

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

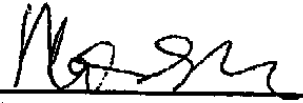
for July 2010

Environmental Pioneers & Solutions Limited
8/F, Chaiwan Industrial Centre Building
20 Lee Chung Street, Chaiwan, Hong Kong
Tel: 28890569 Fax: 2856 2010


The Contents of this report have been

Certified by:

Signature:   Date: 26-08-2010
Miss. Patricia Chung
(Environmental Team Leader)

Signature:  Date: 28-08-2010
Dr. Mark Shea
(Ecologist)

and Verified by:

Signature:  Date: 31-08-2010
Mr. Marcus IP
(Independent Environment Checker)

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Executive summary

This is the twenty-third 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 July 2010 to 31st July 2010. Excavation for construction of retaining wall at Access Road D and emergency flood relief works were carried out in this reporting period.

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.

Ecological impact monitoring was carried out on 20th July 2010. As the ecological impact monitoring report is still under preparation details of findings will be presented in the next reporting month. 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 no non-compliance recorded for this reporting month.

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

There was no reporting change for this month.

Due to the flooding incident in Sha Po Chai Village, emergency flood relief works such as channel clearance works, repair and reinstatement for the damaged village houses, implementation of immediate measures for relieving the imminent flood risk will be major construction activities to be carried out in the upcoming month.

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 twenty-third 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 July 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

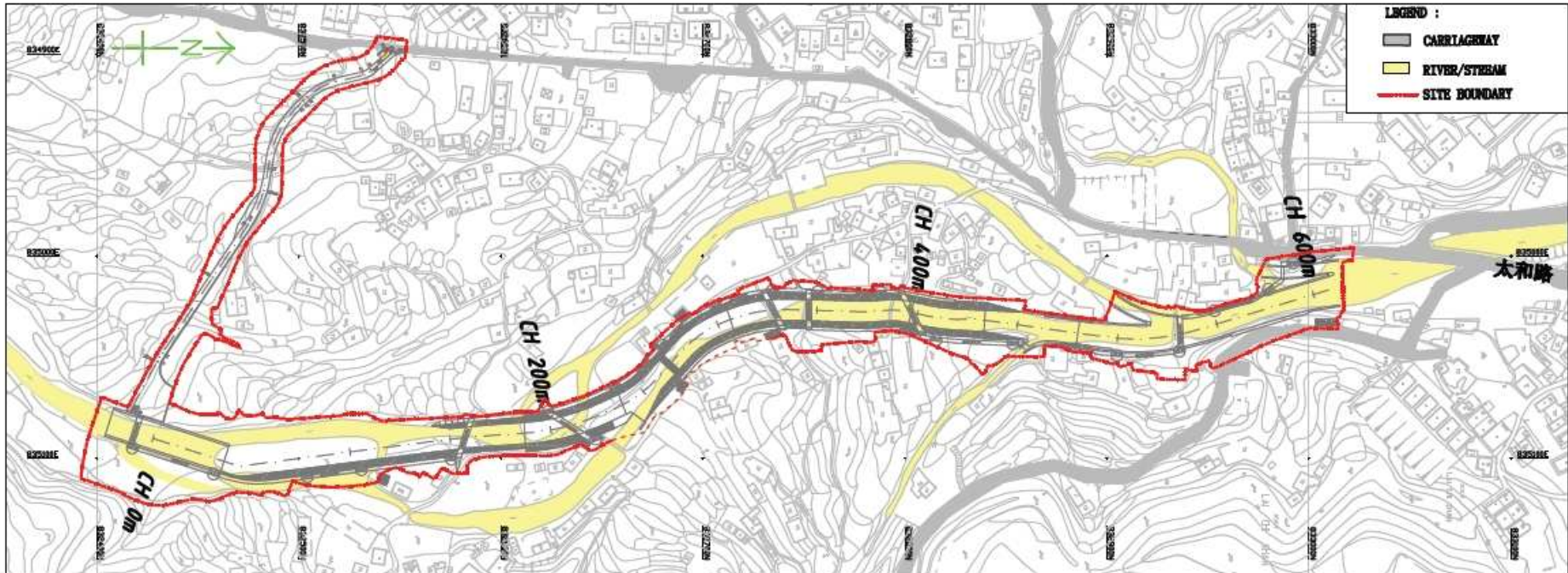
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in April 2011.

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

- (1) Excavation for construction of retaining wall at Access Road D.
- (2) Emergency flood relief works, such as channel clearance works.

2.5 Construction activities for the next reporting period

Due to the flooding incident, emergency flood relief works such as channel clearance works, repair and reinstatement for the damaged village houses, implementation of immediate measures for relieving the imminent flood risk will be major construction activities to be carried out in the upcoming month.

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

No formal complaint in relation to environmental issue was received in the reporting month. Totally, nine complaints had been received since the commencement of the contract. The cumulative complaint log is shown in Appendix F.

3.0 Ecological monitoring results

Ecological impact monitoring was conducted on 20th July 2010 by the Ecologist Dr. Mark Shea. As reported by the Ecologist, the ecological impact monitoring report was still under preparation. Those findings will be shown in the next monthly EM&A report.

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 2nd, 9th and 16th July 2010.

Noise monitoring programme originally scheduled on 23rd and 30th July was cancelled due to the flooding incident on 22nd July 2010. Monitoring stations was inaccessible until the end of this reporting month.

