

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 January 2011

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Executive summary

This is the twenty-ninth 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 January 2011 to 31st January 2011. Construction of footbridge and retaining wall and gabion wall 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 conducted on 27th January 2011 by the Ecologist Dr. Mark Shea. The ecological impact monitoring report prepared by the Ecologist is still under preparation and the report will be provided in the next monthly report. 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 has been omitted. Therefore, no vibration monitoring was conducted by ET during the reporting month.

Two non-compliance events, regarding generation of muddy water causing contamination to the downstream area, were recorded during weekly site inspection held on 26th January 2011. Further details please refer to Section 6.2.

There was no formal complaint in relation to environmental issue received in the reporting month.

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

There was no reporting change for this month.

Construction of retaining wall, footbridge and gabion wall and box culvert will be the 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-ninth 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 January 2011. 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

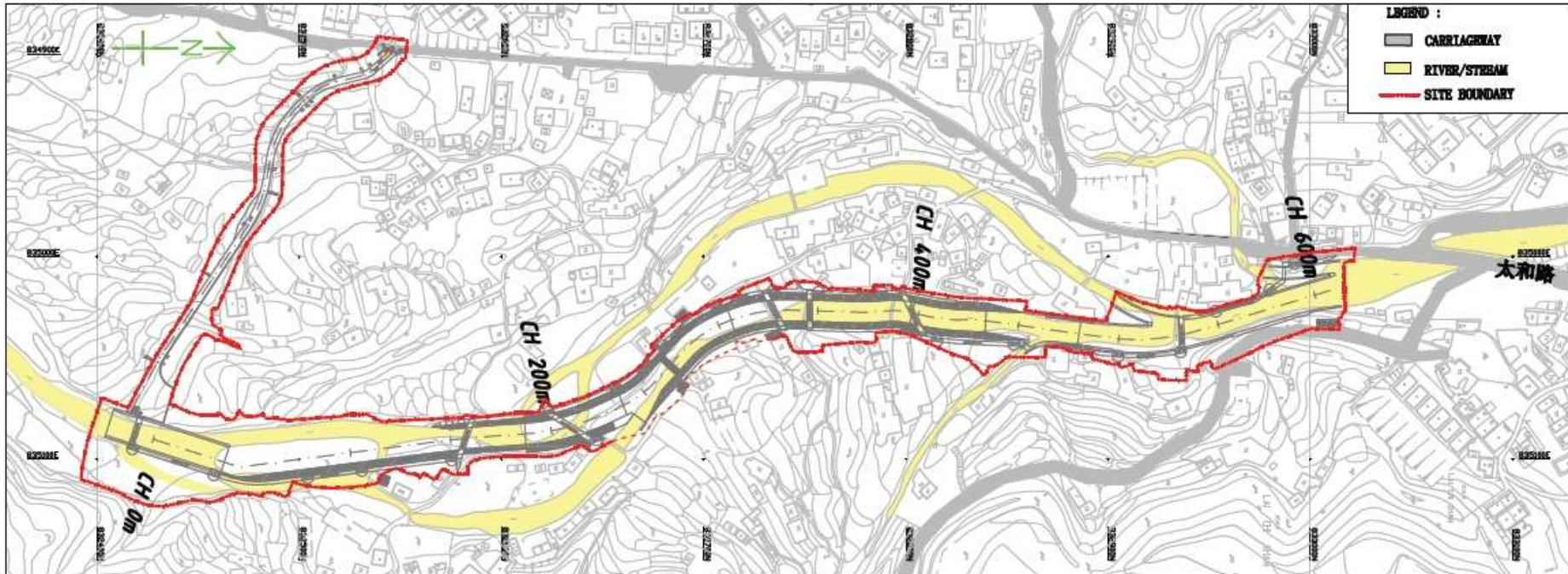
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in March 2012.

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

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

- 1.) construction of retaining wall;
- 2.) construction of footbridge; and
- 3.) construction of gabion wall.

2.5 Construction activities for the next reporting period

Major construction activities carried out by the contractor anticipated for the coming month include:

- 1.) construction of retaining wall;
- 2.) construction of footbridge; and
- 3.) construction of gabion wall.

2.6 Non-compliance with the environmental performance limits

According to the monitoring results no non-compliance with the environmental performance limits were recorded for this reporting month. However, two non-compliance events regarding observation of muddy water during inspection were recorded on 26th January 2011. Details of the events please refer to Section 6.2.

