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 February 2011

Environmental Pioneers & Solutions Limited
Flat B, 6/F Hop Shi Factory Building,
29, Lee Chung Street, Chai Wan, Hong Kong
Tel: 2556 9172 Fax: 2856 2010

The Contents of this report have been

Certified by:

Signature: _____ Date: 7 Apr 2011

Miss. Patricia Chung
(Environmental Team Leader)

Signature: _____ Date: 6 April 2011

Dr. Mark Shea
(Ecologist)

and Verified by:

Signature: _____ Date: 8 April 2011

Ms. Winnie Ko
(Independent Environment Checker)

Report submission and revision:
First submission on 21st March 2011
First revision on 25th March 2011

TABLE OF CONTENTS

Executive summary

This is the thirtieth 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 February 2011 to 28th February 2011. Construction of footbridge, retaining wall, gabion wall and box culvert 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 attached in Appendix J. Next ecological monitoring was arranged in July 2011. 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 and similar observations were also recorded during the weekly site inspections on 1st, 10th, 16th and 23rd February 2011. Details of outcome 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, box culvert and provision of temporary protective measures for the coming wet season 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 thirtieth 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 February 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

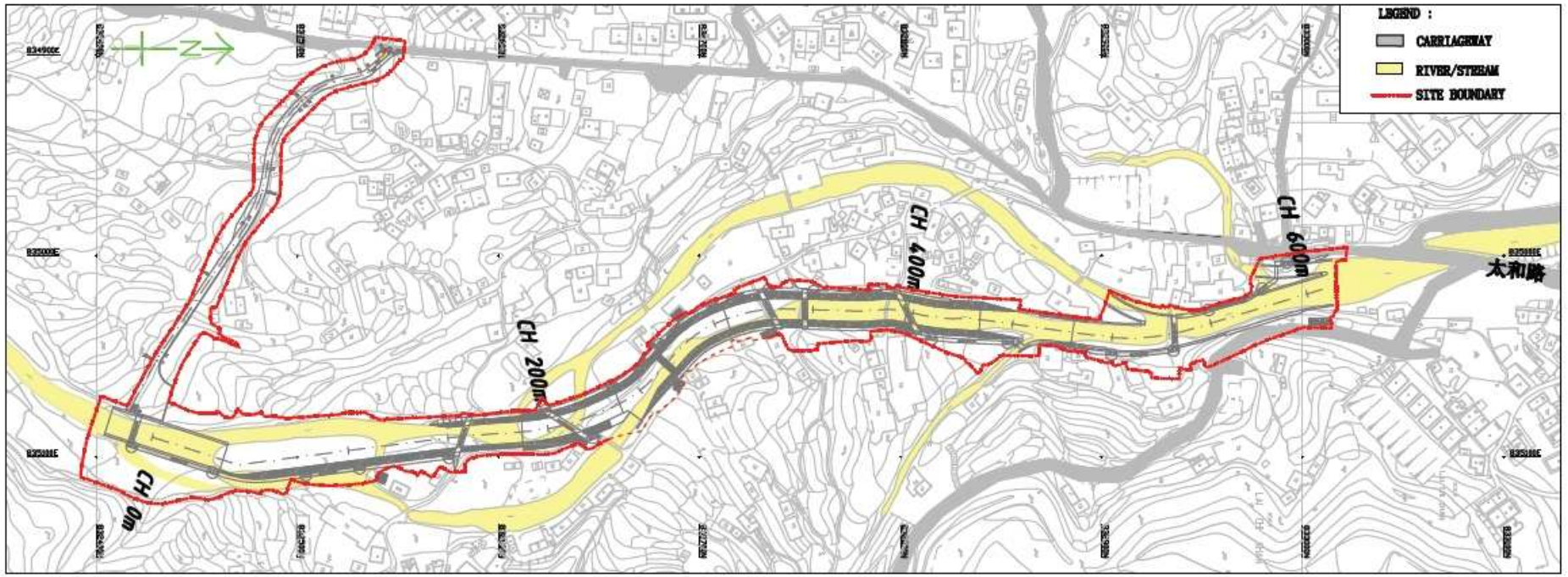
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in March 2012.

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



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.
4.) construction of box culvert.

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.
4.) construction of box culvert.
5.) provision of temporary protective measures for the coming wet season.

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, 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 attached in Appendix J. Next ecological impact monitoring was arranged in July 2011.

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 11th, 18th and 25th February 2011. Measured $L_{eq\ (30min)}$ results ranged from 51.8dB(A) to 72.6dB(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, 10th, 16th and 23rd February 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, 5th, 12th, 19th and 28th February 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
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	Follow up actions were taken along the river channel from ch.400 to 600. However, defects were still observed at the other section Contractor was recommended to implement follow up action as soon as possible	10 Feb 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	Still outstanding. To be followed during the next period	Ongoing	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
			works			
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	Geo-textile coverings were provided to the concerned riverbanks	10 Feb 11	--
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	Hydraulic breakers warped with noise insulation materials as advised	01 Feb 11	--
01 Feb 11	Chemicals without secondary containment measure were tipped at	Observation	Contractor was advised to provide proper drip pan for chemical using on site or	Follow up action was taken as advised prior to the inspection on 10 Feb	10 Feb 11	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
	haul access as ch.500		otherwise idling chemicals should be relocated to designated chemical store			
01 Feb 11	Open stockpiles of earth materials was observed at Access Road D	Observation	Contractor was advised to provide tarpaulin covering to the concerned stockpile	Follow up action was taken to partial of stockpiles while the others would not be covered due to the backfilling issue (i.e.: those stockpiles were under air drying)	10 Feb 11	--
01 Feb 11	Hydraulic breaker occupied at ch.250 was observed to be poor condition that lubricant was spilled to the surrounding haul access	Observation	Contractor was advised to well maintain their site equipment as to avoid oil spillage and generation of excessive noise level	As claimed by Contractor maintenance was provided to the concerned hydraulic breaker	23 Feb 11	--
10 Feb 11	Site surface was observed to be dry and dusty	Observation	Contractor was advised to provide regular water spraying to dusty static area for dust suppression	Follow up action was taken as advised and site surface was in acceptable condition during inspection	23 Feb 11	--
10 Feb 11	Consecutive smoke emission was observed from the backhoe being occupied at Access Road D	Observation	Contractor was advised to well maintain diesel-powered equipment as to avoid black smoke emission from causing air quality impact	Maintenance was provided for the concerned site equipment as reported by Contractor	16 Feb 11	--
10 Feb 11	River water was observed to be muddy along the channel from ch.250	Observation	Contractor was seriously recommended to review their site condition and implement necessary mitigation measures prior to the commencement of abovementioned activities as to avoid contamination of water quality	Still outstanding. To be followed during the next reporting period	Ongoing	--
16 Feb 11	Site water seepage into river channel was observed from surface of haul access at ch.200	Observation	Contractor was recommended to provide proper temporary site drainage system for site water diversion to proper treatment before discharge	Still outstanding. To be followed during the next reporting period	Ongoing	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
23 Feb 11	Wheel washing bay at ch.600 was accumulated with muddy water	Observation	Contractor was advised to well maintain the wheel washing facility to prevent muddy water was brought onto the public access through site vehicles	To be followed during the next reporting period	Ongoing	--
23 Feb 11	No secondary containment measure was provided for the air compressor, numbered 3033, occupied at ch.600	Observation	Contractor was advised to provide proper drip tray for the concerned air compressor as to prevent oil spillage	To be followed during the next 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 Feb 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
05 Feb 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
12 Feb 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
19 Feb 2011	No major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
28 Feb 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 downstream were recorded on 26th January 2011 respectively. Proper follow up actions were not implemented within the reporting period of January EM&A report and investigation by ET was continued in February.

Prior to the site inspection carried out on 10th February 2011, additional sedimentation tank was provided for treatment of muddy water arisen from excavation activities carried out at ch.200. However, excavations as well as site water diversion to the installed sediment tanks were not observed during subsequent inspections. Therefore the effectiveness of the treatment system could not be ascertained.

During the inspection carried out on 16th February 2011, the treatment system aforementioned was observed to be ineffective to treat the muddy water generated from excavation as treated water discharged from the system was still muddy. Contractor was seriously recommended to enhance the site water treatment system as to ensure effluent discharged meets relevant requirements from applied Effluent Discharge License, Water Pollution Control Ordinance (WPCO) and Environmental Impact Assessment Ordinance (EIAO).