Measured $L_{eq(30min)}$ results ranged from 46.1dB(A) to 64.3dB(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, 21st and 29th July 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 2nd, 9th, 16th and 26th July 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
30 June 10	Chemical containers and a can of lubricant without secondary containment were observed at material storage area of Access Road D	Observation	Contractor was advised to provide proper drip pans for chemical and fuel using on site; chemical and fuel no in use should be relocated to designate chemical storage area for further storage	The concerned chemical materials and containers were removed from the site area prior to the inspection on 07 July	07 July 10	--
07 July 10	No particular observation	N/A	N/A	N/A	N/A	--
14 July 10	Oil stains were observed on the surface of access road D of UTPR, which caused by leakage from the backhoe	Observation	Contractor was recommended to collect the contaminated soil and handle as chemical waste for storage and disposal. Also, all plants and equipment should be serviced regularly to minimize oil leakage from causing contamination to the surrounding area.	Contractor took the advice and collect the contaminate soil prior to the inspection on 21 July.	21 July 10	--
14 July 10	Air compressor without secondary containment measure was observed at access road D of UTPR during inspection	Observation	Contractor was advised to rectify such discrepancy by providing proper drip pan as soon as possible	The concerned air compressor was removed from the site prior to the inspection on 21 July	21 July 10	--
21 July 10	No particular observation	N/A	N/A	N/A	N/A	--
29 July 10	No particular observation	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.

Table 6.2 Summary results of ecological site inspection findings				
Date	Observations	Advice from Ecologist	Action Taken	Closing Date
02 Jul 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
09 Jul 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
16 Jul 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
26 Jul 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A

6.2 Non-compliance

There was no non-compliance recorded for the month of July 2010.

6.3 Recommendations

Chemical handling and containment measures for chemical containers and/or site equipments were the major concerns in this reporting period. Contractor was reminded to provide proper drip pans for such chemicals and/or fuel containers using on site. Otherwise, those should be relocated to designate chemical storage when not in use. To minimize possible fuel or chemical leakage from plants and equipments, contractor was recommended to service site equipments deployed on site regularly to maintain good condition.

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.

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.

From the report of Contractor, C&D materials generated were all reused in the project and therefore no inert waste was disposed from the project.

The following table showed amount of waste generation, reused and disposed from this project site in this reporting month.

Table 7.1 Summary of Waste generated and disposed in July 2010

Type of waste	Amount generated	Amount reused	Amount disposed
Inert waste	0.543 m ³	0.543 m ³	0
Non-inert waste	0	0	0
Chemical waste	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

Due to the flooding incident on 22nd July 2010, emergency flood relief works such as channel clearance works, repair and reinstatement works for the damage village houses, implementation of immediate measures for relieving the imminent flood risk will be major construction activities to be carried out in the upcoming month.

To minimize water quality impact arising from channel clearance works, water quality mitigation measures should be implemented as far as practicable. Any muddy water, underground water or wastewater generated from construction activities should be diverted to proper treatment facility prior to discharge.

For the proposed construction activities, heavy plants and vehicles may be occupied and those would generate certain noise impacts to the sensitive receivers. To minimize noise generation, noisy activities should be well planned and scheduled to avoid parallel operation of multiple plants. Erection of noise barriers and/or movable barriers should be implemented whenever necessary.

Aforesaid emergency flood relief works may generate wastes on site. Contractor is advised to assign a site area for temporary waste storage and segregation. Wastes accumulation should be prevented on site; licensed waste collection and disposal should be implemented regularly for hygiene issues.

10.0 Conclusion

Excavation for construction of retaining wall at Access Road D and emergency flood relief works were carried out by the Contractor in this reporting period.

Regular site meetings and inspection audits led by the seniors for discussing environmental issues were held among project proponent, Contractor and the Environmental Team 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.

There was no non-compliance event recorded within this reporting month.

No complaint in relation to environmental issue was recorded in this reporting month.

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	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	62.6	63.2	54.5	2-Jul-10	09:59-10:29	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location as no construction activity was being carried out	Background noise from traffic	Sunny	Façade
UTP 2	62.3	66.4	55.8	2-Jul-10	10:33-11:03		Background noise from traffic	Sunny	Façade
UTP 3	61.3	63.7	61.3	2-Jul-10	11:10-11:40		N/A	Sunny	Façade
UTP 4	57.4	60.2	51.5	2-Jul-10	15:44-16:14		N/A	Sunny	Façade
UTP 5	50.0	50.8	42.8	2-Jul-10	15:11-15:41		N/A	Sunny	Façade
UTP 6	48.5	50.0	46.3	2-Jul-10	14:38-15:08		N/A	Sunny	Façade
UTP 7	48.8	51.2	45.3	2-Jul-10	14:06-14:36		N/A	Sunny	Façade
UTP 8	53.2	54.2	50.6	2-Jul-10	13:34-14:04		N/A	Sunny	Façade
UTP 9	60.3	62.2	55.4	2-Jul-10	13:00-13:30		N/A	Sunny	Façade
UTP 10	50.6	52.0	47.3	2-Jul-10	09:18-09:48		N/A	Sunny	Façade
UTP 11	57.4	55.6	50.3	2-Jul-10	08:45-09:15		N/A	Sunny	*Freefield

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

Location	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	64.3	64.9	53.3	9-Jul-10	10:50-11:20	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location as no construction activity was being carried out	Background noise from traffic	Sunny	Façade
UTP 2	61.3	63.0	56.4	9-Jul-10	11:24-11:54		Background noise from traffic	Sunny	Façade
UTP 3	61.2	62.8	59.9	9-Jul-10	15:43-16:13		N/A	Sunny	Façade
UTP 4	48.4	49.0	42.7	9-Jul-10	15:08-15:38		Background noise from traffic	Sunny	Façade
UTP 5	46.3	47.5	41.4	9-Jul-10	14:36-15:06		N/A	Sunny	Façade
UTP 6	51.5	52.8	48.2	9-Jul-10	14:03-14:33		N/A	Sunny	Façade
UTP 7	50.4	52.3	49.3	9-Jul-10	13:32-14:02		N/A	Sunny	Façade
UTP 8	51.0	51.9	49.0	9-Jul-10	13:00-13:30		N/A	Sunny	Façade
UTP 9	55.4	58.2	50.3	9-Jul-10	10:06-10:36		N/A	Sunny	Façade
UTP 10	46.1	47.1	42.2	9-Jul-10	09:32-10:02		N/A	Sunny	Façade
UTP 11	50.3	51.2	46.4	9-Jul-10	09:00-09:30		N/A	Sunny	*Freefield

