programme

Appendix J: Complaint Investigation Report and Log

DSD Project – River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River

Report for Complaint/ Concern

Ref: DC0706-CL-100507(EPD)R1

EPD Complaint Ref: EP3/N05/RN/00008938-10

Sheet: 1 of 3

RECIPIENT

Name: Chiu Hing Construction & Transportation Co., Ltd,

Details: EPD formally informed Drainage Services Department on 7th May 2010 regarding a complaint on observation of muddy water at section of Upper Tai Po River (UTPR) near Wun Yiu.

Received Date: 7th May 2010

Received Time:

COMPLAINANT / Concern

Name: N/A

Tel: N/A

Address: N/A

COMPLAINT

Noise Air quality/Dust Water Odour Environment Traffic/Pedestrian
Safety Others

Event Date and Time: 7th May 2010

Location: Section of UTPR near Sheung Wun Yiu

INVESTIGATION RESULTS & MITIGATION MEASURES

1. A complaint on 7th May 2010 was recorded that consecutive site water discharge was observed in the site area at the upper stream area of UTPR near Sheung Wun Yiu. Environmental Team (ET) was informed by Engineer Representative (ER) on the same day.
2. As per the EM&A Manual section 9.3, ET arranged a site investigation with the representatives from Contractor, on 7th May 2010 to resolve the above complaint.
3. During the investigation river water was observed to be slightly turbid (Fig.3.1~3.3). Major construction activities were ceased as river-based excavation works were restricted according to contractual requirements. Only site clearance activities of removal of noise barriers were being carried out during the investigation and no generation of muddy effluent was observed from such activities. As reported by Contractor, immediate follow up action was taken on the same day to minimize surface runoff from causing water quality impact.
4. The condition of turbid river water was believed to be attributed by adverse weather condition in the morning on 7th May 2010 (i.e.: amber rainstorm warning signal was hoisted in the morning), which caused soil runoff and disturbance of sediment along the UTPR.
5. Contractor was advised to pay serious attention to the weather condition and provide necessary protective measures to prevent erosion and runoff from deteriorating the river water quality. Bared soil surface and earthy stockpiles on site should be properly covered. Excavated pit should be backfilled as far as practicable.
6. As a follow up investigation, inspection was carried out by ET on 12th May 2010 to check the conditions of project site as well as water quality of UTPR. River water was observed to be clear (Fig.6.1 to 6.3) and no major construction activities were being carried out during investigation.

7. To prevent potential flooding along the project site, haul access from site ch.300 to 450 has been reformed and therefore the haul access was barely exposed (Fig.7.1 & 7.2). To prevent erosion and potential runoff, contractor was advised to implement improvement works to the exposed bare earth surface. Bared haul access should be compacted and/or hydro-seeded as soon as possible. As major construction activities were ceased, temporary stockpiling of earth material should be prevented on site.
8. As reported by Contractor, compaction by roller to the loosed earth surface of the haul access is scheduled in the forthcoming week to upgrade the protective measures to the water stream at UTPR. Hydro-seeding would be also considered as an alternative measure to site area where roller cannot be reached.
9. ET has reminded the Contractor again to be cautious on not arising muddy water in the future construction works along the river.

RECOMMENDATIONS

1. To meet relevant environmental ordinance such as Environmental Impact Assessment Ordinance (EIAO) and Water Pollution Control Ordinance (WPCO), Contractor was seriously reminded that direct discharge of site water is not allowed and site water seepage to the river should be prevented.
2. Prior to the excavation and de-watering activities, mitigation measures including provision of site water treatment facilities, bund walls and barriers should be implemented on site. Underground water and muddy effluent drained from excavated pit should be diverted to proper silt removal facilities before discharge.
3. Contractor should well manage the temporary drainage system on site to avoid surface runoff and muddy effluent from entering into the public drainage and river channel.
4. The contractor shall always check the performance of bunds and barriers provided in order to minimize site water seepage and surface runoff from site.
5. Should no construction works will be carried out, temporary stockpiling of earth materials should be prevented on site as to avoid soil erosion and runoff from causing water quality impact. Also, excavated pits should be backfilled as far as practicable to prevent erosion and generation of muddy water.
6. Contractor should regularly provide training/ toolbox talk on environmental topics, especially about protection of river water quality to their site staffs and sub-contractors.
7. Contractor should also provide detailed briefing to frontline staffs and sub-contractors before commencement of site activities in order to fulfill with planning of construction method statement.
8. Contractor should keep good site practice on regularly checking the environmental performance on sites, especially paying serious attention on any sudden changes of river water quality.
9. Contractor is reminded again to take serious notice on the complaint and always keep good environmental management at site.