Another inspection was carried out on 23rd February 2011 at the incident location. Site water generation was ceased as no further activities were carried out and the excavated pit has been stabilized. However, no further improvement works for the site water treatment system was observed and Contractor was reminded to pay serious attention on the quality of effluent discharged and enhance the treatment system whenever it is necessary.

Also, insufficient of protective measures to avoid site water seepage and soil runoff was consecutively observed within this reporting month. Contractor was strongly recommended to provide geo-textile to protect the barely exposed riverbanks and earth bunds. Proper temporary site water drainage system should be provided to divert site water for proper treatment and discharge.

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 provide regular maintenance to powered mechanical equipments as to avoid black smoke emission and/or excessive noise generation due to poor condition of equipments.

6.4 Implementation status and effectiveness of the mitigation measures

Refer the previous table 6.1, contractor has implemented mitigation measures to address some of the problems as advised by ER, IEC and ET. However, issue of follow up action to address concerns of water quality defects and condition of site equipments were still outstanding. Contractor has been reminded again to implement necessary corrective actions to rectify those discrepancies as soon as possible.

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 February 2011

Type of waste	Amount generated	Amount reused	Amount disposed
Inert waste	581 m^3	581 m^3	0
Non-inert waste	45 kg	0	45 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	31st Aug, 2005	N/A	Superseded
Amended Environmental Permit	EP-223/2005/A	18th Nov, 2008	N/A	Issued
Construction Noise Permit	N/A	N/A	N/A	N/A
Effluent Discharge License	3678	14th Mar, 2008	31st Mar, 2013	Issued
Registration as a Chemical Waste Producer	5213-724-C3251-03	19th 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, gabion wall and box culvert and provision of temporary protective measures for the coming wet season 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, gabion wall and box culvert 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.

Further investigation was carried out by ET for two non-compliance events recorded on 26th January 2011 and advices of water quality mitigation measures were given to Contractor for their consideration. Contractor was reminded again to pay serious attention on not arising water contamination to the downstream area as such practice would violate Water Pollution Control Ordinance and Environmental Impact Assessment Ordinance.

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

Ecological impact monitoring was conducted on 27th January 2011 and the ecological impact monitoring report, prepared by the Ecologist Dr. Mark Shea, is attached in Appendix J. 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	65.4	68.3	54.1	11-Feb-11	09:26-09:56	Drilling noise	Background noise from traffic	Sunny	Façade
UTP 2	63.4	65.8	55.4	11-Feb-11	08:50-09:20	Drilling noise	Background noise from traffic	Sunny	Façade
UTP 3	64.3	65.6	60.8	11-Feb-11	10:02-10:32	Drilling noise	N/A	Sunny	Façade
UTP 4	68.8	71.4	61.4	11-Feb-11	10:37-11:07	Operation of backhoe & boulder movement	N/A	Sunny	Façade
UTP 5	67.3	70.6	57.4	11-Feb-11	11:10-11:40	Boulder movement	N/A	Sunny	Façade
UTP 6	61.7	66.3	54.2	11-Feb-11	16:05-16:35	Operation of backhoe	N/A	Sunny	Façade
UTP 7	58.3	60.4	50.8	11-Feb-11	15:33-16:03	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 8	61.8	67.0	54.2	11-Feb-11	15:00-15:30	Operation of backhoe & excavation	N/A	Sunny	Façade
UTP 9	62.2	65.5	58.3	11-Feb-11	14:20-14:50	Operation of backhoe & excavation	N/A	Sunny	Façade
UTP 10	53.0	53.3	41.6	11-Feb-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	Sunny	Façade
UTP 11	54.6	54.8	43.4	11-Feb-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	65.5	69.5	53.2	18-Feb-11	08:50-09:20	Drilling noise	Background noise from traffic	Sunny	Façade
UTP 2	64.2	68.5	51.7	18-Feb-11	09:26-09:56	Drilling noise	Background noise from traffic	Sunny	Façade
UTP 3	66.2	68.2	61.5	18-Feb-11	10:02-10:32	Drilling noise & Operation of Backhoe	N/A	Sunny	Façade
UTP 4	68.4	71.5	58.6	18-Feb-11	10:37-11:07	Operation of backhoe	N/A	Sunny	Façade
UTP 5	67.7	69.5	60.8	18-Feb-11	11:09-11:39	Operation of backhoe	N/A	Sunny	Façade
UTP 6	63.4	66.8	58.2	18-Feb-11	16:00-16:30	Operation of backhoe	N/A	Sunny	Façade
UTP 7	68.4	73.4	58.2	18-Feb-11	15:25-15:55	Operation of backhoe & excavation	N/A	Sunny	Façade
UTP 8	70.6	74.7	63.4	18-Feb-11	14:52-15:22	Operation of backhoe & excavation	N/A	Sunny	Façade
UTP 9	63.3	66.8	54.1	18-Feb-11	14:17-14:47	Operation of backhoe	N/A	Sunny	Façade
UTP 10	52.6	53.0	42.3	18-Feb-11	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	N/A	Sunny	Façade
UTP 11	56.4	56.5	44.0	18-Feb-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

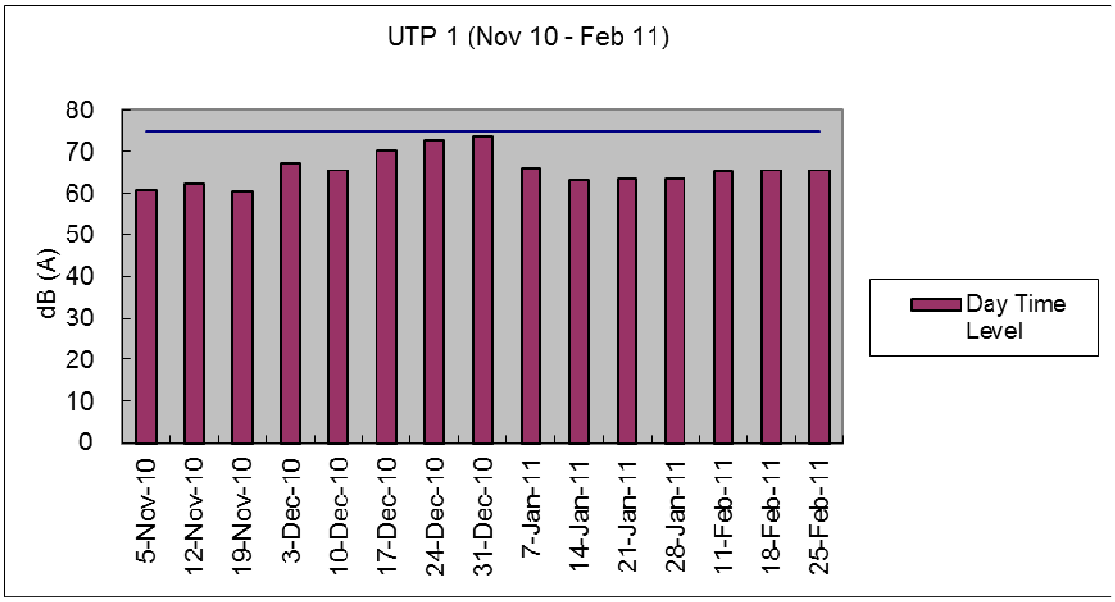
Location	Leq 30min	L_{10} 30min	L_{90} 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	65.5	68.5	53.4	25-Feb-11	13:38-14:08	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	Background noise from traffic	Sunny	Façade
UTP 2	61.4	65.3	57.6	25-Feb-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	Background noise from traffic	Sunny	Façade
UTP 3	62.2	64.8	59.3	25-Feb-11	14:16-14:46	Boulder movement	N/A	Sunny	Façade
UTP 4	68.3	70.6	54.0	25-Feb-11	14:50-15:20	Boulder movement	N/A	Sunny	Façade
UTP 5	70.4	72.2	59.6	25-Feb-11	15:21-15:51	Boulder movement & breaking	N/A	Sunny	Façade
UTP 6	66.7	70.8	55.8	25-Feb-11	15:57-16:27	Boulder movement & breaking	N/A	Sunny	Façade
UTP 7	72.6	78.4	64.4	25-Feb-11	11:22-11:52	Excavation & boulder movement	N/A	Sunny	Façade
UTP 8	70.0	75.5	61.4	25-Feb-11	10:48-11:18	Excavation & boulder movement	N/A	Sunny	Façade
UTP 9	66.8	70.2	53.1	25-Feb-11	10:13-10:43	Excavation & boulder movement	N/A	Sunny	Façade
UTP 10	51.8	51.8	40.6	25-Feb-11	09:40-10:10	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	55.4	55.7	45.2	25-Feb-11	09:07-09:37	The measured noise level was dominated by the background noise in the immediate vicinity of the monitoring location due to its large distance from the construction activities	N/A	Sunny	*Freefield