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

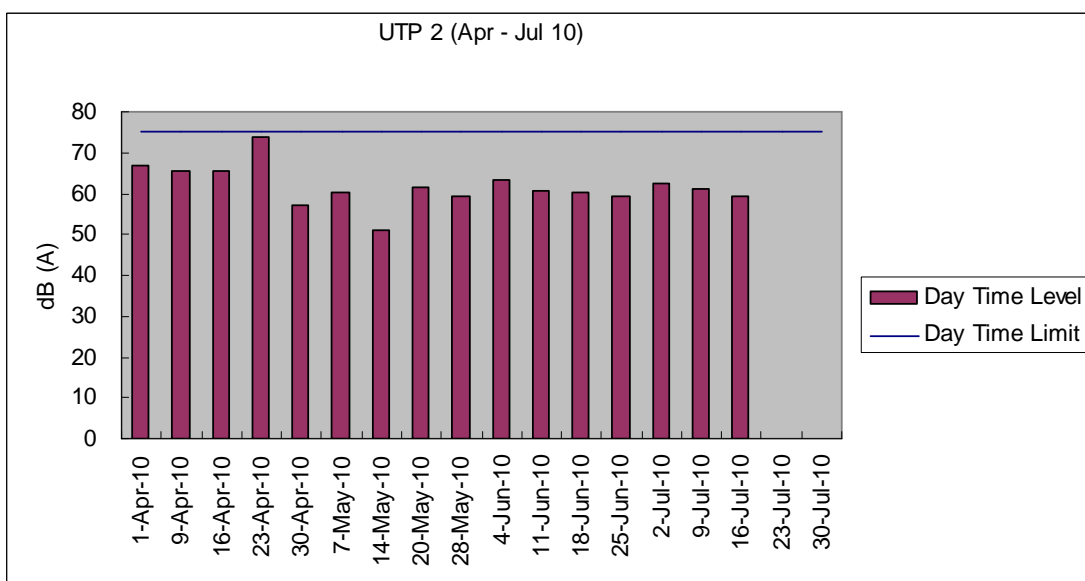
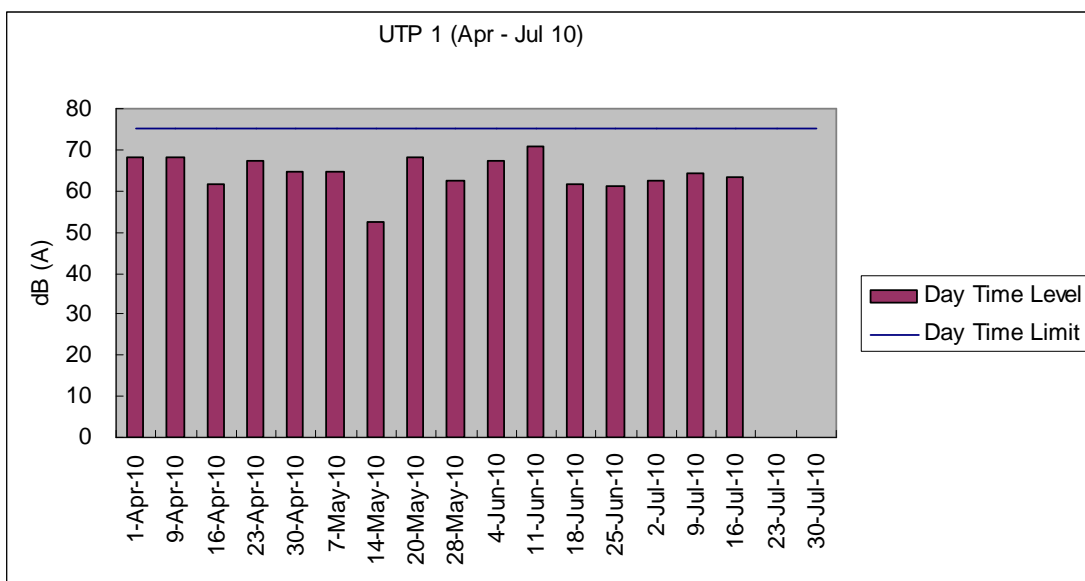
Location	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	63.4	65.4	58.3	16-Jul-10	13:34-14:04	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location as no construction activity was being carried out	Background noise from traffic	Cloudy	Façade
UTP 2	59.3	61.7	48.8	16-Jul-10	13:00-13:30		Background noise from traffic	Cloudy	Façade
UTP 3	61.3	62.7	59.7	16-Jul-10	08:50-09:20		N/A	Cloudy	Façade
UTP 4	52.2	53.4	52.2	16-Jul-10	09:25-09:55		N/A	Cloudy	Façade
UTP 5	49.5	51.4	47.0	16-Jul-10	09:57-10:27		N/A	Cloudy	Façade
UTP 6	50.6	51.6	49.2	16-Jul-10	10:29-10:59		N/A	Cloudy	Façade
UTP 7	49.3	51.2	46.7	16-Jul-10	11:06-11:36		N/A	Cloudy	Façade
UTP 8	49.6	50.7	48.1	16-Jul-10	14:17-14:47		N/A	Cloudy	Façade
UTP 9	55.4	60.3	42.5	16-Jul-10	14:50-15:20		N/A	Cloudy	Façade
UTP 10	52.2	54.7	48.3	16-Jul-10	16:00-16:30		N/A	Cloudy	Façade
UTP 11	52.6	53.7	51.1	16-Jul-10	15:26-15:56		N/A	Cloudy	*Freefield