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, eleven 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 27th January 2011. The Ecological Impact monitoring report, prepared by Ecologist Dr. Mark Shea, is under preparation and would be provided 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 7th, 14th, 21st and 28th January 2011. Measured $L_{eq(30min)}$ results ranged from 52.2dB(A) to 70.8dB(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 5th, 12th, 19th and 26th January 2011. 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, 8th, 15th, 22nd and 31st January 2011. 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
20, 27 Oct, 03, 17 Nov & 08 Dec 10	Oil stains were observed on the haul access and underneath the backhoe at approximate ch.50, 100, 400, 500 and 600 respectively	Observation	Contractor was reminded to provide regular maintenance to the site equipments as to avoid leakage. Contaminated soil observed should be collected and handled as chemical waste for storage and disposal	Contaminated soil were collected as reported by Contractor	12 Jan 11	--
03 Nov 10	Implementation of protective measures for haul access and exposed riverbanks was outstanding	Observation	Contractor was reminded to provide proper bund wall at edges of haul access and geo-textile coverings to the riverbanks to prevent erosion and runoff	Still outstanding. To be followed during the next reporting period	Ongoing	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
17 Nov 10	Excavated materials were stockpiled on top of the riverbank at approximate ch.200	Observation	Contractor was advised to remove the stockpiles away from the river channel as soon as possible	Concerned stockpiles were removed prior to the inspection on 05 Jan	05 Jan 11	--
08 Dec 10	Implementation of water quality mitigation measure for construction of footbridge at ch.200 was outstanding	Observation	Contractor was recommended to implement necessary protective measures, such as provision of bund wall and geo-textile coverings, to avoid water contamination from site works	Still outstanding. To be followed during the next period	Ongoing	--
15 Dec 10	Implementation of water quality mitigation measure f at ch.500 was outstanding	Observation	Contractor was recommended to implement necessary protective measures, such as provision of bund wall and geo-textile coverings, to avoid water contamination from site works	Concerned haul access was rectified by providing bund wall, which formed by concrete blocks, prior to the inspection on 12 Jan	12 Jan 11	--
15, 22 & 29 Dec 10	Sandbag barriers for temporary crossing at ch.600 were observed to be damaged	Observation	Contractor was advised to replace the damaged sandbags to avoid grit and soil from dropping into the river channel	Follow up action was taken as advised prior to the inspection on 05 Jan	05 Jan 11	--
29 Dec 10	Site surface was observed to be dry and dusty	Observation	Contractor was reminded to dampen dusty static area regularly for dust suppression	Follow up action was taken as advised prior to the inspection on 05 Jan	05 Jan 11	--
05 Jan 11	Site water seepage from site at approximate ch.500 caused contamination of water quality at the downstream area	Observation	Contractor was requested to implement necessary corrective action to stop further deterioration of water quality immediately	Follow up action was taken as advised. No further seepage of site water was observed during inspection on 12 Jan	12 Jan 11	--
12 Jan 11	River water at down stream area from ch.450 was observed to be turbid and such condition was attributed by turbid water outside site boundary	Reminder	Although condition observed was not mainly caused by project works Contractor was still reminded to pay serious attention on not arising muddy water from their activities	No follow up action was required	N/A	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
12 & 19 Jan 11	Riverbanks along ch.300 to 400 was barely exposed without protective measures	Observation	Contractor was recommended to protect the riverbanks and haul access by provision of bund wall and geo-textile coverings	Still outstanding. To be followed during the next reporting period	Ongoing	--
26 Jan 11	No mitigation measures in preventing erosion and surface runoff for newly formed haul access and riverbanks was implemented at ch.300. The condition observed caused consecutive sediment runoff and contamination of water quality to the downstream area	Non-compliance	Details of advice given please refer to Section 6.2	Details of action taken please refer to Section 6.2	Ongoing	--
26 Jan 11	Muddy water arisen from excavation works at ch.250 was being diverted to an under-designed site water treatment system. Muddy water without sufficient treatment was then discharged to the river channel and caused contamination to the downstream area	Non-compliance	Details of advice given please refer to Section 6.2	Details of action taken please refer to Section 6.2	Ongoing	--
26 Jan 11	Insufficient of noise mitigation measure was observed for the hydraulic breakers occupying for boulder breaking activities	Observation	Contractor should warp up the breaker tips of the hydraulic breakers with proper noise insulation materials to minimize noise generation	To be followed during the next reporting period	Ongoing	--

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 Jan 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
08 Jan 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
15 Jan 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
22 Jan 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
31 Jan 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A

6.2 Non-compliance

Two non-compliance events regarding insufficient of mitigation measures causing sediment runoff and water quality impact to the down stream were recorded on 26th January 2011 respectively.

During inspection carried out on 19th January 2011, the newly formed haul access and riverbanks at approximate ch.300 was not properly protected and therefore causing consecutive sediment runoff and water quality impact to the down stream area. As it was repeatedly observed during the inspection on 26th January 2011 and due to the seriousness of the condition ET considered those as a non-compliance event. To rectify the discrepancies Contractor was requested to implement corrective actions immediately, which at least include the following:

- Bund wall should be provided at the edge of the haul access to prevent surface runoff
- Exposed riverbanks and soil slopes should be covered with geo-textile coverings to prevent erosion and sediment runoff
- Any waste water, underground water and/or discharge within site area should be diverted to proper site water treatment facility for treatment before discharge into the river channel

The second non-compliance event was recorded due to the observation of muddy effluent discharge on 26th January 2011. During the inspection muddy water arisen from excavation activities being carried out at ch.250 was diverted to an under-designed site water treatment system. Muddy water without sufficient treatment was then discharged to the river channel and caused contamination to the downstream area. Due to the nature and quantities of site water generated from excavation, Contractor was recommended to further enhance their site water treatment system as to ensure effluent meets relevant requirements from applied Effluent Discharge License, Water Pollution Control Ordinance (WPCO) and Environmental Impact Assessment Ordinance (EIAO).

By the end of the reporting period implementation of proper follow up actions for the abovementioned discrepancies was still outstanding. And therefore, contractor was reminded again to implement necessary corrective actions as soon as possible. The effectiveness of mitigation measures implemented will be further checked by ET and

to be reported during the next EM&A report.

6.3 Recommendations

Contractor was recommended to implement necessary measures in mitigating water quality impact arisen from construction activities. Prior to excavation, bund walls wrapped by geo-textile should be formed as an enclosed environment for excavation activities to prevent any earth material and site water from entering into the river channel. Riverbanks and earth bunds should be covered with geo-textile coverings to prevent erosion. Contractor should also prevent excessive storage of any earth materials on site as to avoid soil debris from washing into the river channel by surface runoff.

Sufficient and effective site water treatment facilities should be provided on site. Any wastewater, underground water and muddy effluent within site area should be diverted for treatment before discharge.

Contractor should also implement necessary measures to mitigate noise generation from construction works such as demolition and boulder breaking. Hydraulic breakers for those activities should be covered by adequate noise insulation materials as far as practicable. Noisy activities should be scheduled and arranged to prevent parallel operation of site equipments and excessive noise generation during early morning.