Approved by: Patricia Chung Chi Ping
(Environmental Team Leader)

Signature:



Date: 17-05-2010

Fig.3.1 – Water discharged from approximate ch.200



Fig.3.2 – River water at down stream area



Fig.3.3 – River channel near site ch.400



Fig.3.4 – River water at down stream area



Fig.6.1 – River water at approximate ch.50



Fig.6.2 – River water at approximate ch.150



Fig.6.3 – River water at downstream area



Fig.7.1 – reformed haul access at approximate ch.300



Fig.7.2 – reformed haul access at approximate ch.450



COMPLAINT / CONCERN LOG

Ref: DC0706-CL-100507(EPPD)R1

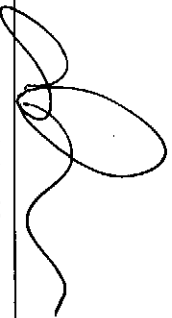
Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
<p>Our Ref: DC0706-CL-100507(EPPD) R1 EPPD complaint Ref: EP3/N05//RN/00007763-10</p>	<p>7th May 2010, A complaint was recorded for the observation of muddy water at the section of Upper Tai Po River near Sheung Wun Yiu</p>	<p>A complaint received via EPPD on 7th May 2010</p>	<p>Complaint on Muddy water arisen by drainage improvement works of the project at Upper Tai Po River (UTPR)</p>	<ol style="list-style-type: none"> 1) A complaint on 7th May 2010 was recorded that consecutive site water discharge was observed in the site area at the upper stream area of UTPR near Sheung Wun Yiu. Environmental Team (ET) was informed by Engineer Representative (ER) on the same day. 2) As per the EM&A Manual section 9.3, ET arranged a site investigation with the representatives from Contractor, on 7th May 2010 to resolve the above complaint. 3) During the investigation river water was observed to be slightly turbid. Major construction activities were ceased as river-based excavation works were restricted according to contractual requirements. Only site clearance activities of removal of noise barriers were being carried out during the investigation and no generation of muddy effluent was observed from such activities. As reported by Contractor, immediate follow up action was taken on the same day to minimize surface runoff from causing water quality impact. 4) The condition of turbid river water was believed to be attributed by adverse weather condition in the morning on 7th May 2010 (i.e.: amber rainstorm warning signal was hoisted in the morning), which caused soil runoff and disturbance of sediment along the UTPR. 5) Contractor was advised to pay serious attention to the weather condition and provide necessary protective measures 	<p>File Closed</p>

			<p>to prevent erosion and runoff from deteriorating the river water quality. Bared soil surface and earthy stockpiles on site should be properly covered. Excavated pit should be backfilled as far as practicable.</p> <p>6) As a follow up investigation, inspection was carried out by ET on 12th May 2010 to check the conditions of project site as well as water quality of UTPR. River water was observed to be clear and no major construction activities were being carried out during investigation.</p> <p>7) To prevent potential flooding along the project site, haul access from site ch.300 to 450 has been reformed and therefore the haul access was barely exposed. To prevent erosion and potential runoff, contractor was advised to implement improvement works to the exposed bare earth surface. Bared haul access should be compacted and/or hydroseeded as soon as possible. As major construction activities were ceased, temporary stockpiling of earth material should be prevented on site.</p> <p>8) As reported by Contractor, compaction by roller to the loosed earth surface of the haul access is scheduled in the forthcoming week to upgrade the protective measures to the water stream at UTPR. Hydro-seeding would be also considered as an alternative measure to site area where roller cannot be reached.</p> <p>9) ET has reminded the Contractor again to be cautious on not arising muddy water in the future construction works along the river.</p>
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				<p>10) Suggestions were given to the Contractor including:</p> <ul style="list-style-type: none"> - To meet relevant environmental ordinance such as Environmental Impact Assessment Ordinance (EIAO) and Water Pollution Control Ordinance (WPCO), Contractor was seriously reminded that direct discharge of site water is not allowed and site water seepage to the river should be prevented. - Prior to the excavation and de-watering activities, mitigation measures including provision of site water treatment facilities, bund walls and barriers should be implemented on site. Underground water and muddy effluent drained from excavated pit should be diverted to proper silt removal facilities before discharge. - Contractor should well manage the temporary drainage system on site to avoid surface runoff and muddy effluent from entering into the public drainage and river channel. - The contractor shall always check the performance of bunds and barriers provided in order to minimize site water seepage and surface runoff from site. - Should no construction works will be carried out, temporary stockpiling of earth materials should be prevented on site as to avoid soil erosion and runoff from causing water quality impact. Also, excavated pits should be backfilled as far as practicable to prevent erosion and 	
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				<ul style="list-style-type: none"> - generation of muddy water. - Contractor should regularly provide training/ toolbox talk on environmental topics, especially about protection of river water quality to their site staffs and sub-contractors. - Contractor should also provide detailed briefing to frontline staffs and sub-contractors before commencement of site activities in order to fulfill with planning of construction method statement. - Contractor should keep good site practice on regularly checking the environmental performance on sites, especially paying serious attention on any sudden changes of river water quality. - Contractor is reminded again to take serious notice on the complaint and always keep good environmental management at site. 	
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Prepared by Environmental Team Leader:



Ms. Patricia Chung

Date: 17th May 2010