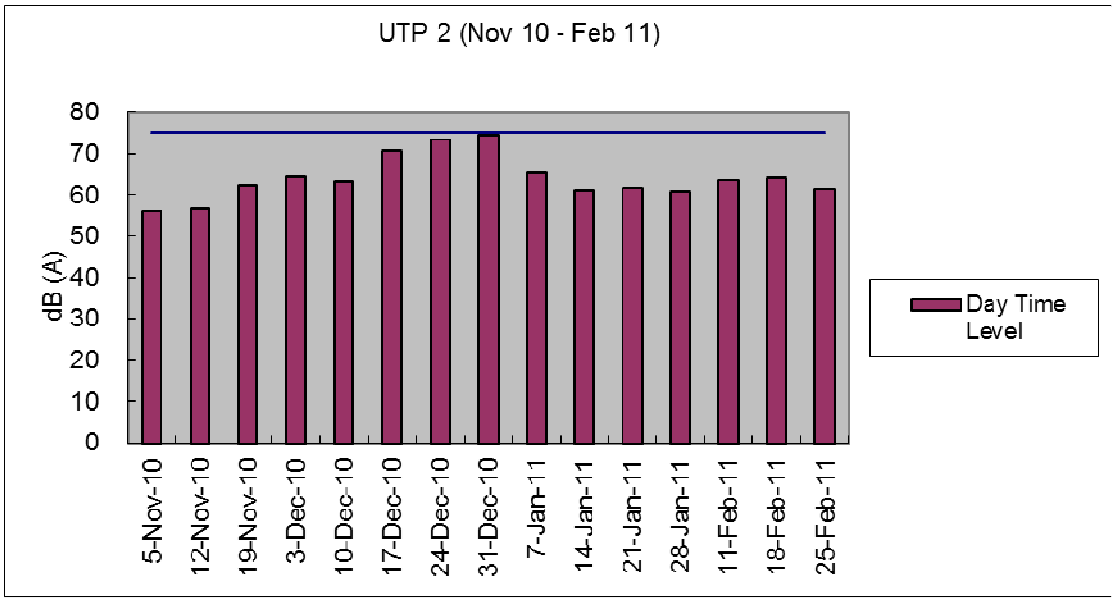
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

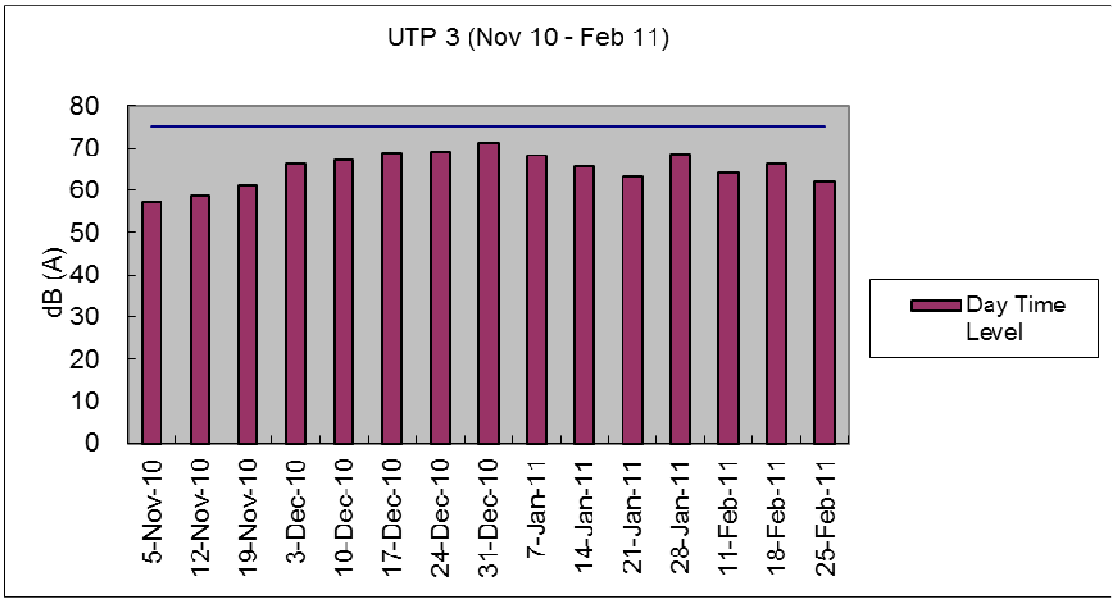
Graphical plot for noise measurements

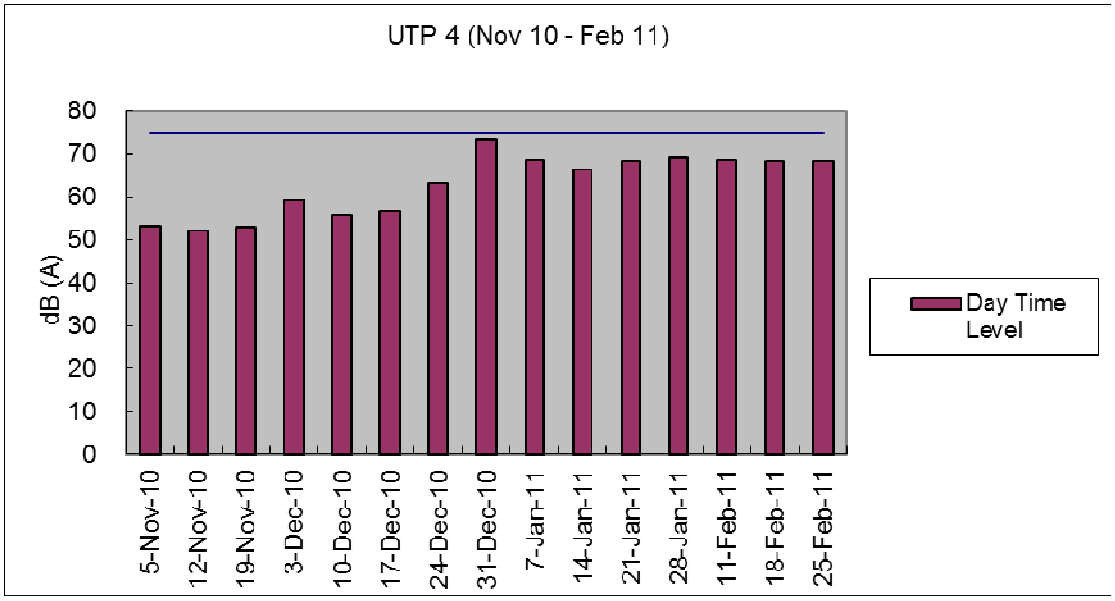
The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from November 2010 to February 2011.

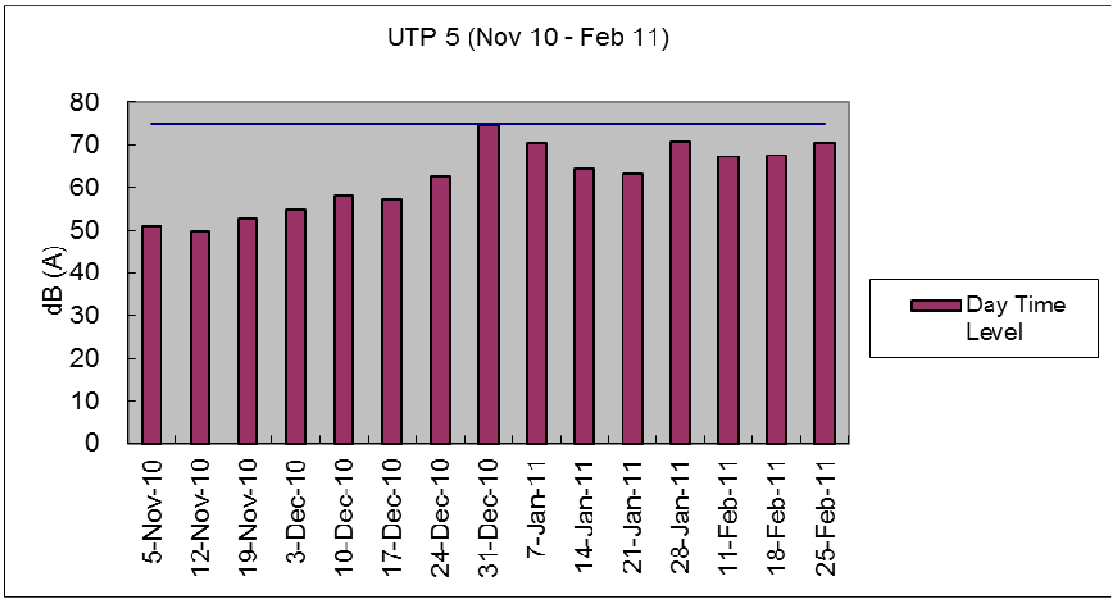
Noise monitoring originally proposed to be carried out 26th November 2010 was cancelled due to security and safety reason.

