

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 September 2010

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Report submission and revision:
First submission on 11th October 2010
Second submission on 18th October 2010

TABLE OF CONTENTS

TABLE OF CONTENTS	3
Executive summary	4
1.0 Introduction	6
2.0 Environmental status	6
2.1 Project area	6
2.2 Construction programme	6
2.3 Proposed construction sequences	7
2.4 Construction activities for the reporting period	9
2.5 Construction activities for the next reporting period	9
2.6 Non-compliance with the environmental performance limits	9
2.7 Summary of complaints	9
3.0 Ecological monitoring results	9
4.0 Noise monitoring results	10
5.0 Vibration monitoring results	11
6.0 Environmental issues and actions	11
6.1 Site inspections and key environmental issues	11
6.2 Non-compliance	13
6.3 Recommendations	14
6.4 Implementation status and effectiveness of the mitigation measures	14
7.0 Waste management status	15
8.0 Status of environmental licensing and permit	16
9.0 Future key issues	17
10.0 Conclusion	18
Appendix A: Event and action plan for ecology	20
Appendix B: Action and limit level for construction noise	23
Appendix C: Reference standards for vibration	25
Appendix D: Noise monitoring results, graphical plots and location plan	27
Appendix E: Monitoring schedule for the present and next reporting period	40
Appendix F: Cumulative complaint log	43
Appendix G: Implementation status of environmental protection and mitigation measures	44
Appendix H: Cumulative waste flow table	48
Appendix I: Construction programme	49

Executive summary

This is the twenty-fifth 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”. This report concludes the impact monitoring for the activities undertaken during the period from 1st September 2010 to 30th September 2010. 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.

The last ecological impact monitoring was carried out by the Ecologist Dr. Mark Shea on 20th July 2010 and the next ecological impact monitoring was arranged in January 2011. The capture survey was proposed to be carried out on 15th October 2010 and 2nd November 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.

A non-compliance event regarding to the incident of oil leakage from the backhoe, and an environmental concern regarding to the change of condition of the natural riverbank at approximate ch.0 to 150 on the western side of the river channel were recorded in this reporting month. Details of the incidents, findings, recommendations given by ET and outcome please refer to Section 6.2

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 on 22nd July 2010, emergency flood relief works such as construction of a temporary steel footbridge at bifurcation and laying pipes underneath the existing footbridges to improve flow capacity of the river channel are almost completed and will still be the major construction activities to be carried out in the upcoming month. In addition, erection of temporary noise barriers and formation of temporary haul road will also be carried out.

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-fifth 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 September 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

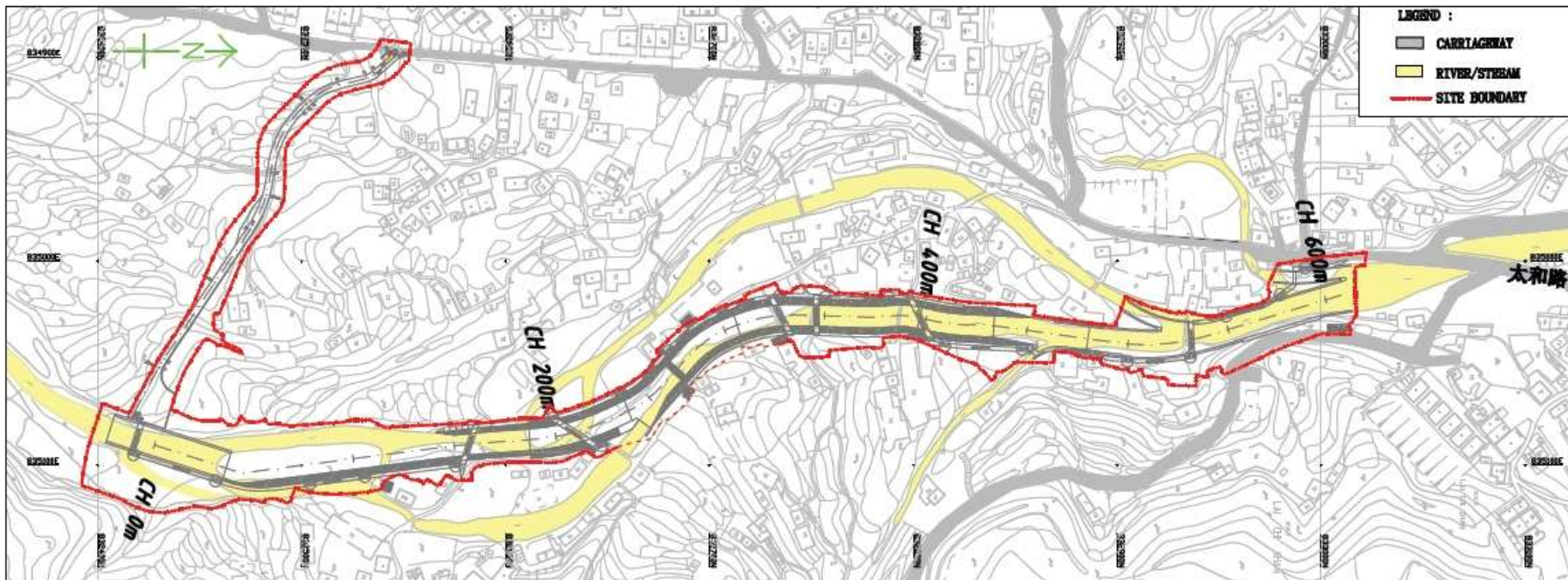
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in March 2012.

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) Construction of retaining wall at Access Road D.
- (2) Emergency flood relief works, such as repair and reinstatement of the damaged village houses, construction of wire fences, construction of rock grille, construction of a temporary steel footbridge at bifurcation, laying pipes underneath of the existing footbridges to improve its flow capacity, etc.