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 January 2011

Type of waste	Amount generated	Amount reused	Amount disposed
Inert waste	117 m ³	117 m ³	0
Non-inert waste	44 kg	0	44 kg
Chemical waste	0	N/A	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

Construction of retaining wall, footbridge and gabion wall will still be major construction activities to be carried out in the upcoming month. The construction activities for these items will generate environmental impacts in several aspects.

To minimize water quality impact arising from construction activities within river channel, 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.

Contractor was reminded to provide regular water spraying to dusty static area for dust suppression. Excessive storage of earthy stockpile and/or C&D wastes should be prevented to minimize air quality impact arisen by wind erosion.

Aforementioned 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, footbridge, formation and gabion wall were major site activities 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 has been omitted. 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.

Two non-compliance events, regarding generation of muddy water causing contamination to the downstream area, were recorded during weekly site inspection held on 26th January 2011. The follow up action taken by Contractor was still outstanding and final outcome will be updated during the next EM&A report.

There was no formal complaint in relation to environmental issue received in the reporting month.

Ecological impact monitoring was conducted on 27th January 2011. The next ecological impact monitoring would be carried out in July 2011.

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	66.2	70.4	60.6	7-Jan-11	09:24-9:54	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	65.4	71.3	57.4	7-Jan-11	08:45-09:15	Boulder breaking and boulder movement	Background noise from traffic	Cloudy	Façade
UTP 3	68.4	73.7	60.2	7-Jan-11	10:01-10:31	Boulder breaking and boulder movement	N/A	Cloudy	Façade
UTP 4	68.8	72.6	61.7	7-Jan-11	10:35-11:05	Operation of backhoe	N/A	Cloudy	Façade
UTP 5	70.5	74.8	32.2	7-Jan-11	11:07-11:37	Operation of backhoe	N/A	Cloudy	Façade
UTP 6	66.8	72.2	58.0	7-Jan-11	15:55-16:25	Operation of backhoe	N/A	Cloudy	Façade
UTP 7	64.7	70.3	55.4	7-Jan-11	15:23-15:53	Operation of backhoe	N/A	Cloudy	Façade
UTP 8	64.3	69.3	53.4	7-Jan-11	14:50-15:20	Operation of backhoe	N/A	Cloudy	Façade
UTP 9	62.1	65.5	57.3	7-Jan-11	14:11-14:41	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	53.7	54.2	41.1	7-Jan-11	13:35-14:05	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	55.0	55.4	43.3	7-Jan-11	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	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	63.3	68.0	55.4	14-Jan-11	09:29-9:59	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	61.3	66.6	54.1	14-Jan-11	08:53-09:23	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	65.6	66.8	62.2	14-Jan-11	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 4	66.4	71.0	58.2	14-Jan-11	10:43-11:13	Operation of backhoe	N/A	Cloudy	Façade
UTP 5	64.3	70.1	53.0	14-Jan-11	11:15-11:45	Operation of backhoe	N/A	Cloudy	Façade
UTP 6	62.4	66.3	51.8	14-Jan-11	16:07-16:37	Operation of backhoe	N/A	Cloudy	Façade
UTP 7	58.8	59.2	50.3	14-Jan-11	15:33-16:03	Operation of backhoe	N/A	Cloudy	Façade
UTP 8	60.3	64.1	51.6	14-Jan-11	14:58-15:28	Operation of backhoe	N/A	Cloudy	Façade
UTP 9	57.1	59.4	51.8	14-Jan-11	14:19-14:49	Operation of backhoe	N/A	Cloudy	Façade
UTP 10	52.2	52.4	41.6	14-Jan-11	13:37-14:07	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	54.3	54.3	45.2	14-Jan-11	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	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	63.4	68.4	54.7	21-Jan-11	09:38-10:08	Operation of backhoe	Background noise from traffic	Sunny	Façade
UTP 2	61.8	65.2	53.6	21-Jan-11	09:00-09:30	Operation of backhoe	Background noise from traffic	Sunny	Façade
UTP 3	63.4	65.8	60.7	21-Jan-11	10:15-10:45	Operation of backhoe	N/A	Sunny	Façade
UTP 4	68.3	74.6	60.4	21-Jan-11	10:52-11:22	Operation of backhoe	N/A	Sunny	Façade
UTP 5	63.4	70.2	57.4	21-Jan-11	11:25-11:55	Operation of backhoe	N/A	Sunny	Façade
UTP 6	62.4	66.4	55.4	21-Jan-11	16:00-16:30	Operation of backhoe	N/A	Sunny	Façade
UTP 7	64.0	66.8	57.3	21-Jan-11	15:23-15:53	Operation of backhoe	N/A	Sunny	Façade
UTP 8	68.8	73.5	60.3	21-Jan-11	14:48-15:18	Operation of backhoe	N/A	Sunny	Façade
UTP 9	63.4	66.6	56.6	21-Jan-11	14:09-14:39	Operation of backhoe	N/A	Sunny	Façade
UTP 10	55.4	55.9	43.3	21-Jan-11	13:33-14:03	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	56.4	56.7	45.0	21-Jan-11	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	*Freefield