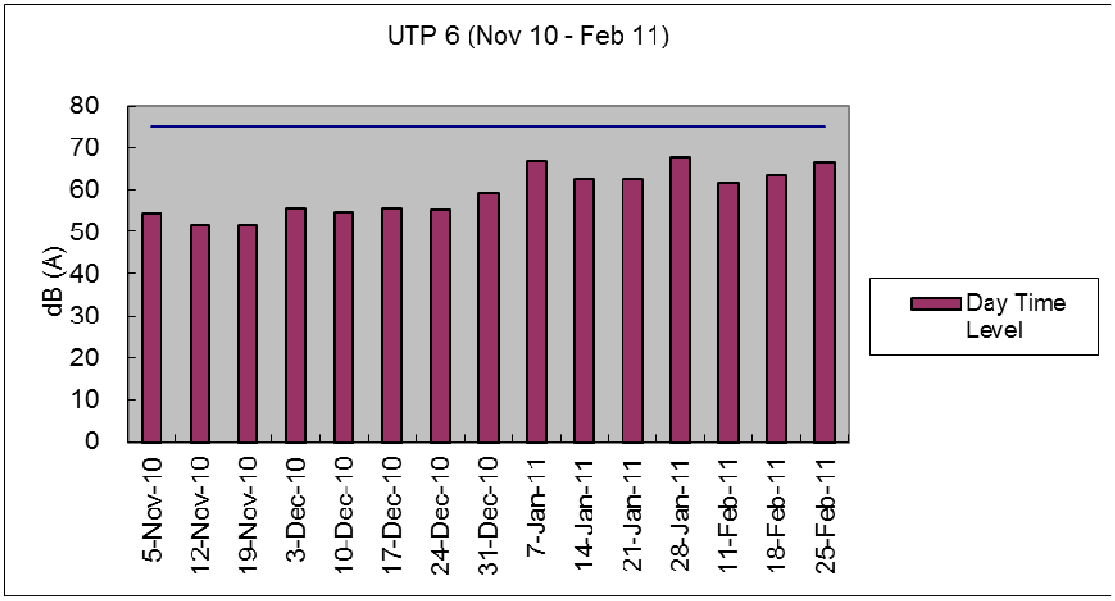


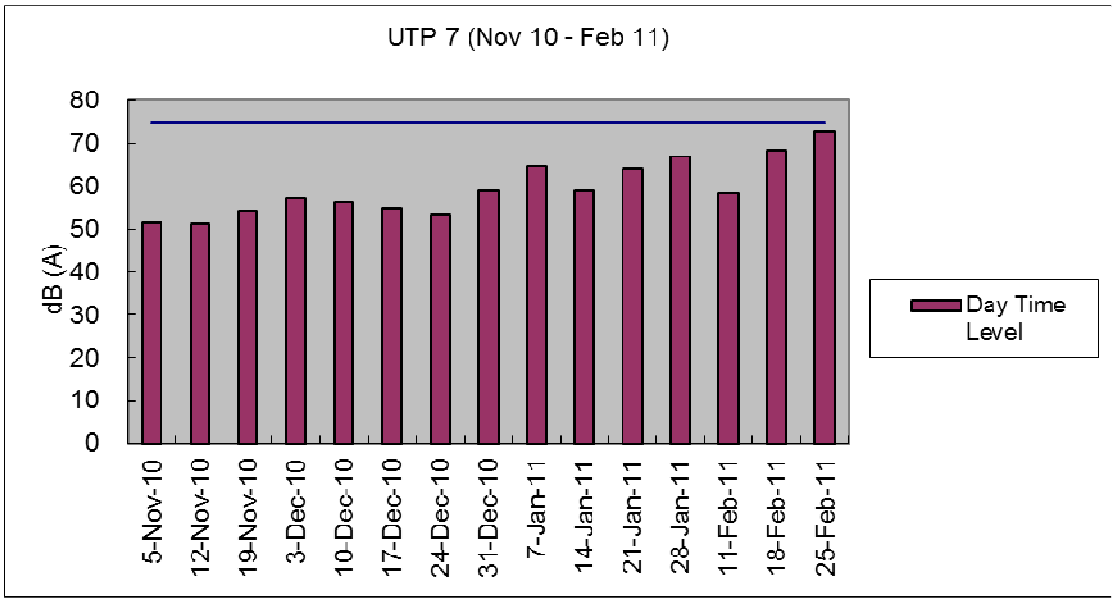


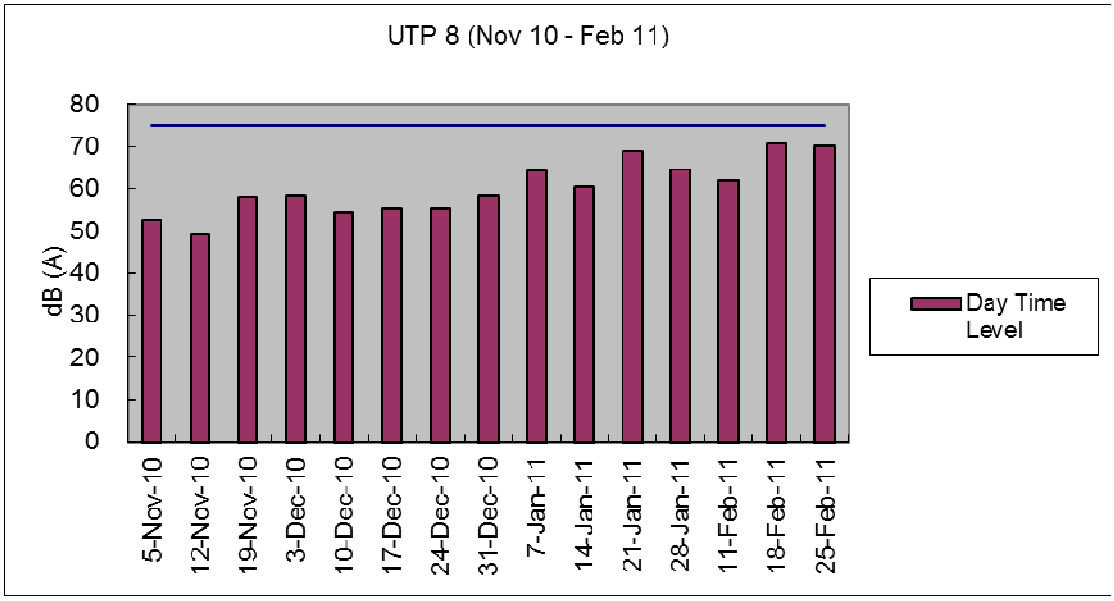

UTP 3 (Nov 10 - Feb 11)
dB (A)
0
10
20
30
40
50
60
70
80
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level