2.5 Construction activities for the next reporting period

Emergency flood relief works such as construction of a temporary steel footbridge at bifurcation and laying pipes underneath the existing footbridges to improve its flow capacity will be carried out in the next reporting month. In addition, construction of land-based retaining wall at Access Road D, erection of temporary noise barriers and formation of temporary haul road will also 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

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

The last ecological impact monitoring was conducted on 20th July 2010 by the Ecologist Dr. Mark Shea and the next ecological impact monitoring was arranged in January 2011. Capture survey was proposed to be carried out on 15th October and 2nd November 2010.

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 4th, 10th, 17th, 24th and 30th September 2010. Due to rainy weather noise monitoring originally scheduled on 3rd September 2010 was postponed to 4th September 2010

Measured $L_{eq(30min)}$ results ranged from 50.3dB(A) to 68.4dB(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 1st, 8th, 15th, 22nd, 29th September 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, 6th, 13th, 20th and 30th September 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
01 Sept 10	Haul access was observed to be dry and dusty	Observation	Contractor was reminded to provide water spraying to dusty static area regularly for dust suppression	Follow up action was taken as advised prior to the inspection on 15 Sept.	15 Sept 10	--
18 & 25 Aug 10 & 01 Sept 10	Preserved trees without protective measures were observed at approximate ch.50	Observation	Contractor was advised to erect proper fencing and remove site materials away from the trees	Follow up action was taken as advised prior to the inspection on 15 Sept	15 Sept 10	--
15 Sept 10	General wastes and abandoned site materials were poorly tipped nearby the river channel at ch.250	Observation	Contractor was advised to assign licensed waste collector to collect and dispose the concerned wastes as soon as possible	Follow up action was taken as advised prior to the inspection on 29 Sept	29 Sept 10	--
15 & 22 Sept 10	Chemicals without secondary containment measures were found at interim bridge site at approximate ch.250	Observation	Contractor was reminded to provide proper drip pans for chemicals using on site; otherwise idling chemicals should be relocated to designate chemical store	Follow up action was taken as advised prior to the inspection on 29 Sept	29 Sept 10	--
15 Sept 10	An idling backhoe was severely leaking oil at approximate ch.450	Non-compliance	Details of recommendation given please refer to Section 6.2	As reported by Contractor maintenance was provided to the concerned backhoe. The condition would be checked in the upcoming inspection	Ongoing	Refer to Section 6.2
22 Sept 10	Muddy water leaved by excavation as observed from a excavated pit at approximate ch.200	Observation	Contractor was advised to backfilled the excavated pit to prevent accumulation of site water	There was no further accumulation and/or generation of site water in the concerned area during inspection	29 Sept 10	--
29 Sept 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
01 Sept 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
06 Sept 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
13 Sept 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
20 Sept 2010	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
30 Sept 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 event regarding oil leakage from site equipment was recorded during routing site inspection on 15th September 2010. Also, an environmental concern regarding to the existing condition of the natural riverbank at approximate ch.0 to 150 was raised in this reporting month.

A backhoe idling at haul access at approximate ch.450 was found severely leaking lubricant oil and fuel during inspection on 15th September 2010. Also, Oil stains leaded by leakage were observed leaving on the haul access. As such, Contractor was requested to implement corrective actions immediately to rectify the conditions observed, which at least include:

- to provide maintenance to the concerned backhoe as to stop further leakage;
- to collect the contaminated soil from the haul access. Soil collected should be properly handled as chemical wastes for storage and disposal;
- to check all other site equipments using on site and provide maintenance whenever necessary; and
- to provide sufficient training and tool box talk to their frontline staffs on how to prevent chemical leakage.

The concerned backhoe has been removed away from the site area and maintenance has been provided to the backhoe as reported by the Contractor. The condition of the backhoe will be checked in the reporting month once it is in operation again.

Due to the flooding incident lead by heavy rain on 22nd July 2010, the natural riverbank, at approximate ch.0 to 150 on the western side of the river channel, was eroded by the flood water. To avoid the river bank form further erosion, it was temporarily stabilized by boulders found in the river as an emergency measures.

The change of condition of the riverbank lead by the flooding incident may not comply with the specific condition item 2.8 of the Environmental Permit EP-223/2005/A. As such, the project team is considering the implementing of long term application of a variation to the environmental permit, if necessary, to address such environmental concern. ET would pay serious attention on this case and to report the outcome in the future.

6.3 Recommendations

Contractor was also reminded to pay attention on implementation status of mitigation measures to minimize chemical leakage from causing land contamination, and waste handling issues on site. To minimize visual impact and for hygiene, Contractor should assign a proper area for temporary storage and segregation of wastes on site.

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 upcoming 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 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 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 September 2010

Type of waste	Amount generated	Amount reused	Amount disposed
Inert waste	550 m ³	550 m ³	0
Non-inert waste	57 kg	0	57 kg
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

Land-based construction of retaining wall at Access Road D, erection of temporary noise barriers and formation of temporary haul road will be carried out in the upcoming month. And, due to the flooding incident on 22nd July 2010, emergency flood relief works such as construction of a temporary steel footbridge at bifurcation and laying pipes underneath the existing footbridges to improve its flow capacity will also be carried out.

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 construction 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

Construction of retaining wall at Access Road D and emergency flood relief works such as construction of wire fences, rock grille, temporary steel footbridge at bifurcation and laying pipes underneath the existing footbridges to improve its flow capacity, etc. 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.

The last ecological impact monitoring was carried out on 20th July 2010 and the next ecological impact monitoring was arranged in January 2011.

A non-compliance event regarding to the incident of oil leakage from the backhoe, and an environmental concern regarding to the change of condition of the natural riverbank at approximate ch.0 to 150 on the western side of the river channel were recorded in this reporting month. Until the end of this reporting period some of the follow up actions are still under process and therefore ET would pay serious attention on these cases and will report the outcome in the next EM&A report.