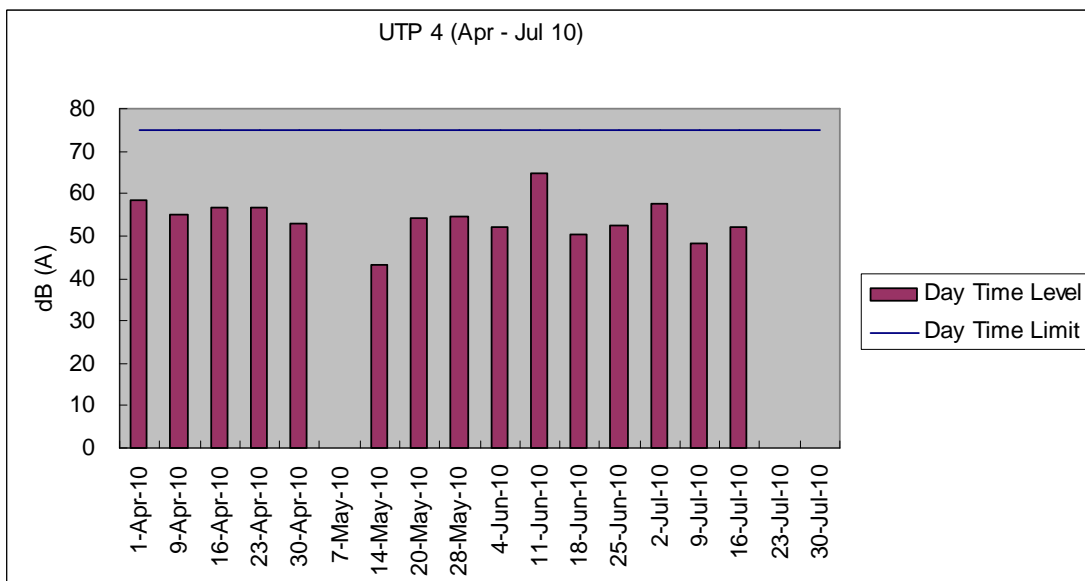
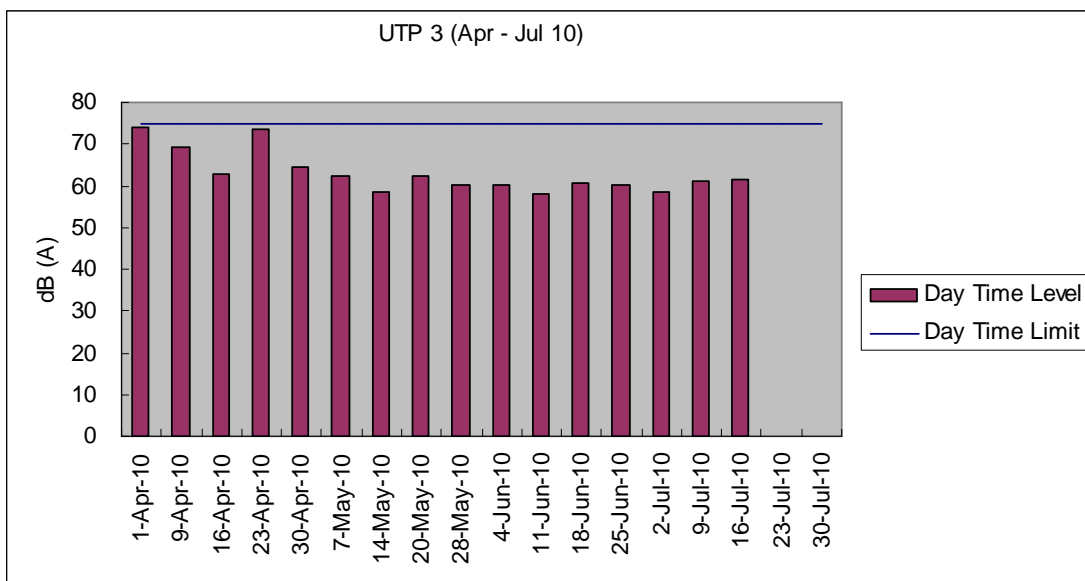
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