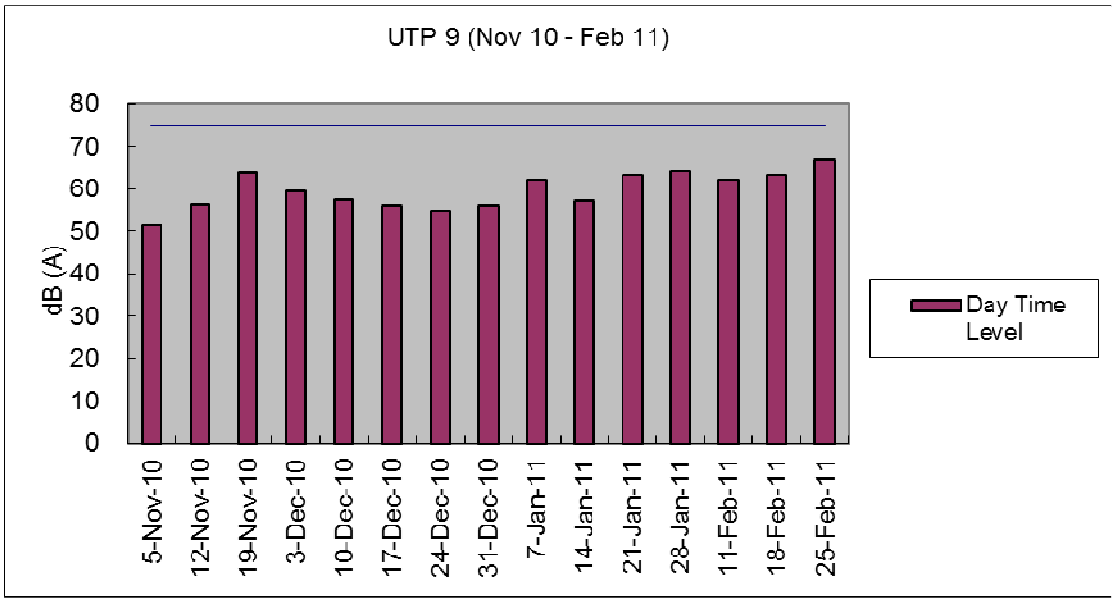

UTP 4 (Nov 10 - Feb 11)
dB (A)
0
10
20
30
40
50
60
70
80
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level