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	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	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	1. Ensure Remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non conformity	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	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	1. Ensure Remedial measures are properly implemented	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	58.2	61.1	49.4	4-Sep-10	11:20-11:50	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 2	55.8	57.2	42.3	4-Sep-10	10:45-11:15	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	61.2	62.4	59.7	4-Sep-10	15:56-16:26	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	60.7	63.0	53.6	4-Sep-10	15:15-15:45	Operation of Backhoe and Excavation Noise	N/A	Cloudy	Façade
UTP 5	63.4	68.2	56.2	4-Sep-10	14:41-15:11	Operation of Backhoe and Excavation Noise	N/A	Cloudy	Façade
UTP 6	65.8	70.3	58.4	4-Sep-10	14:08-14:38	Operation of Backhoe and Excavation Noise	N/A	Cloudy	Façade
UTP 7	57.3	59.7	51.4	4-Sep-10	13:33-14:03	Operation Noise from Power Generator and Hammering Noise	N/A	Cloudy	Façade
UTP 8	60.4	63.8	51.7	4-Sep-10	13:00-13:30	Operation Noise from Power Generator and Grab Lorry	N/A	Cloudy	Façade
UTP 9	56.3	59.2	43.4	4-Sep-10	09:56-10:26	Operation Noise from Power Generator and Grab Lorry	N/A	Cloudy	Façade
UTP 10	52.8	53.7	40.4	4-Sep-10	09:19-09:49	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	54.5	54.0	46.1	4-Sep-10	08:45-09:15	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	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	57.6	64.7	46.2	10-Sep-10	11:21-11:51	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 2	57.4	61.2	43.8	10-Sep-10	10:44-11:14	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 3	59.4	61.3	56.2	10-Sep-10	15:42-16:12	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	52.2	53.6	42.2	10-Sep-10	15:10-15:40	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 5	51.8	52.2	40.7	10-Sep-10	14:38-15:08	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 6	53.4	55.6	43.6	10-Sep-10	14:05-14:35	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 7	68.4	71.7	59.4	10-Sep-10	13:31-14:01	Concrete Drilling Noise, Operation Noise from Power Generator and Hammering Noise	N/A	Cloudy	Façade
UTP 8	64.1	67.2	57.9	10-Sep-10	13:00-13:30	Concrete Drilling Noise, Operation Noise from Power Generator and Hammering Noise	N/A	Cloudy	Façade
UTP 9	60.4	62.6	49.7	10-Sep-10	10:00-10:30	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	N/A	Cloudy	Façade
UTP 10	51.7	51.9	43.7	10-Sep-10	09:18-09:48	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	Cloudy	Façade
UTP 11	57.7	57.7	44.3	10-Sep-10	08:45-09:15	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	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	57.6	59.0	48.2	17-Sep-10	13:36-14:06	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	Background noise from traffic	Sunny	Façade
UTP 2	58.3	61.2	48.5	17-Sep-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	60.4	62.2	57.6	17-Sep-10	16:00-16:30	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	N/A	Sunny	Façade
UTP 4	52.3	53.5	41.0	17-Sep-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	51.6	51.6	43.6	17-Sep-10	14:47-15:17	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	54.7	56.3	48.2	17-Sep-10	14:15-14:45	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 7	55.6	59.7	47.3	17-Sep-10	11:08-11:38	Operation Noise from Power Generator	N/A	Sunny	Façade
UTP 8	58.7	62.2	49.5	17-Sep-10	10:34-11:04	Operation Noise from Power Generator and Grab Lorry	N/A	Sunny	Façade
UTP 9	60.3	63.2	52.2	17-Sep-10	09:56-10:26	Operation Noise of Grab Lorry	N/A	Sunny	Façade
UTP 10	51.8	52.0	40.4	17-Sep-10	09:18-09:48	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 11	55.2	55.5	43.8	17-Sep-10	08:4-09:15	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	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	60.5	61.4	48.6	24-Sep-10	13:35-14:05	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	Background noise from traffic	Cloudy	Façade
UTP 2	57.4	59.3	51.2	24-Sep-10	13:00-13:30	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	Background noise from traffic	Cloudy	Façade
UTP 3	60.2	62.2	57.3	24-Sep-10	16:05-16:35	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	50.3	51.2	42.0	24-Sep-10	15:27-15:57	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 5	51.8	53.4	46.2	24-Sep-10	14:55-15:25	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 6	54.2	54.5	46.3	24-Sep-10	14:22-14:52	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 7	58.2	59.4	49.7	24-Sep-10	11:18-11:48	Operation Noise of Grab Lorry	N/A	Cloudy	Façade
UTP 8	61.2	63.3	49.2	24-Sep-10	10:44-11:14	Operation Noise of Grab Lorry	N/A	Cloudy	Façade
UTP 9	57.4	58.2	48.8	24-Sep-10	10:10-10:40	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Cloudy	Façade
UTP 10	51.8	51.5	42.6	24-Sep-10	09:30-10:00	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Cloudy	Façade
UTP 11	57.3	57.5	49.3	24-Sep-10	08:57-09:27	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Cloudy	*Freefield