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

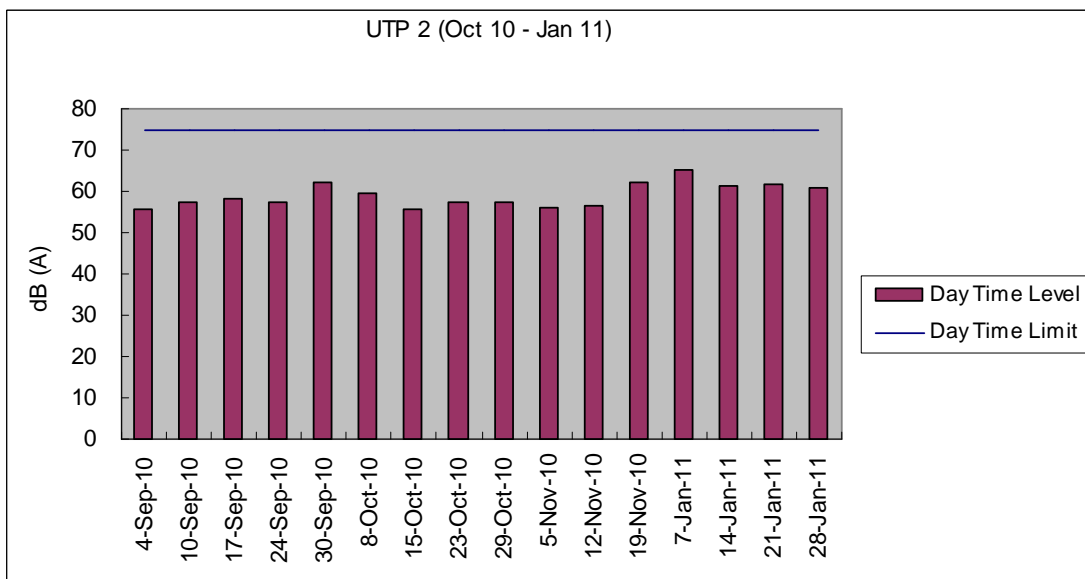
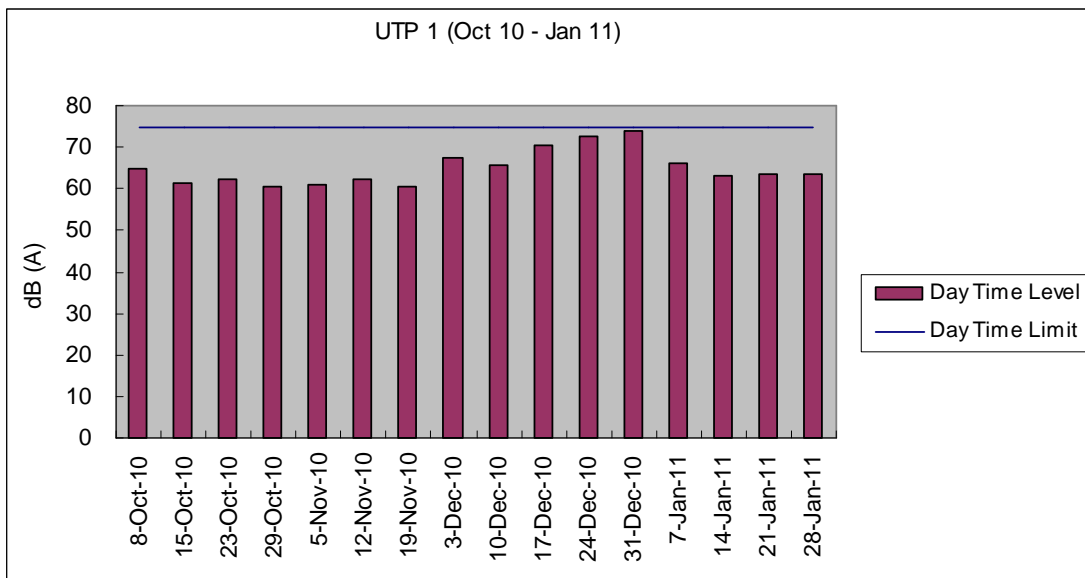
Location	Leq 30min	L ₁₀ 30min	L ₉₀ 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	63.4	68.8	56.2	28-Jan-11	13:34-14:04	Boulder Breaking	Background noise from traffic	Cloudy	Façade
UTP 2	60.8	67.4	53.2	28-Jan-11	13:00-13:30	Boulder Breaking	Background noise from traffic	Cloudy	Façade
UTP 3	68.6	74.4	60.5	28-Jan-11	14:09-14:39	Boulder Breaking	N/A	Cloudy	Façade
UTP 4	69.4	74.6	61.7	28-Jan-11	14:45-15:15	Operation of backhoe	N/A	Cloudy	Façade
UTP 5	70.8	76.4	65.6	28-Jan-11	15:17-15:47	Operation of backhoe	N/A	Cloudy	Façade
UTP 6	67.7	73.4	64.5	28-Jan-11	15:51-16:21	Operation of backhoe	N/A	Cloudy	Façade
UTP 7	67.0	74.3	63.4	28-Jan-11	11:27-11:57	Operation of backhoe	N/A	Cloudy	Façade
UTP 8	64.4	71.8	57.3	28-Jan-11	10:55-11:25	Operation of backhoe	N/A	Cloudy	Façade
UTP 9	64.3	66.6	58.3	28-Jan-11	10:18-10:48	Operation of backhoe	N/A	Cloudy	Façade
UTP 10	53.5	53.5	41.3	28-Jan-11	09:34-10:04	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	N/A	Cloudy	Façade
UTP 11	55.6	56.3	43.8	28-Jan-11	08:56-09:26	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	*Freefield