Graphical plot for noise measurements

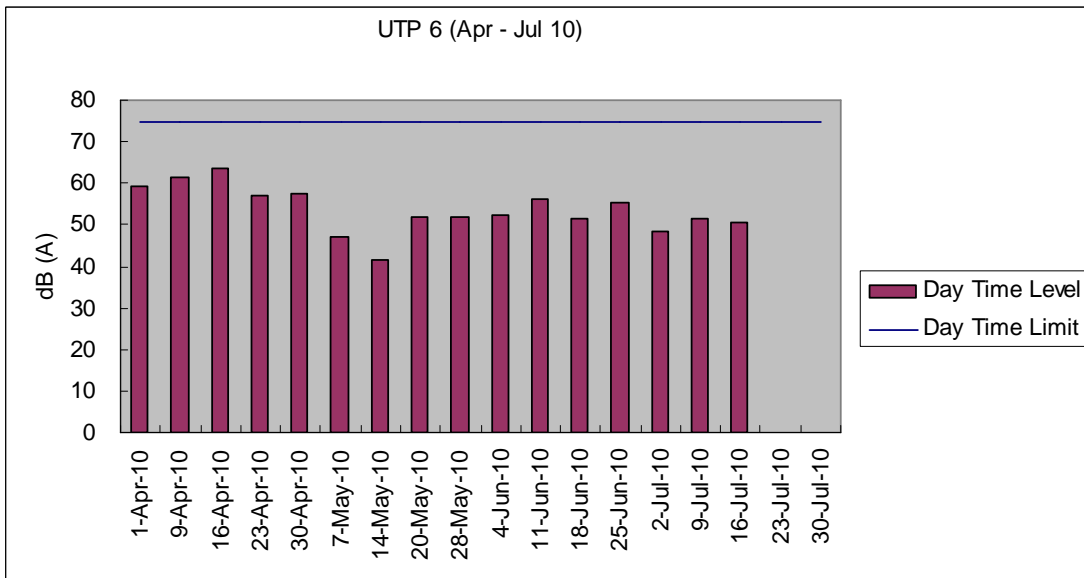
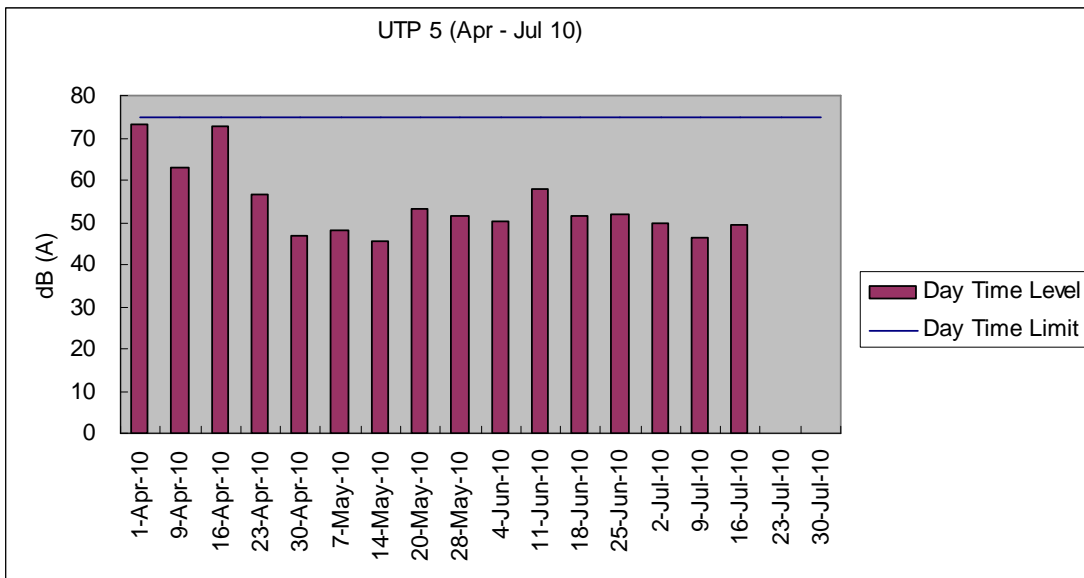
The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from April 2010 to July 2010.

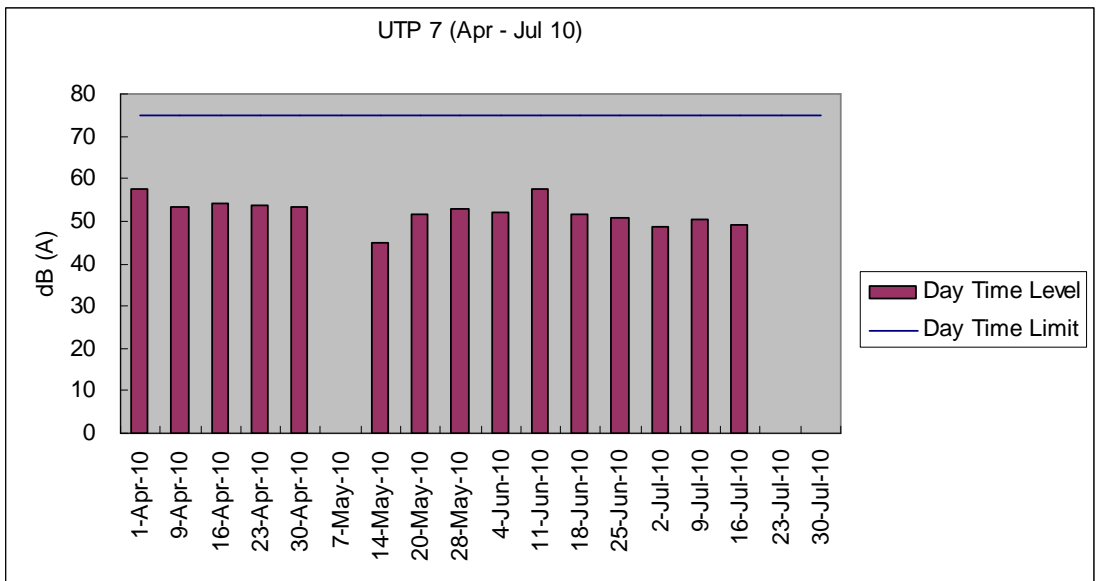
Noise monitoring originally proposed to be carried out 23rd and 30th July 2010 were cancelled due to the effect of flooding incident at UTPR.