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

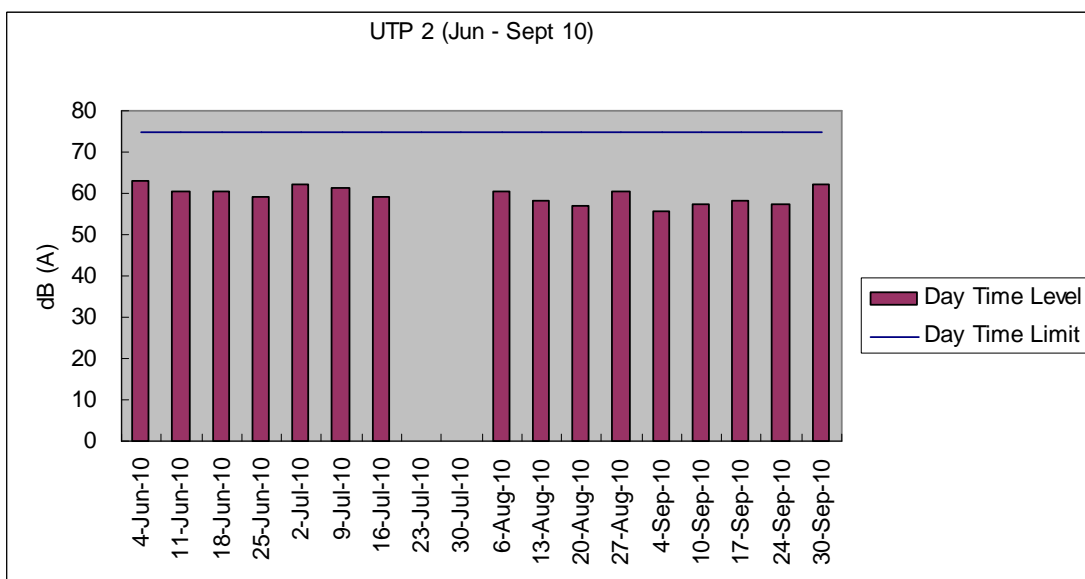
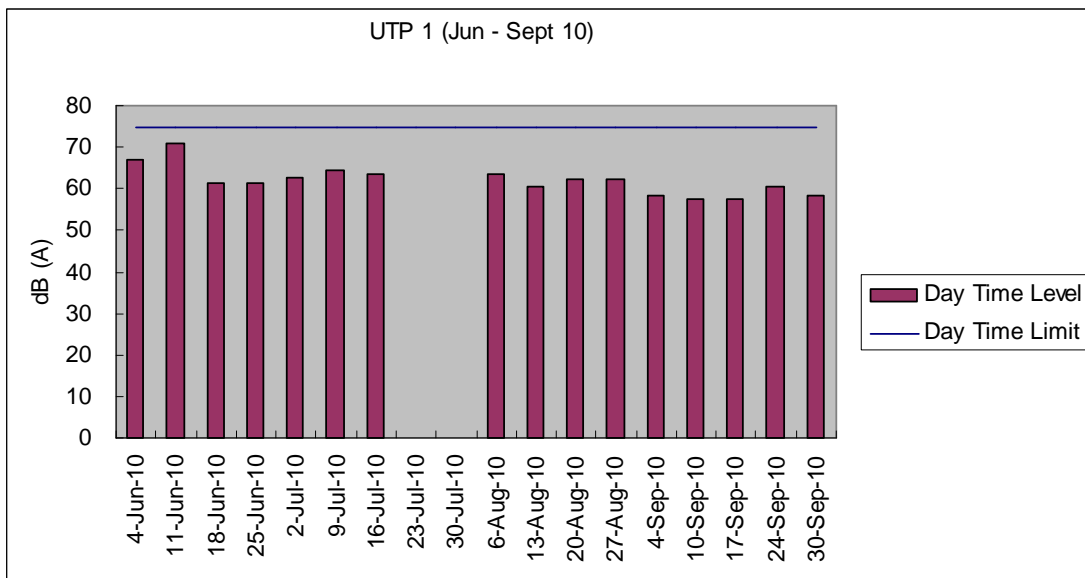
Location	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	58.3	59.2	50.2	30-Sep-10	13:32-14:02	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	Façade
UTP 2	62.2	65.3	48.3	30-Sep-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	N/A	Sunny	Façade
UTP 3	61.4	63.0	59.8	30-Sep-10	16:03-16:33	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	Façade
UTP 4	60.2	63.4	50.2	30-Sep-10	15:24-15:54	Operation of Backhoe and Excavation Noise	N/A	Sunny	Façade
UTP 5	64.3	68.4	49.9	30-Sep-10	14:52-15:22	Operation of Backhoe and Excavation Noise	N/A	Sunny	Façade
UTP 6	55.8	56.9	52.3	30-Sep-10	14:20-14:50	Operation of Backhoe	N/A	Sunny	Façade
UTP 7	54.8	55.2	48.7	30-Sep-10	11:18-11:48	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 8	55.1	55.1	53.7	30-Sep-10	10:46-11:16	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Sunny	Façade
UTP 9	60.4	61.0	48.7	30-Sep-10	10:13-10:43	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Sunny	Façade
UTP 10	53.2	54.7	49.2	30-Sep-10	09:35-10:05	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Sunny	Façade
UTP 11	59.7	59.9	51.8	30-Sep-10	09:03-09:33	The measured noise level was dominated by the background noise as no construction was being carried out during measurement	N/A	Sunny	*Freefield