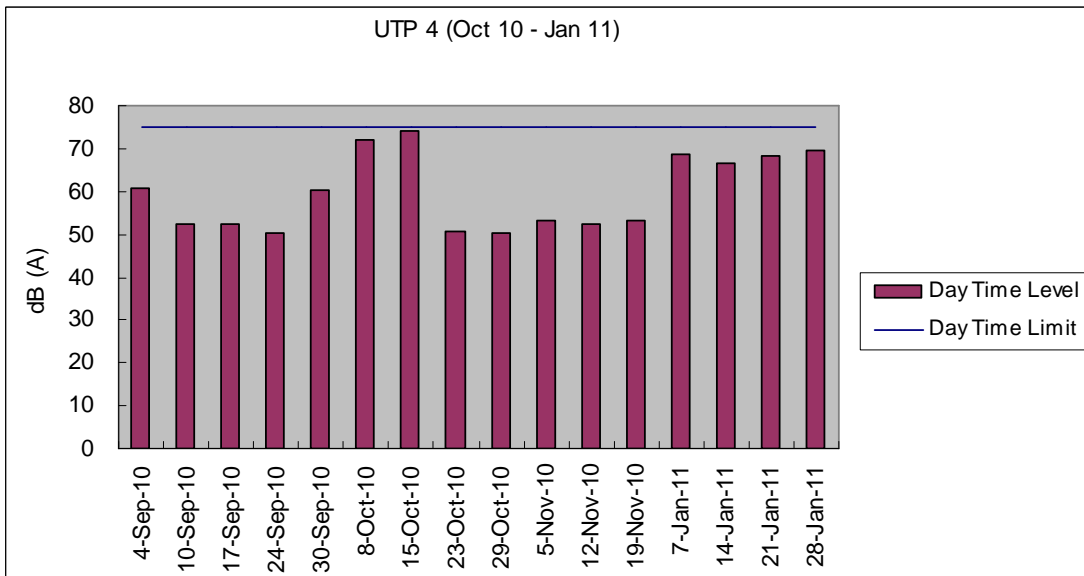
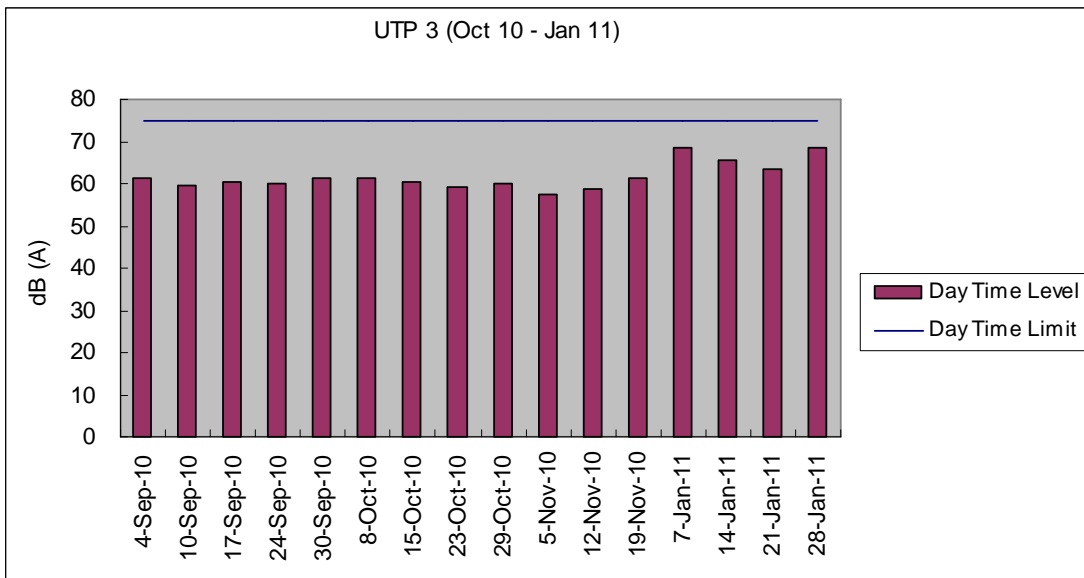
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

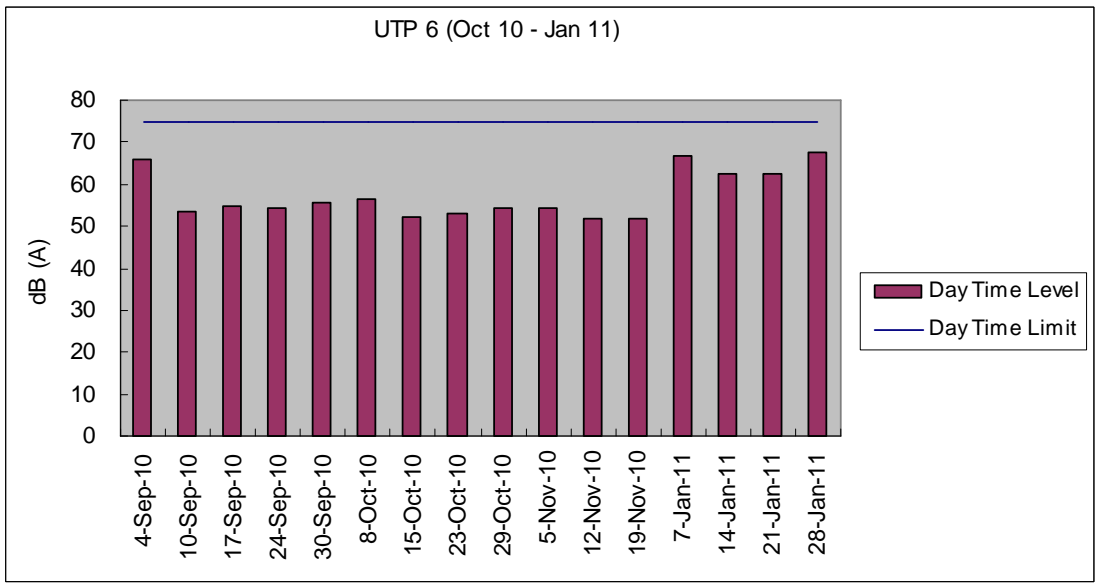
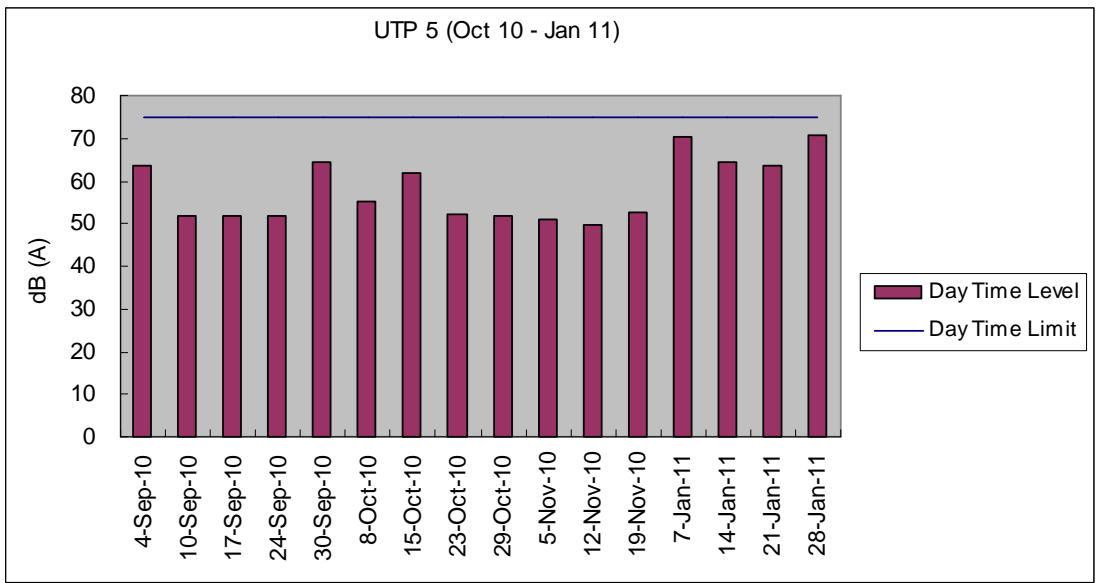
Graphical plot for noise measurements