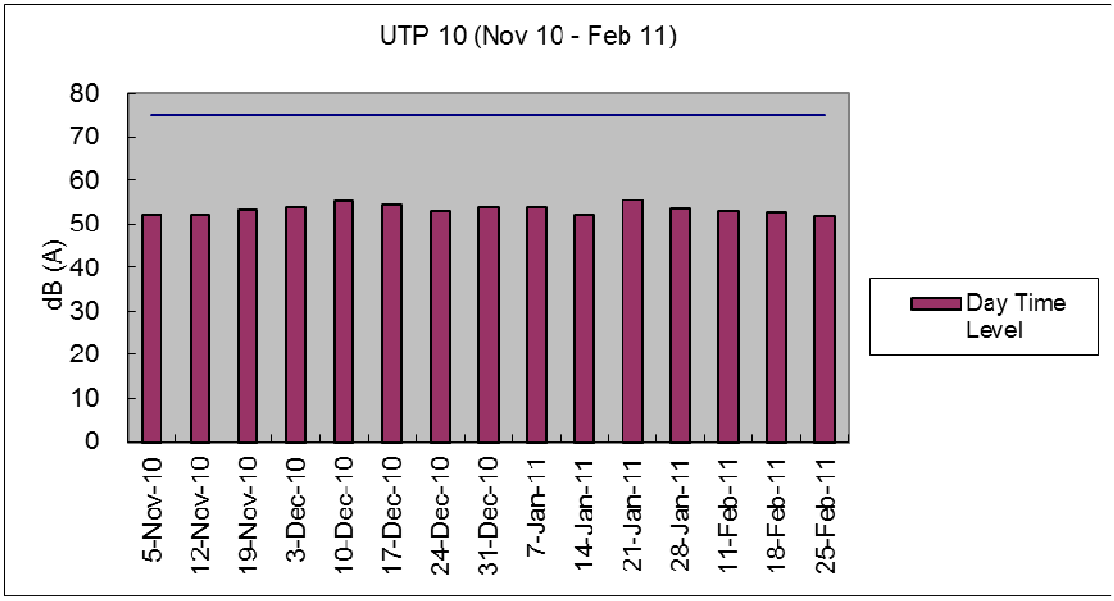

UTP 5 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level

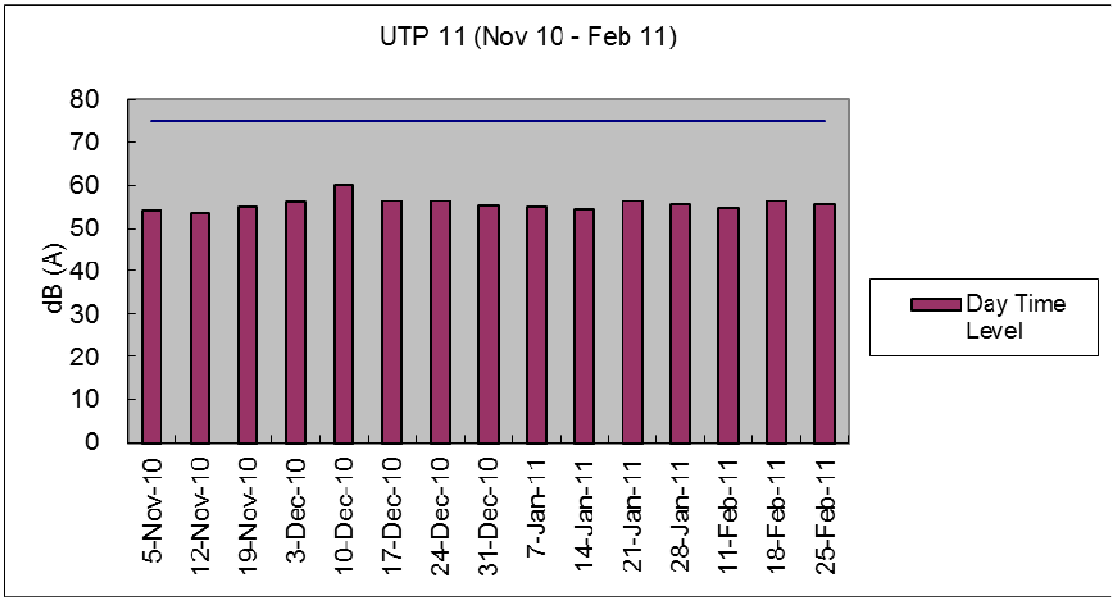

UTP 6 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level

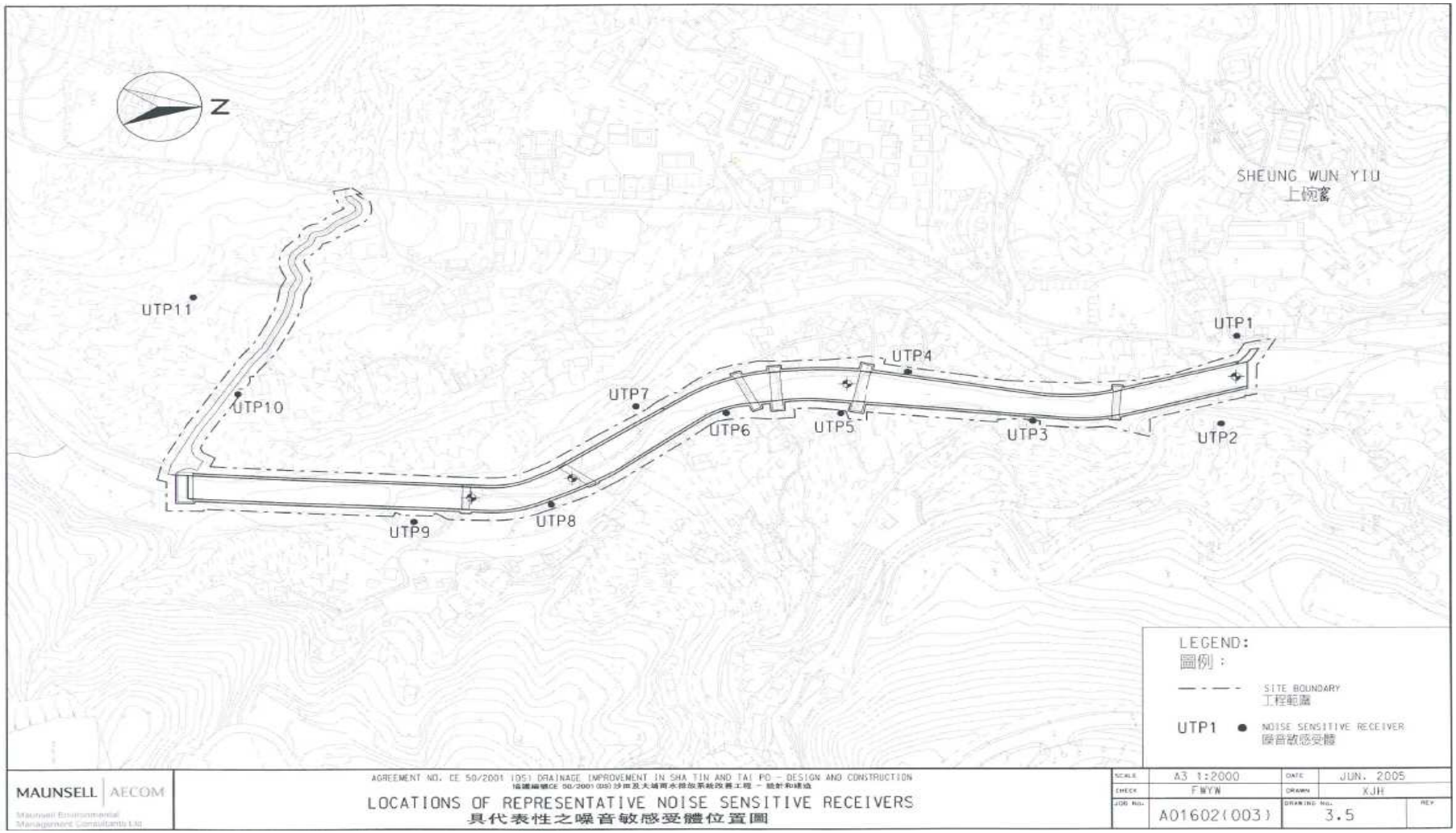

UTP 7 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level


UTP 8 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level


UTP 9 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level


UTP 10 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level


UTP 11 (Nov 10 - Feb 11)
dB (A)
80
70
60
50
40
30
20
10
0
5-Nov-10
12-Nov-10
19-Nov-10
3-Dec-10
10-Dec-10
17-Dec-10
24-Dec-10
31-Dec-10
7-Jan-11
14-Jan-11
21-Jan-11
28-Jan-11
11-Feb-11
18-Feb-11
25-Feb-11
Day Time Level


N
SHEUNG WUN YIU
上碗窰
UTP11
UTP10
UTP9
UTP8
UTP7
UTP6
UTP5
UTP4
UTP3
UTP2
UTP1
LEGEND:
圖例：
SITE BOUNDARY
工程範圍
UTP1
NOISE SENSITIVE RECEIVER
噪音敏感受體
MAUNSELL AECOM
Maunsell Environmental Management Consultants Ltd
AGREEMENT NO. CE 50/2001 (DS) DRAINAGE IMPROVEMENT IN SHA TIN AND TAI PO – DESIGN AND CONSTRUCTION
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 FWYW
DRAWN KJH
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 February 2011

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

Master Schedule of EM&A works in March 2011

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

Appendix F: Cumulative complaint log

Environmental Parameters	**Cumulative no. Brought forward**	**No. of complaint February 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	Deficiency identified	Ongoing
	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, 4th November 2008, 27th, 28th October 2009, 15th October and 9th 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 table

Cumulative 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
February 2011	581m^3	581m^3	0	0.045 tonnes	0	0.045 tonnes	0	0
Total	**2689.9m^3**	**2525m^3**	**36.9m^3**	**2.277 tonnes**	**0**	**2.277 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)

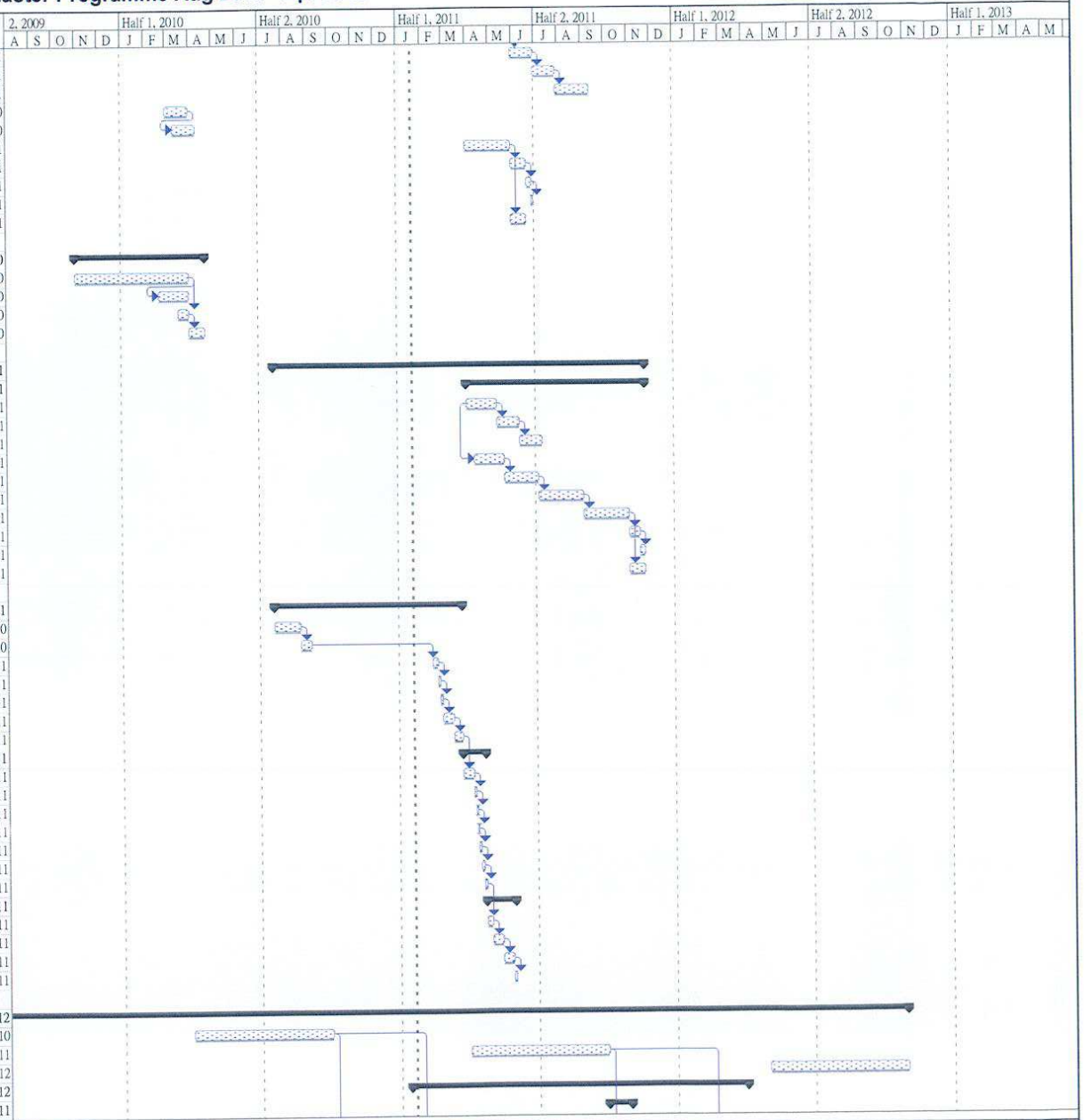
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
996	Install Handrails/Chainage Markers	30 days	31/5/2011	29/6/2011
997	Chainlink fencing	30 days	30/6/2011	29/7/2011
998	Drainage pipe and U-channel construction (both sides)	45 days	30/7/2011	12/9/2011
999	Retaining Wall Bay 9 and Bay 10 Construction	31 days	1/3/2010	31/3/2010
1000	Footbridge SB02 Deck	30 days	11/3/2010	9/4/2010
1001	Dwarf Wall/Drawpit and Ducting Construction	60 days	1/4/2011	30/5/2011
1002	Public Lighting Installation (CE2281/82/83/84/85/86)	21 days	31/5/2011	20/6/2011
1003	T&C	7 days	21/6/2011	27/6/2011
1004	Removal of Public Lighting VE 1240-A1	2 days	28/6/2011	29/6/2011
1005	Watermain Diversion	21 days	31/5/2011	20/6/2011
1006				
1007	From CHL 2000 to CHL 1850	172 days	1/11/2009	21/4/2010
1008	Excavation to form new arrangement of river bed (Prov. Substrates on riverbe	151 days	1/11/2009	31/3/2010
1009	Grade 500 Rockfilling	40 days	20/2/2010	31/3/2010
1010	Temp. Drainage Diversion at Ch.2025	14 days	18/3/2010	31/3/2010
1011	Footpath / Surface Drainage	21 days	1/4/2010	21/4/2010
1012				
1013	Section 2 - She Shan River (Area K) Ch 1850 to 1550	491 days	20/7/2010	22/11/2011
1014	From CHL 1850 to CHL 1550	236 days	1/4/2011	22/11/2011
1015	Footpath construction at LHS (Ch. 1520 to 1600)	40 days	1/4/2011	10/5/2011
1016	Install Handrails/Chainage Markers	30 days	11/5/2011	9/6/2011
1017	Chainlink fencing	30 days	10/6/2011	9/7/2011
1018	Drainage pipe and U-channel construction	40 days	11/4/2011	20/5/2011
1019	Excavation to form new arrangement of river bed (Prov. Substrates on riverbe	45 days	21/5/2011	4/7/2011
1020	Footbridge SB01 - Dwarf Wall	60 days	5/7/2011	2/9/2011
1021	Dwarf Wall/Drawpit and Ducting Construction	60 days	3/9/2011	1/11/2011
1022	Public Lighting Installation (CE2278/79)	14 days	2/11/2011	15/11/2011
1023	T&C	7 days	16/11/2011	22/11/2011
1024	Watermain Diversion	21 days	2/11/2011	22/11/2011
1025				
1026	Variation Order No. 116	248 days	20/7/2010	24/3/2011
1027	Fabrication of Precast Concrete Planter	35 days	20/7/2010	23/8/2010
1028	Material delivery	14 days	24/8/2010	6/9/2010
1029	Temp. drainage diversion/ haul rd	7 days	14/2/2011	20/2/2011
1030	Blinding layer	3 days	21/2/2011	23/2/2011
1031	PVC sheeting	3 days	24/2/2011	26/2/2011
1032	Installation of Planters	14 days	27/2/2011	12/3/2011
1033	Infill of Planting Soil	12 days	13/3/2011	24/3/2011
1034	Variation Order No. 232	30 days	25/3/2011	23/4/2011
1035	Material delivery	14 days	25/3/2011	7/4/2011
1036	Temp. drainage diversion	3 days	8/4/2011	10/4/2011
1037	Excavation	2 days	11/4/2011	12/4/2011
1038	Blinding layer	1 day	13/4/2011	13/4/2011
1039	Placement of Conc. Blks	3 days	14/4/2011	16/4/2011
1040	Make Good	4 days	17/4/2011	20/4/2011
1041	Reinstatement of river bed	3 days	21/4/2011	23/4/2011
1042	Variation Order No. 145	38 days	24/4/2011	31/5/2011
1043	Temp. Haul Rd/Divesion	7 days	24/4/2011	30/4/2011
1044	Material delivery	14 days	1/5/2011	14/5/2011
1045	Install Stone Facing	14 days	15/5/2011	28/5/2011
1046	Reinstatement of river bed	3 days	29/5/2011	31/5/2011
1047				
1048	Programme of Upper Tai Po River	1861 days	28/9/2007	31/10/2012
1049	Wet Season of 2010	184 days	1/4/2010	1/10/2010
1050	Wet Season of 2011	183 days	1/4/2011	30/9/2011
1051	Wet Season of 2012	184 days	1/5/2012	31/10/2012
1052	Ch 230-350	444 days	14/1/2011	1/4/2012
1053	Gabion Wall (Ch 235-300 RHS) TG1	30 days	1/10/2011	30/10/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