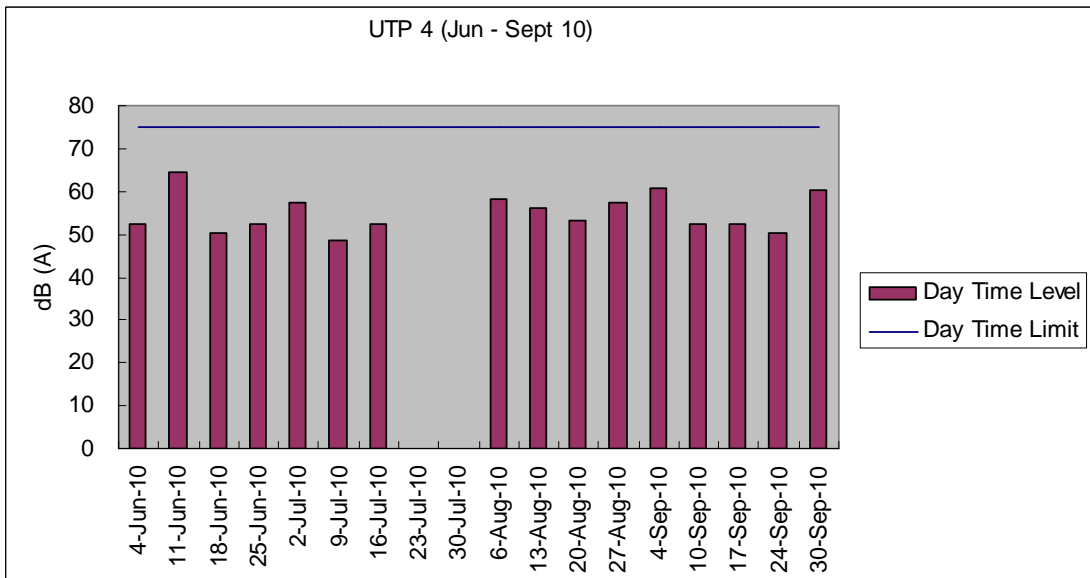
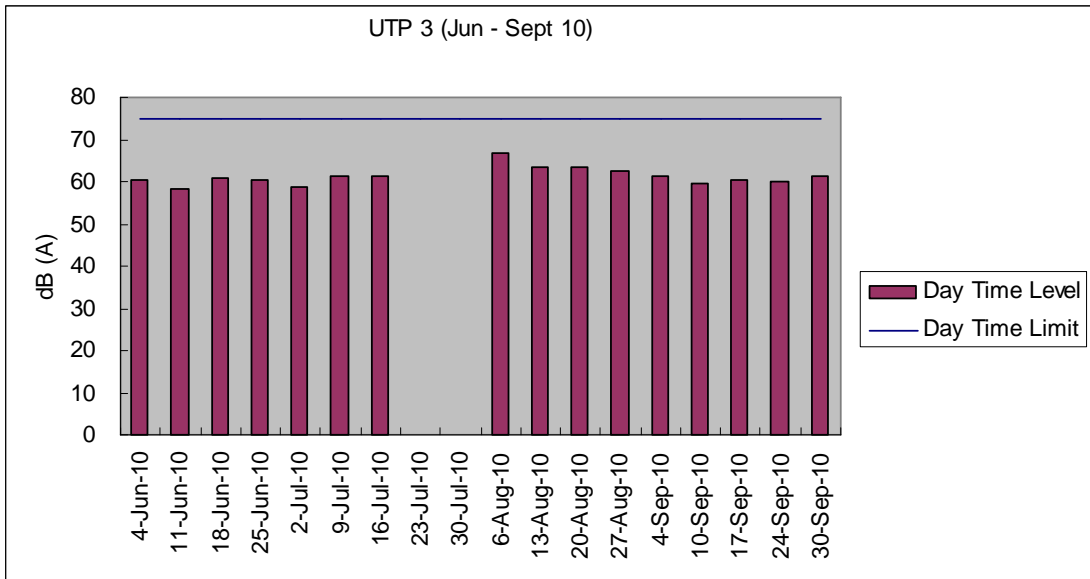
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

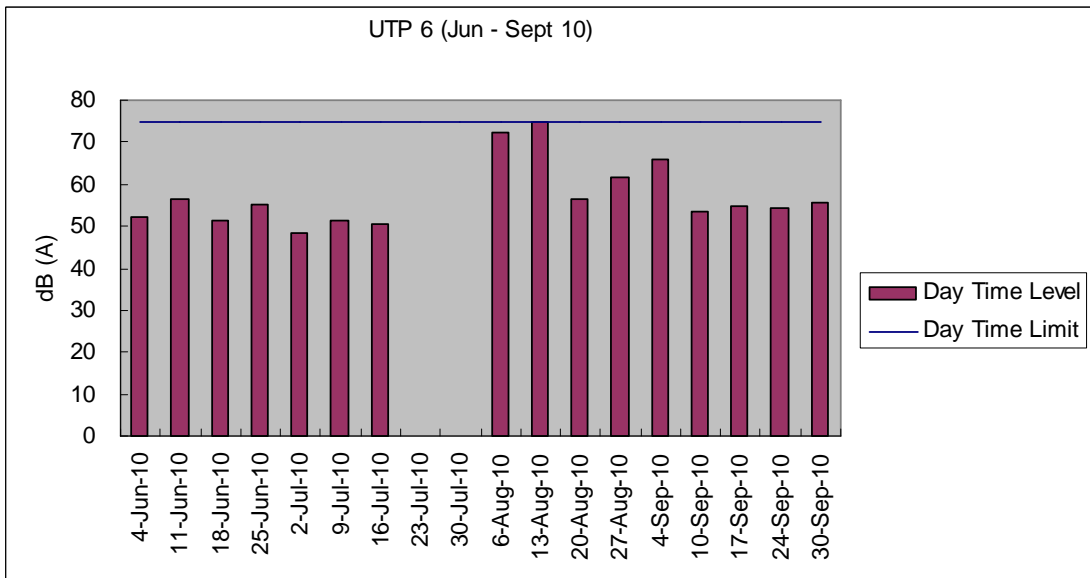
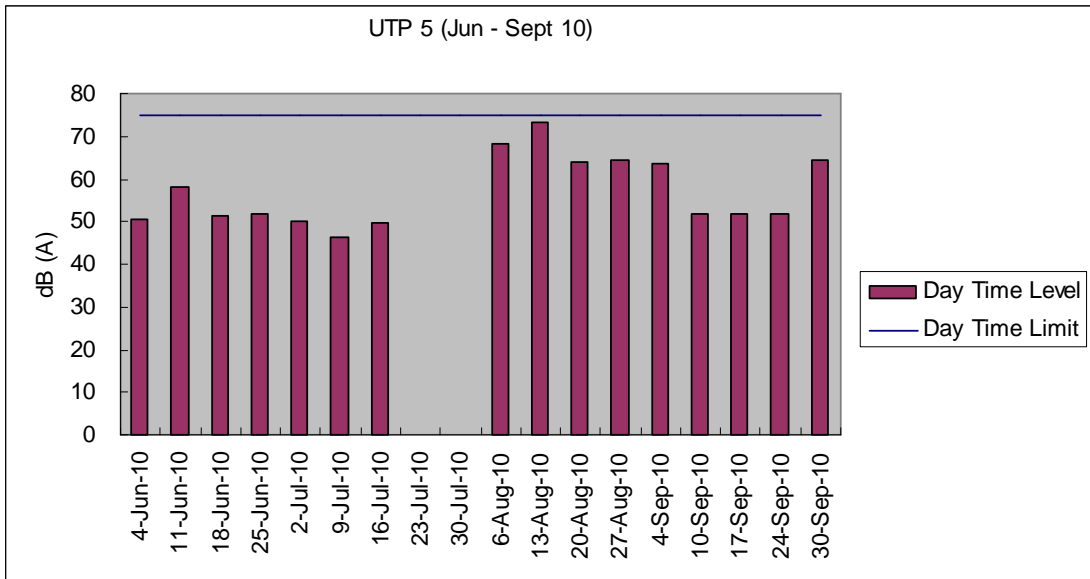
Graphical plot for noise measurements