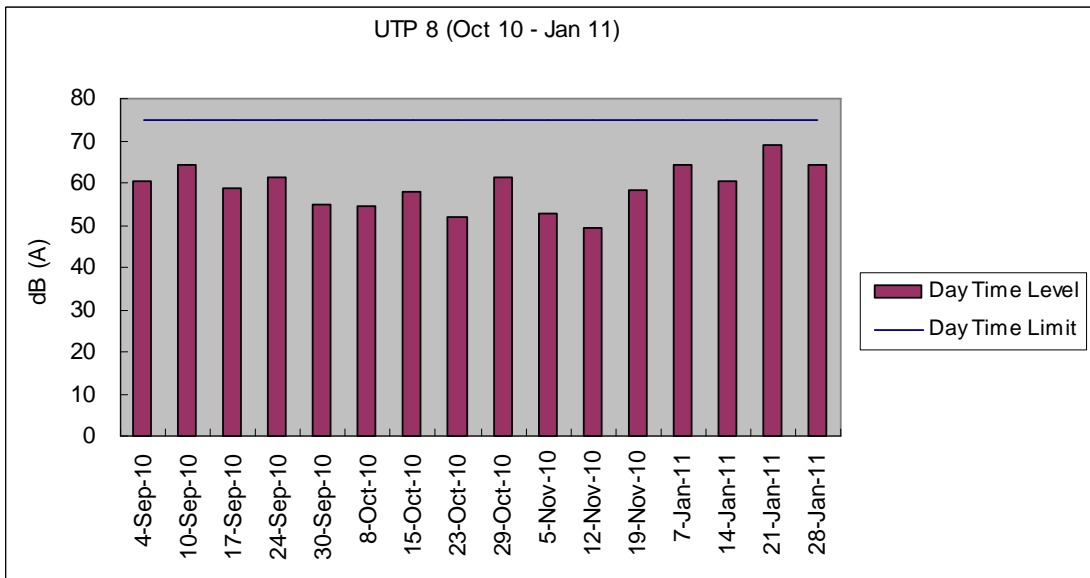
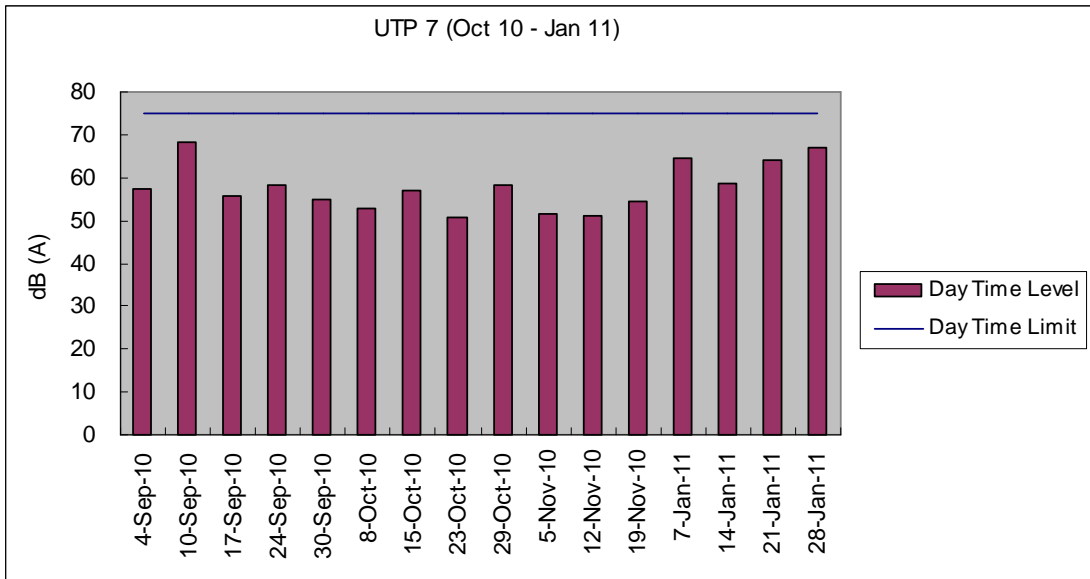
The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from October 2010 to January 2011.