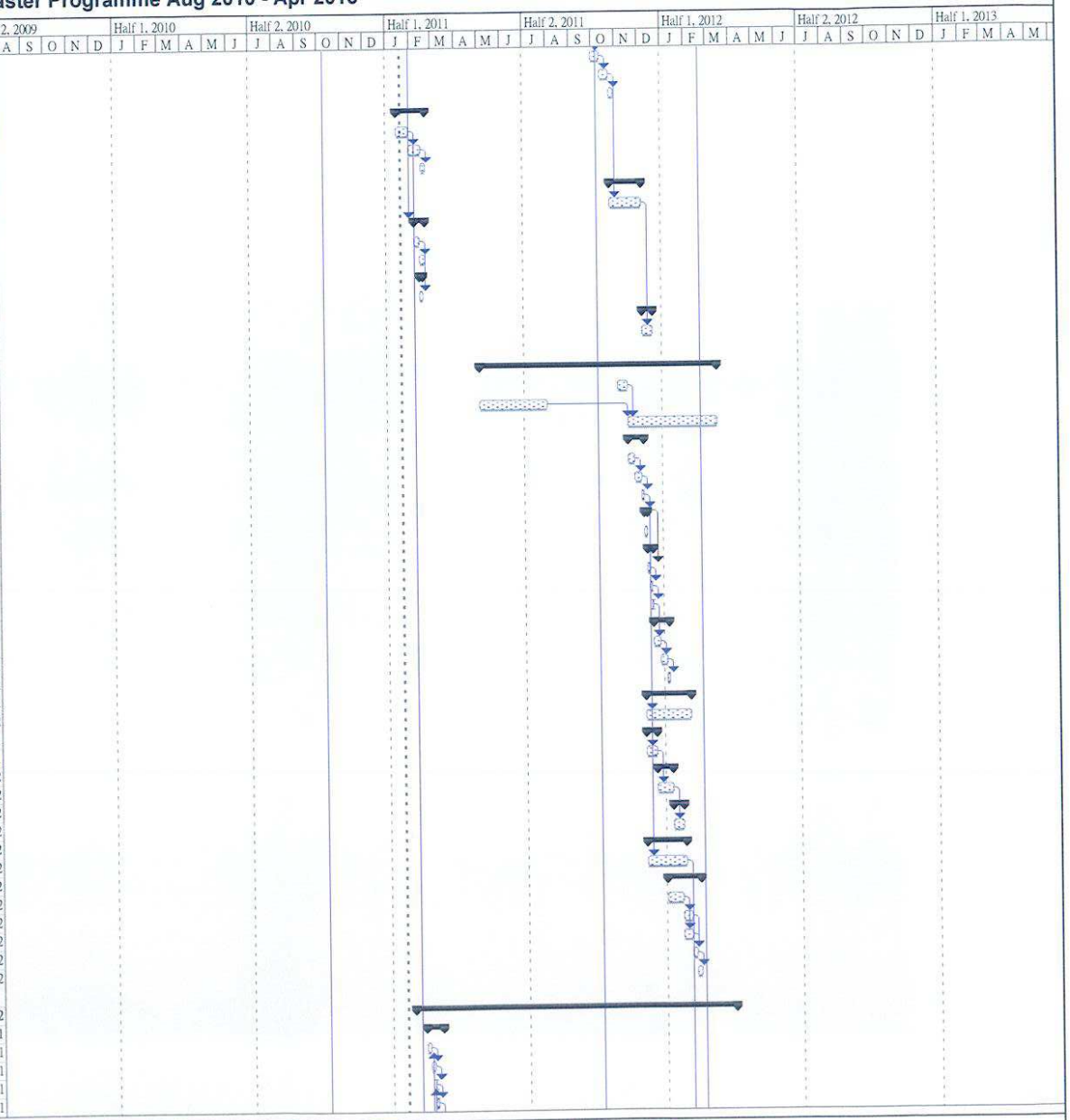
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1054	Excavation and Formation	12 days	1/10/2011	12/10/2011
1055	Gabion Wall Construction (Ch 235-270 LHS)	12 days	13/10/2011	24/10/2011
1056	Backfilling	6 days	25/10/2011	30/10/2011
1057	Retaining Wall (Ch 300-330 RHS) TR1 (replaced by AD1)	38 days	15/1/2011	21/2/2011
1058	Excavation and Formation	16 days	15/1/2011	30/1/2011
1059	Laying Concrete block and gabion units	16 days	31/1/2011	15/2/2011
1060	Backfilling	6 days	16/2/2011	21/2/2011
1061	Drainage & Footpath (CH 275-330 RHS)	42 days	25/10/2011	5/12/2011
1062	Construction of drainage & footpath	42 days	25/10/2011	5/12/2011
1063	Gabion Wall (Ch 307-330 LHS) TG2	14 days	7/2/2011	20/2/2011
1064	Excavation and Formation	7 days	7/2/2011	13/2/2011
1065	Gabion Wall Construction (Ch 307-330 LHS)	7 days	14/2/2011	20/2/2011
1066	Maintainence Staircase (Ch 315 LHS)	4 days	14/2/2011	17/2/2011
1067	Formwork and concreting	4 days	14/2/2011	17/2/2011
1068	Drainage & Footpath (Ch 307-330 LHS)	14 days	6/12/2011	19/12/2011
1069	Construction of drainage & footpath	14 days	6/12/2011	19/12/2011
1070				
1071	Temp crossing at Ch230	316 days	3/5/2011	13/3/2012
1072	Temp crossing at Ch230	13 days	3/11/2011	15/11/2011
1073	UU diversion	90 days	3/5/2011	31/7/2011
1074	Pedesrian Diversion	119 days	16/11/2011	13/3/2012
1075	Gabion Wall (Ch 230-257 LHS) TG2	21 days	16/11/2011	6/12/2011
1076	Excavation and Formation	9 days	16/11/2011	24/11/2011
1077	Gabion Wall Construction (Ch 230-257 LHS)	9 days	25/11/2011	3/12/2011
1078	Backfilling	3 days	4/12/2011	6/12/2011
1079	Maintainence Staircase (Ch 242 RHS)	4 days	7/12/2011	10/12/2011
1080	Formwork and concreting	4 days	7/12/2011	10/12/2011
1081	Gabion Wall (Ch 257-275 LHS) TG4	7 days	11/12/2011	17/12/2011
1082	Excavation and Formation	3 days	11/12/2011	13/12/2011
1083	Gabion Wall Construction (Ch 257-275 LHS)	3 days	14/12/2011	16/12/2011
1084	Backfilling	1 day	17/12/2011	17/12/2011
1085	Retaining Wall (Ch 275-307 LHS) TR1 (replaced by AD1)	21 days	18/12/2011	7/1/2012
1086	Excavation and Formation	9 days	18/12/2011	26/12/2011
1087	Laying Concrete block and gabion units	9 days	27/12/2011	4/1/2012
1088	Backfilling	3 days	5/1/2012	7/1/2012
1089	Drainage & Footpath (Ch 200-307 LHS)	60 days	7/12/2011	4/2/2012
1090	Construction of drainage & footpath (Ch 200-307 LHS)	60 days	7/12/2011	4/2/2012
1091	Step 2 (Ch 236)	14 days	7/12/2011	20/12/2011
1092	Construction of Step 2 (Ch 236)	14 days	7/12/2011	20/12/2011
1093	Cascade (Ch 275)	21 days	21/12/2011	10/1/2012
1094	Construction of Cascade (Ch 275)	21 days	21/12/2011	10/1/2012
1095	Step 3 (Ch 307)	14 days	11/1/2012	24/1/2012
1096	Construction of Step 3 (Ch307)	14 days	11/1/2012	24/1/2012
1097	River Bed formation (Ch 230-310)	52 days	7/12/2011	27/1/2012
1098	Placing Grade 500 toe Stone	52 days	7/12/2011	27/1/2012
1099	Lighting at CH 250-320	45 days	2/1/2012	15/2/2012
1100	Construction of Drawpits / Ductings	21 days	2/1/2012	22/1/2012
1101	Public lighting Installation (CE2318)	12 days	23/1/2012	3/2/2012
1102	Public lighting Installation (CE2317)	12 days	23/1/2012	3/2/2012
1103	T&C	6 days	4/2/2012	9/2/2012
1104	Removal of existing lighting (VA1311-Z1)	6 days	10/2/2012	15/2/2012
1105				
1106	Footbridge TB04 (Ch 330)	427 days	31/1/2011	1/4/2012
1107	Construction of Abutment A (LHS)	22 days	14/2/2011	7/3/2011
1108	Excavation and Blinding	5 days	14/2/2011	18/2/2011
1109	Formwork and rebar fixing for base slab	5 days	19/2/2011	23/2/2011
1110	Concreting of base slab	1 day	24/2/2011	24/2/2011
1111	Stripping off formwork	3 days	25/2/2011	27/2/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