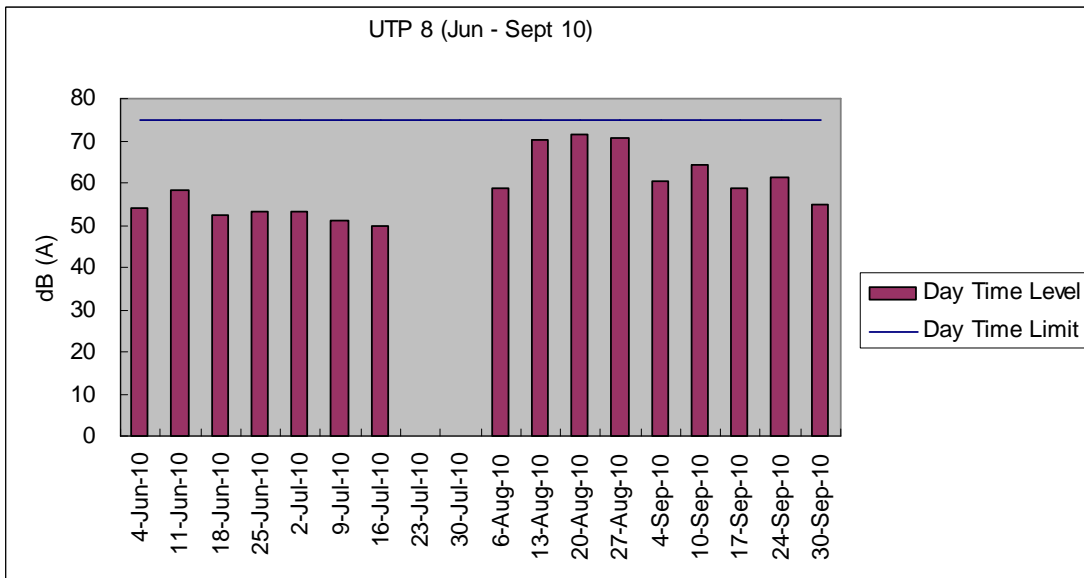
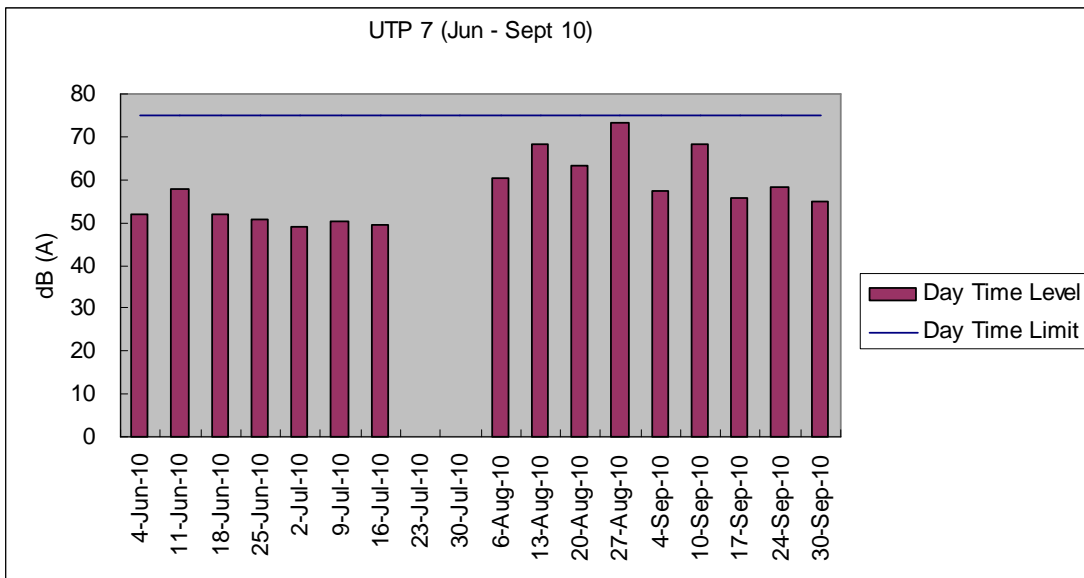
The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from June 2010 to September 2010.