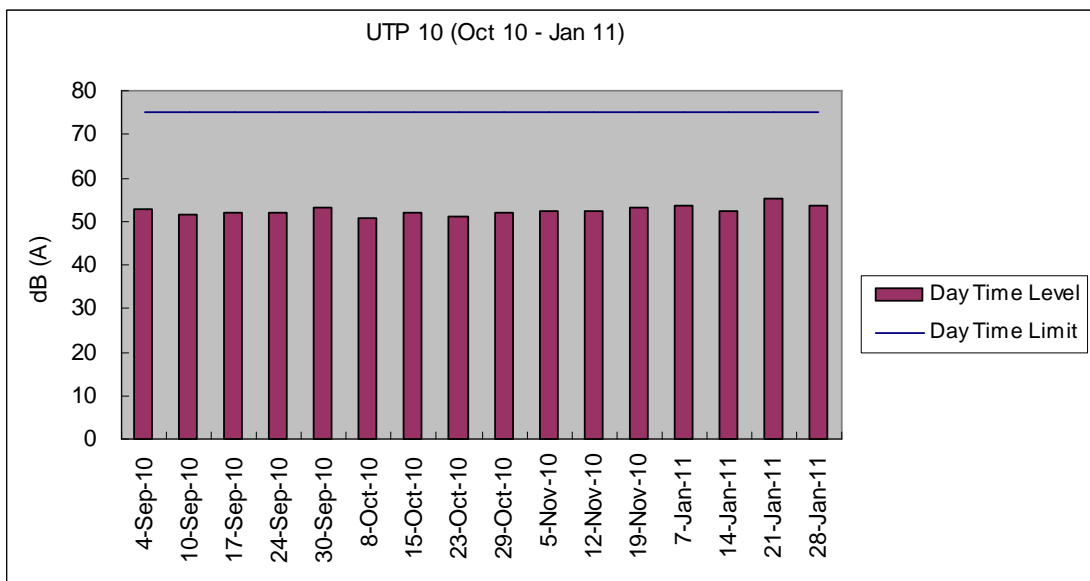
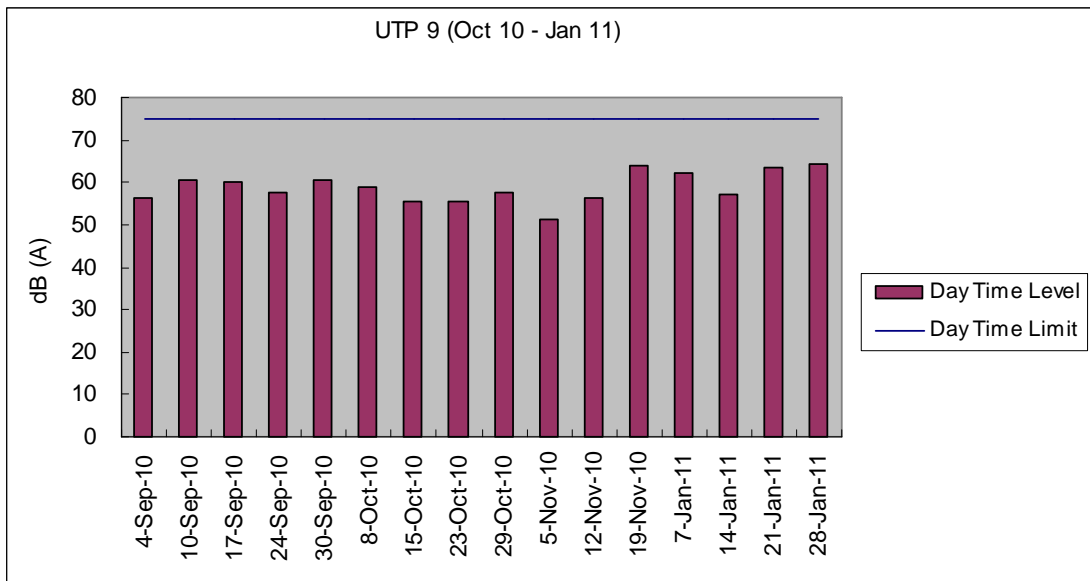
Noise monitoring originally proposed to be carried out 26th November 2010 was cancelled due to security and safety reason.