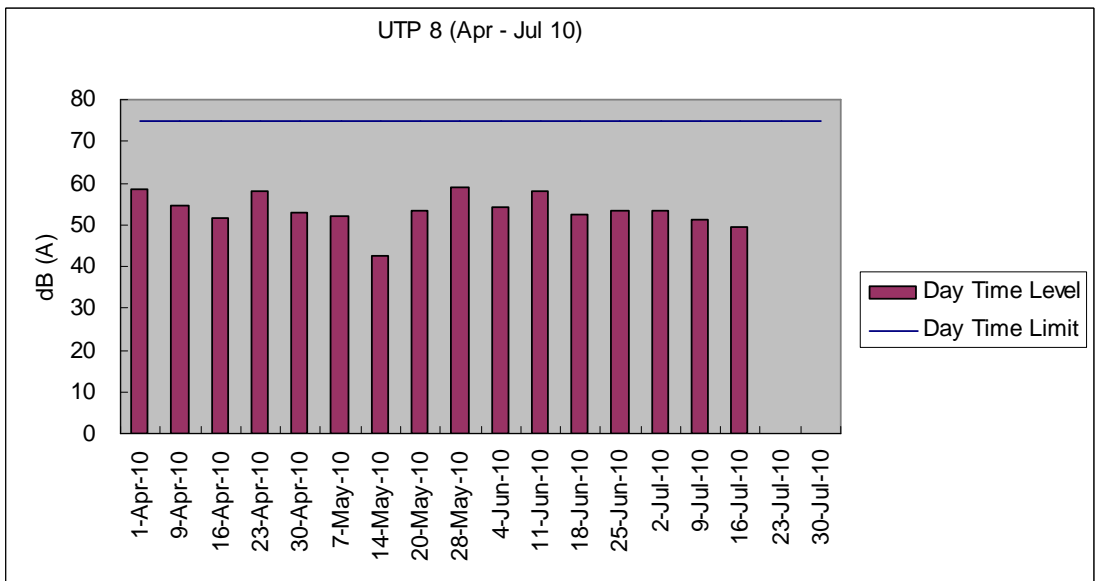


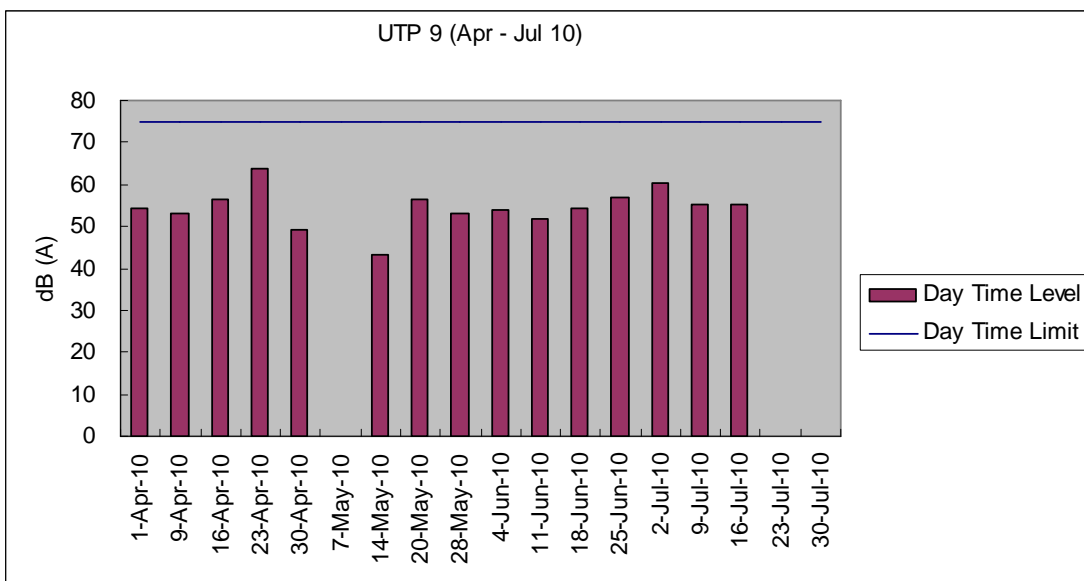
Noise monitoring for 7th May 2010 was cancelled due to heavy rain