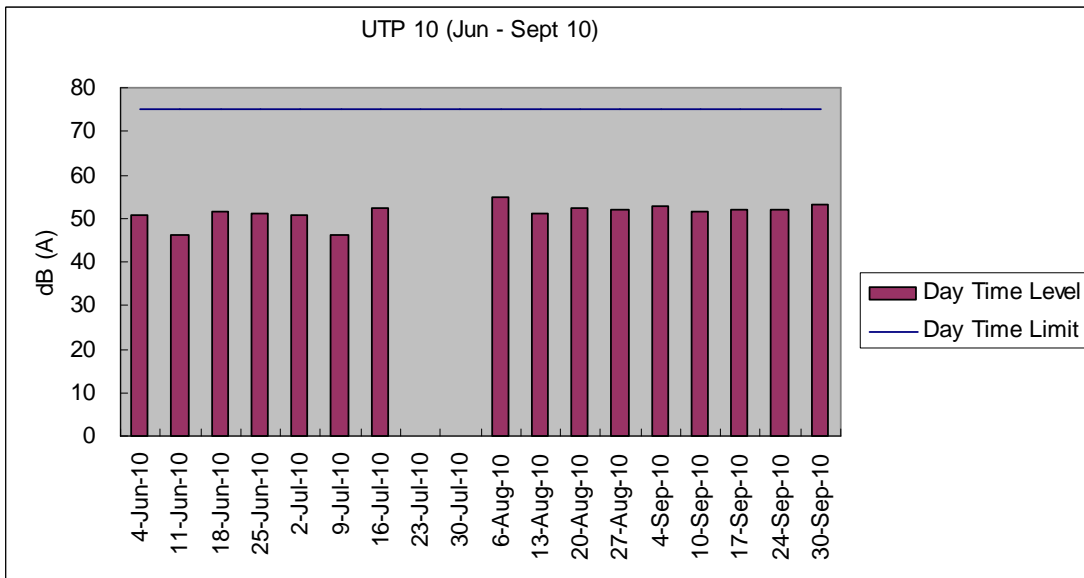
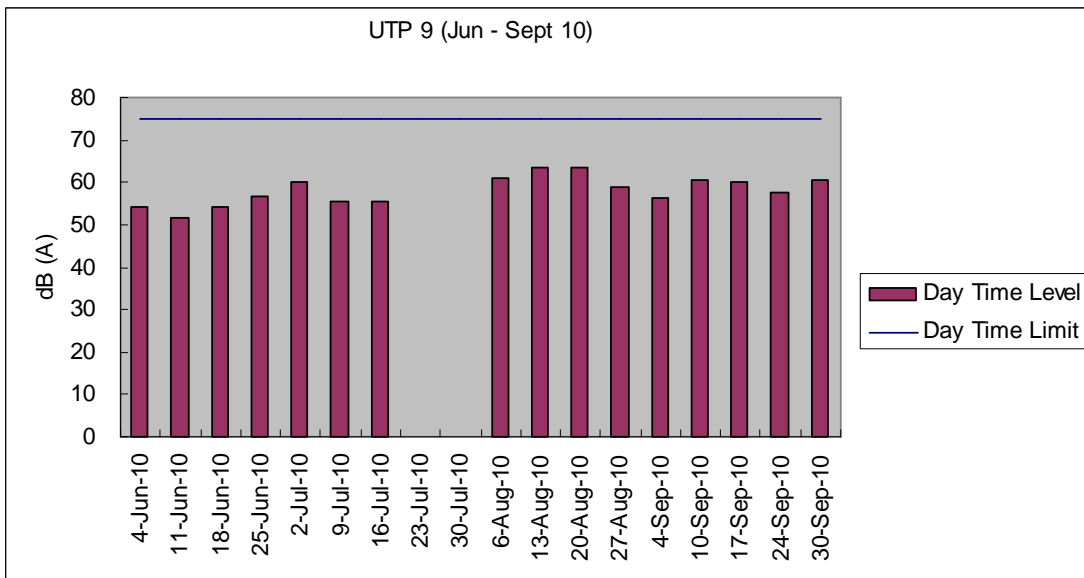
Noise monitoring originally proposed to be carried out 23rd and 30th July 2010 were cancelled due to the effect of flooding incident at UTPR.