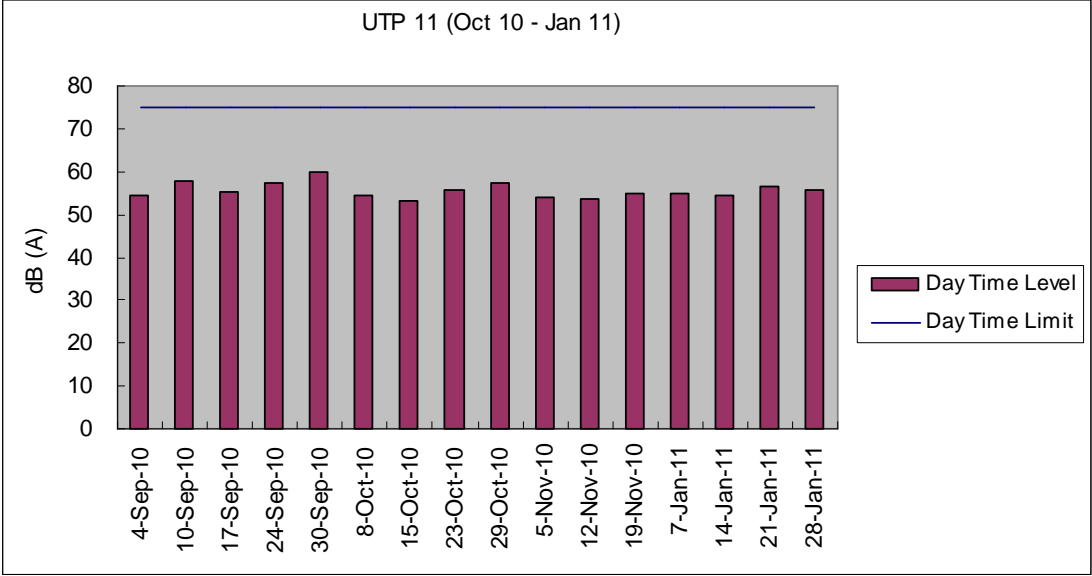


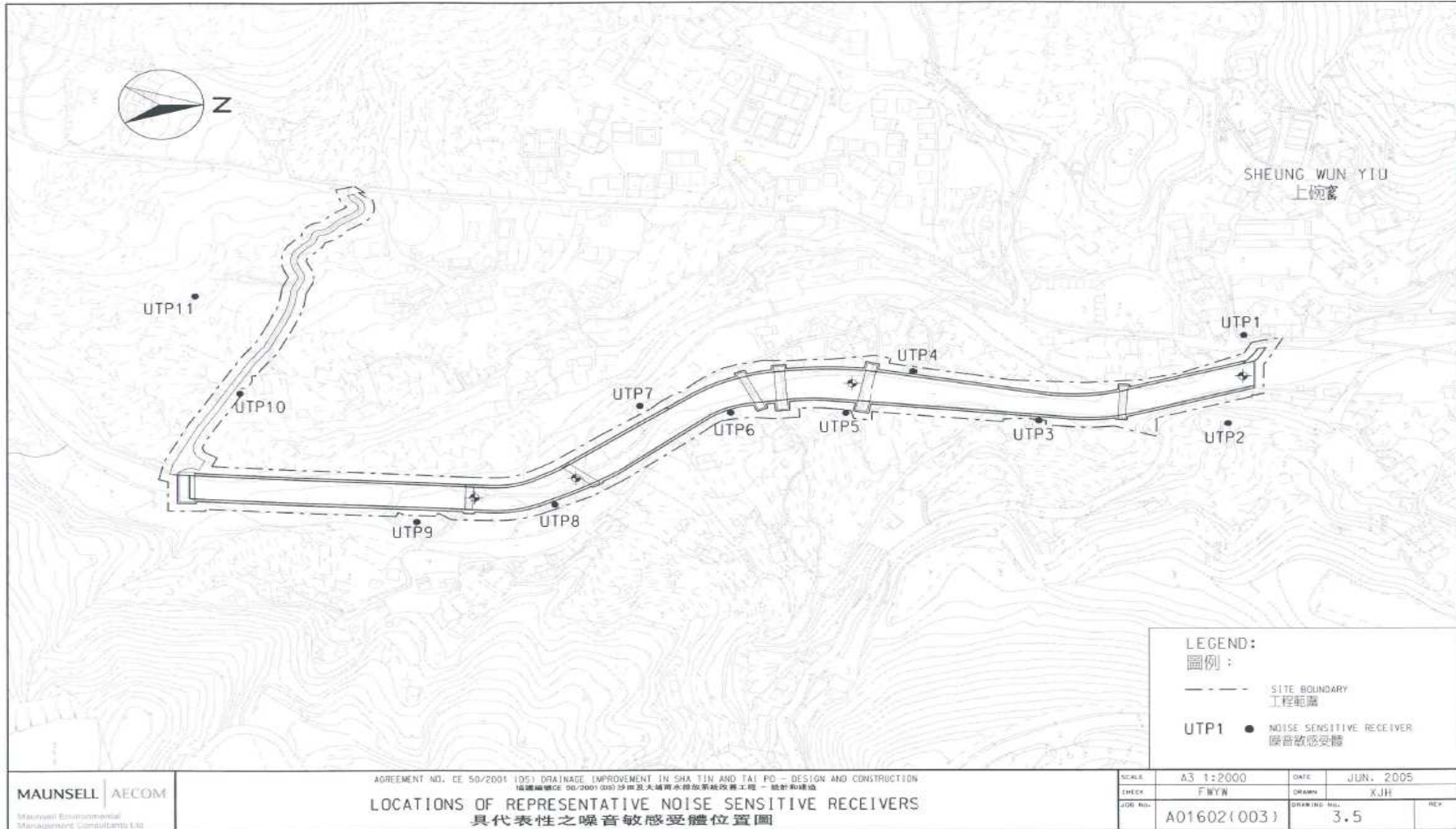












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AGREEMENT NO. CE 50/2001 (05) DRAINAGE IMPROVEMENT IN SHA TIN AND TAI PO - DESIGN AND CONSTRUCTION
 協議編號 CE 50/2001 (05) 沙田及大埔雨水排放系統改善工程 - 設計和建造
LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS
 具代表性之噪音敏感受體位置圖

SCALE	A3 1:2000	DATE	JUN. 2005
CHECK	F.W.Y.W.	DRAWN	X.J.H.
JOB NO.	A01602(003)	DRAWING NO.	3.5
		REV	

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

Master Schedule of EM&A works in January 2011

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

Master Schedule of EM&A works in February 2011

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

Appendix F: Cumulative complaint log

Environmental Parameters	Cumulative no. Brought forward	No. of complaint January 2011	Overall Total
Air/Dust	1	0	1
Noise	2	0	2
Water	8	0	8
House Keeping Hygiene	0	0	0
Chemical waste	0	0	0
Total	11	0	11

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	Deficiency identified	Ongoing

	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, 27 th , 28 th October 2009, 15 th October and 9 th November 2010	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 disposed*
Year 2008 to 2009	36.9m ³	0	36.9m ³	2.000 tonnes	0	2.000 tonnes	20kg	20kg
Year 2010	1955m ³	1955m ³	0	0.192 tonnes	0	0.192 tonnes	0	0
January 2011	117m ³	117m ³	0	0.040 tonnes	0	0.040 tonnes	0	0
Total	2108.9m³	1944m³	36.9m³	2.232 tonnes	0	2.232 tonnes	20kg	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 (Rev. No. 14)