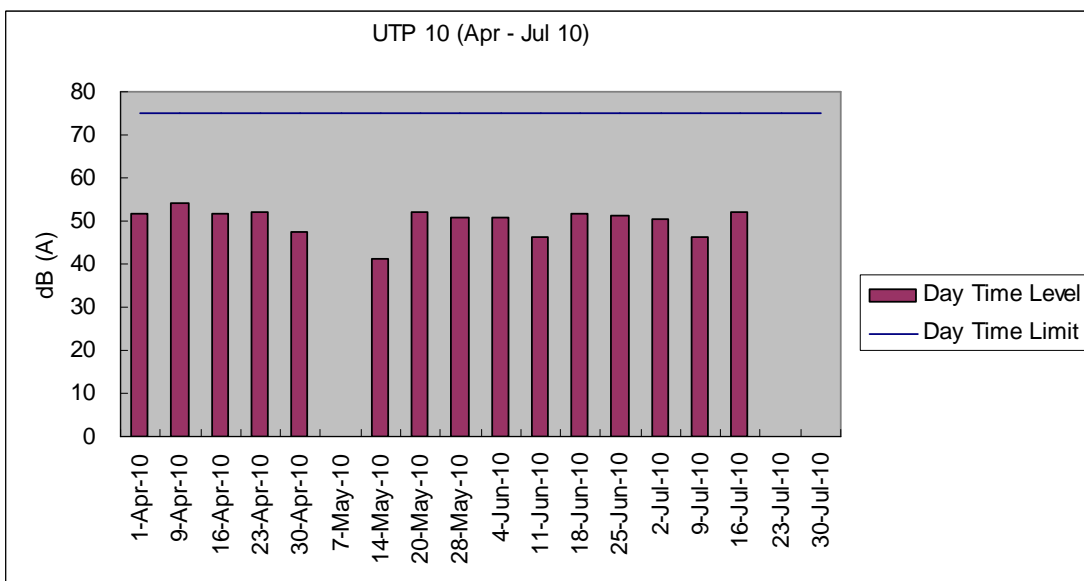


Noise monitoring for 7th May 2010 was cancelled due to heavy rain

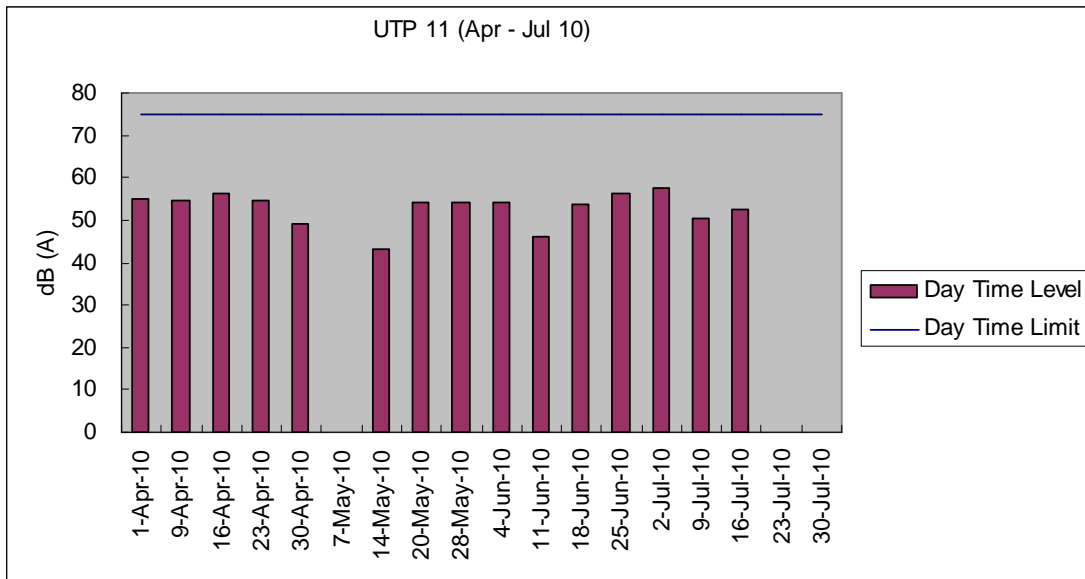




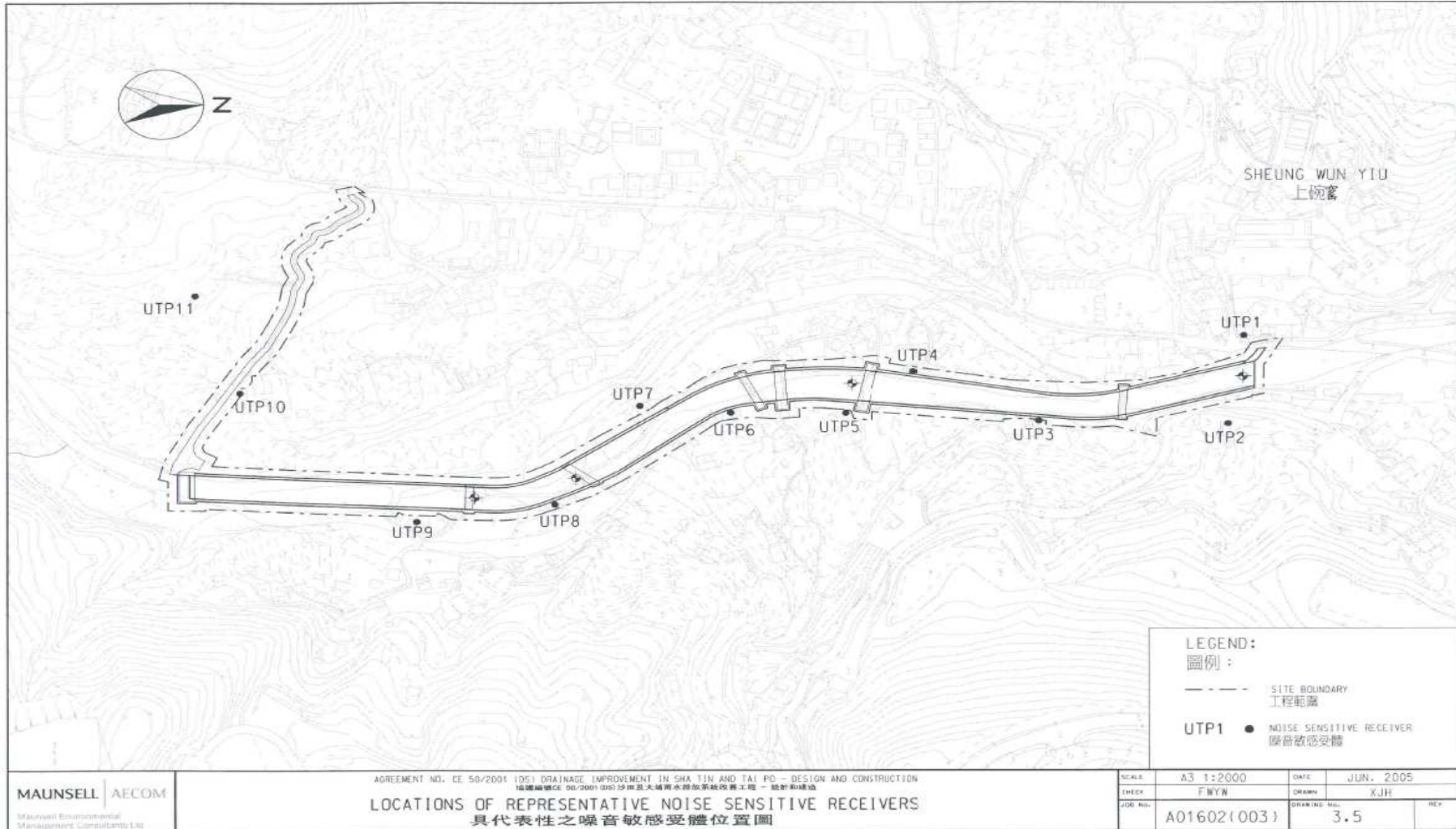
Noise monitoring for 7th May 2010 were cancelled due to heavy rain