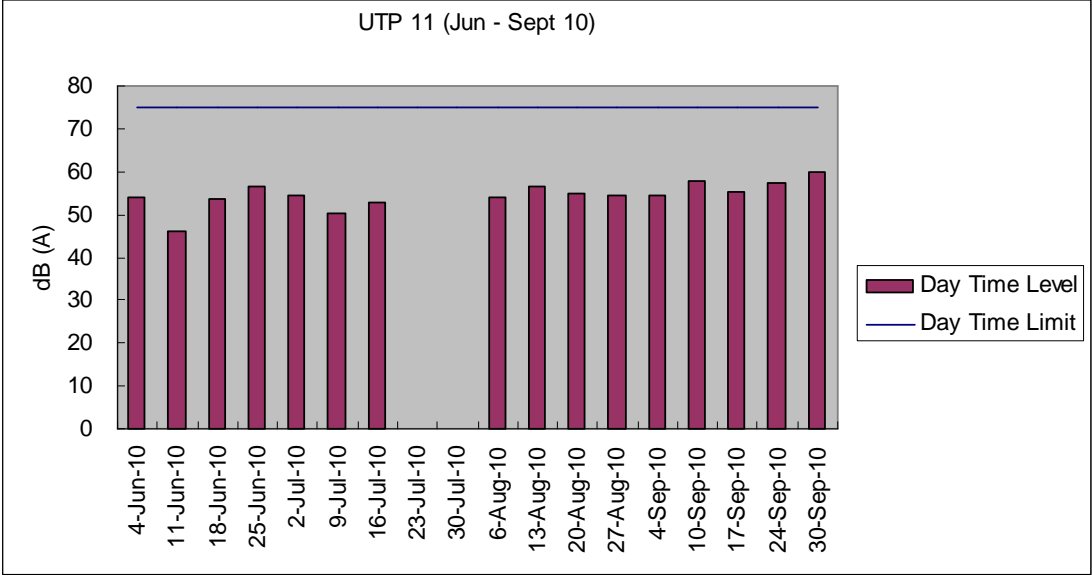


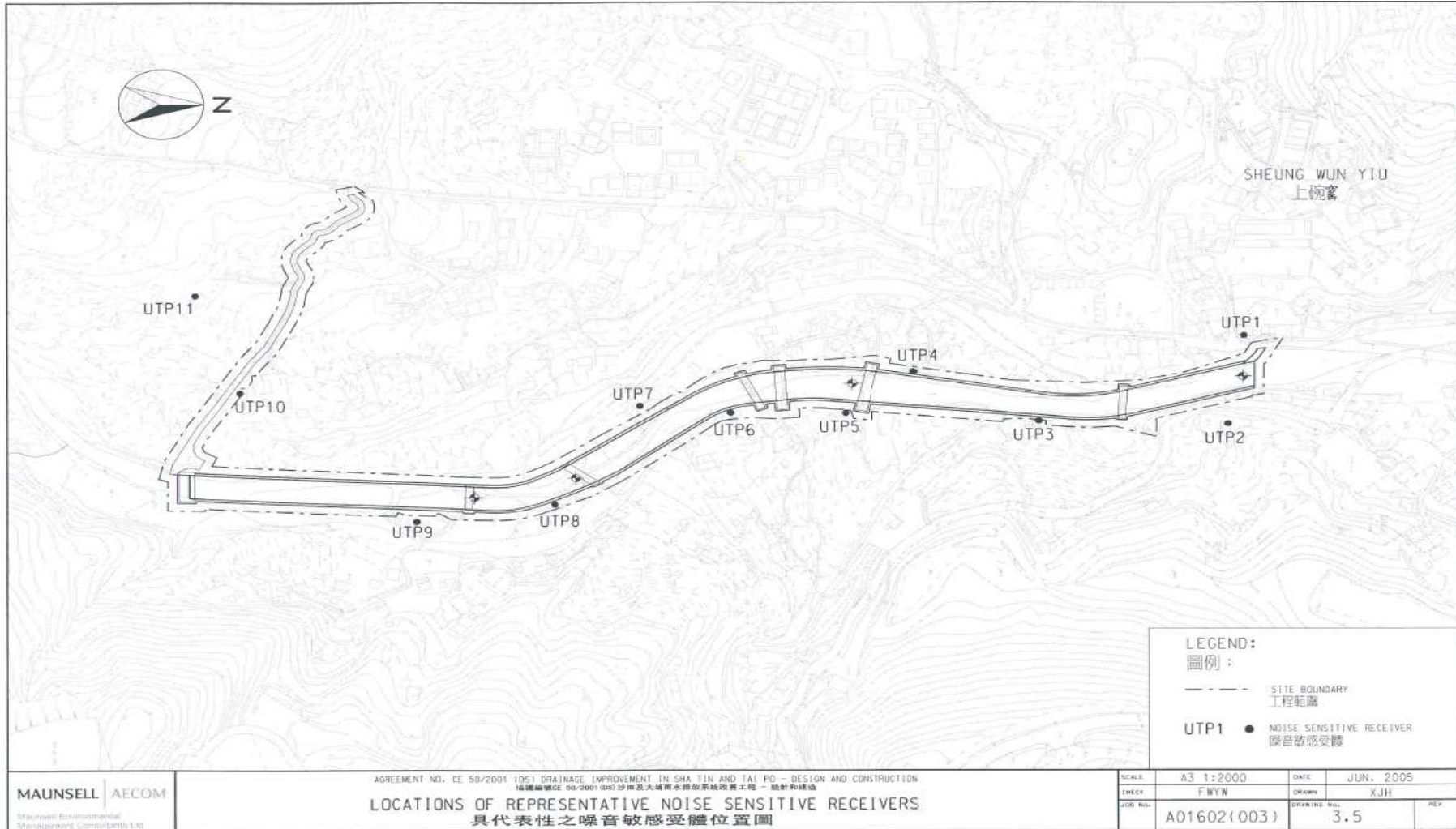












Appendix E: Monitoring schedule for the present and next reporting period

Master Schedule of EM&A works in September 2010

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

Master Schedule of EM&A works in October 2010

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

Appendix F: Cumulative complaint log

Environmental Parameters	Cumulative no. Brought forward	No. of complaint September 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	Implemented	Not required
	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	Concerns raised due to the flood incident on 22 Jul 10 and the follow up flood relief works	To be followed
	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 generated, reused and disposed since 15th September 2008

Type of waste	Inert Waste			Non-Inert Waste			Chemical Waste		
	Amount generated	Amount reused	Amount disposed	Amount generated	Amount reused	Amount disposed	Amount generated	Amount reused	Amount disposed*
Year 2008 to 2009	36.9m ³	0	36.9m ³	2 tonnes	0	2 tonnes	20kg	0	20kg
January 2010	0	0	0	0	0	0	0	0	0
February 2010	205m ³	205m ³	0	0	0	0	0	0	0
March 2010	125m ³	125m ³	0	0	0	0	0	0	0
April 2010	354m ³	354m ³	0	0	0	0	0	0	0
May 2010	13m ³	13m ³	0	0	0	0	0	0	0
June 2010	10m ³	10m ³	0	0.020 tonnes	0	0.020 tonnes	0	0	0
July 2010	10m ³	10m ³	0	0	0	0	0	0	0
August 2010	265m ³	265m ³	0	0.064 tonnes	0	0.064 tonnes	0	0	0
September 2010	550m ³	550m ³	0	0.057 tonnes	0	0.057 tonnes	0	0	0
Total	1568.9m³	1532m³	36.9m³	2.141 tonnes	0	2.141 tonnes	20kg	0	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