Noise monitoring for 7th May 2010 were cancelled due to heavy rain



Noise monitoring for 7th May 2010 were cancelled due to heavy rain



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

Master Schedule of EM&A works in July 2010

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

Master Schedule of EM&A works in August 2010

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

Appendix F: Cumulative complaint log

Environmental Parameters	Cumulative no. Brought forward	No. of complaint July 2010	Overall Total
Air/Dust	1	0	1
Noise	2	0	2
Water	6	0	6
House Keeping Hygiene	0	0	0
Chemical waste	0	0	0
Total	9	0	9

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	Implemented	Not required
	-Cover excavated or stockpile of dusty material by impervious sheeting or sprayed with water	Implemented	Not required
	-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	Implemented	Not required
	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 showing amount of wastes disposed 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
May 2010	0	0	0
June 2010	0	0.02 tonnes	0
July 2010	0	0	0
Total	36.9m ³	2.02 tonnes	20kg

Remark*: Chemical wastes and general 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

DSD Contract No. DC/2007/06
 River Improvement Works in Upper Lam Teuen River, She Shan River & Upper Tal Po River
 Master Programme of Upper Tal Po River (Version 9)

ID	Task Name	Duration	Start	Finish	Predecessors
245	Lighting at Footbridge TB04	39 days	24/1/2011	9/3/2011	
250	Demolition of Bridge TB-A	7 days	10/3/2011	17/3/2011	
251	Ch. 330-330	321 days	1/3/2010	9/3/2011	
253	Gabion Wall (Ch. 330-345 LHS) TR2	25 days	21/07/2010	30/07/2010	
256	Gabion Wall (Ch. 330-345 RHS) TR2	25 days	21/07/2010	30/07/2010	
259	Footbridge TB05 (Ch. 350)	136 days	21/07/2010	9/3/2011	
260	Construction of Abutment A	28 days	21/07/2010	31/07/2010	
268	Construction of Abutment B	28 days	4/11/2010	6/12/2010	
276	Construction of decking	41 days	7/12/2010	22/1/2011	
281	Lighting at Footbridge TB05	39 days	24/1/2011	9/3/2011	
286	Retaining Wall (Ch. 345-400 LHS) TR1 (replaced by AD1)	84 days	21/07/2010	10/1/2011	
290	Retaining Wall (Ch. 345-400 RHS) TR1 (replaced by AD1)	34 days	1/3/2011	8/6/2011	
294	Ch. 350-400	579 days	29/3/2010	1/2/2012	
295	Step 4 (Ch. 360)	30 days	31/1/2011	5/2/2011	
297	Footbridge TB06 (Ch. 400)	570 days	29/3/2010	1/2/2012	
298	Construction of Abutment A	28 days	4/11/2010	6/12/2010	
299	Construction of Abutment B	28 days	29/3/2010	29/4/2010	
314	Construction of decking	41 days	1/11/2011	17/12/2011	
319	Lighting at Footbridge TB06	39 days	19/12/2011	1/2/2012	
324	Lighting at CH 350-380	39 days	3/12/2011	16/2/2011	
328	Ch. 400-525	423 days	4/10/2010	8/2/2012	
329	Step 5 (Ch. 410)	30 days	3/1/2011	5/2/2011	
331	Maintenance Staircase (Ch. 420 LHS)	6 days	1/12/2010	7/12/2010	
333	Box Culvert TB01 (Ch. 450)	49 days	1/12/2010	26/1/2011	
343	Retaining Wall (Ch. 480-500 LHS) TR2 (20m)	38 days	1/12/2010	13/1/2011	
361	Retaining Wall (Ch. 400-450 RHS) TR1 (replaced by AD1)	30 days	4/10/2010	6/11/2010	
365	Retaining Wall (Ch. 400-450 LHS) TR1 (replaced by AD1)	30 days	8/11/2010	11/12/2010	
369	Retaining Wall (Ch. 450-500 RHS) TR2	62 days	13/12/2010	22/2/2011	
410	Retaining Wall (Ch. 500-530 LHS) TR3	58 days	22/1/2011	30/3/2011	
431	Step 6 (Ch. 500)	30 days	3/1/2011	5/2/2011	
433	Cascades (Ch. 500 RHS)	45 days	3/1/2011	23/2/2011	
434	Footbridge TB07 (Ch. 525)	423 days	4/10/2010	8/2/2012	
442	Construction of Abutment A	28 days	4/10/2010	4/11/2010	
443	Construction of Abutment B	28 days	5/11/2010	7/12/2010	
450	Construction of decking	41 days	1/11/2011	17/12/2011	
453	Demolition of existing Footbridge TB-D (Ch. 525)	12 days	26/12/2012	8/2/2012	
457	Footbridge TB07 Lighting	39 days	12/12/2011	25/1/2012	
462	Ch. 525-615	586 days	7/4/2010	18/2/2012	
463	Retaining Wall (Ch. 535-555 LHS) TR4	111 days	21/07/2010	8/2/2011	
485	Retaining Wall TR3	244 days	7/4/2010	15/1/2011	
486	(Ch. 555-595 LHS) TR5 (AD)	146 days	7/4/2010	23/9/2010	
491	Retaining Wall TR5A CH555-595 LHS	91 days	21/07/2010	15/1/2011	
533	Step 7 (Ch. 570)	30 days	16/1/2012	18/2/2012	
535	Box Culvert TB02 (Ch. 580)	49 days	4/10/2010	29/11/2010	
545	Retaining Wall (Ch. 595-615) TR3	49 days	3/1/2011	28/2/2011	
559	Lighting at CH 550-610	105 days	1/11/2010	23/2/2011	
568	Project Completion	1016 days	26/9/2007	31/3/2012	

2010: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

2011: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

2012: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

Print Date: 30/3/2010
 Revised Date: 29/3/2010

Task Split
 Progress
 Milestones

Summary
 Project Summary

External Tasks
 External Milestones

Deadline

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