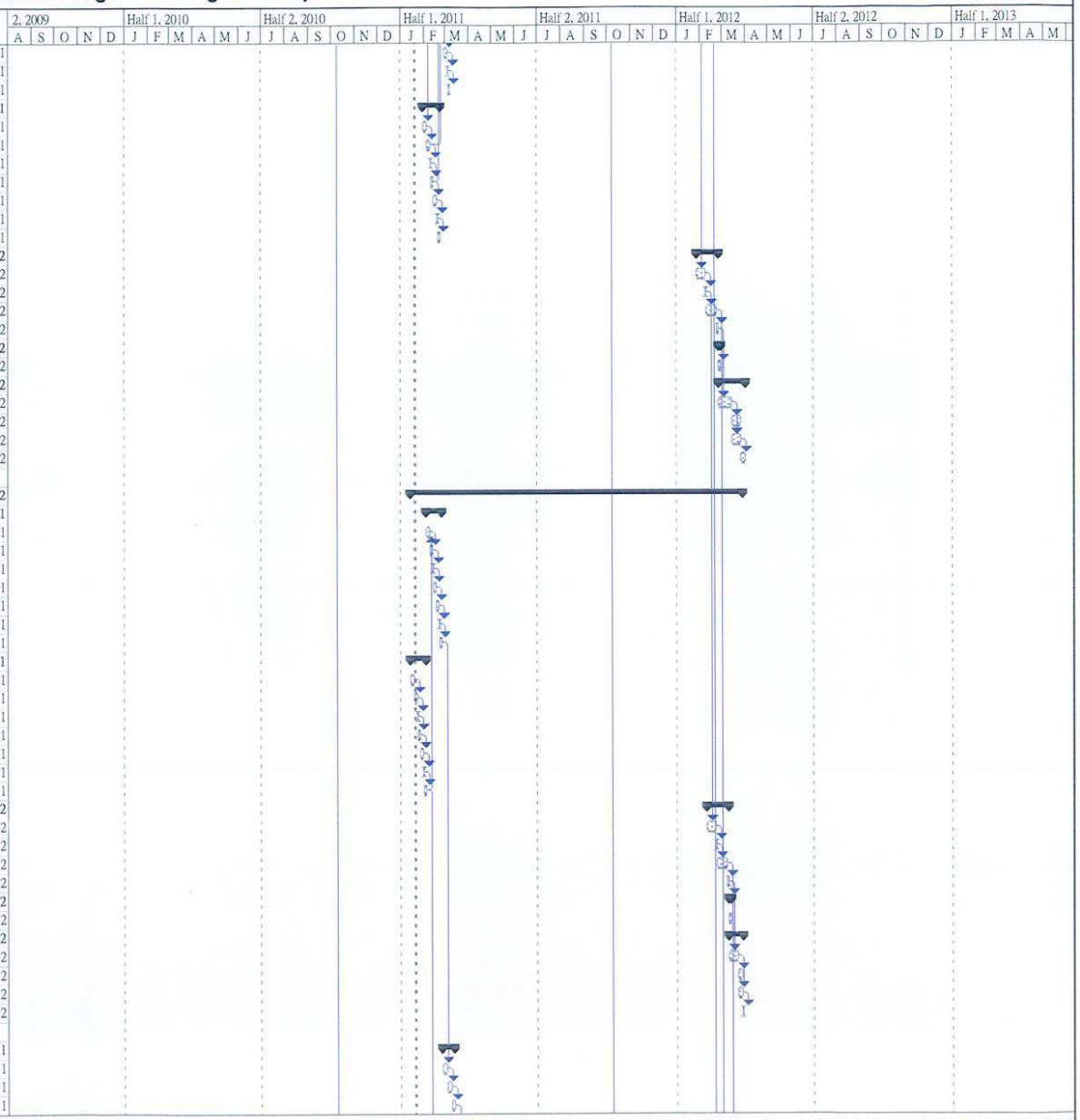
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1112	Rebar fixing and shuttering formwork for column	5 days	28/2/2011	4/3/2011
1113	Concreting of column	1 day	5/3/2011	5/3/2011
1114	Stripping off formwork	2 days	6/3/2011	7/3/2011
1115	Construction of Abutment B (RHS)	23 days	31/1/2011	22/2/2011
1116	Excavation and Blinding	5 days	31/1/2011	4/2/2011
1117	Formwork and rebar fixing for base slab	5 days	5/2/2011	9/2/2011
1118	Concreting of base slab	1 day	10/2/2011	10/2/2011
1119	Stripping off formwork	3 days	11/2/2011	13/2/2011
1120	Rebar fixing and shuttering formwork for column	5 days	14/2/2011	18/2/2011
1121	Concreting of base slab	1 day	19/2/2011	19/2/2011
1122	Stripping off formwork	3 days	20/2/2011	22/2/2011
1123	Construction of decking	29 days	28/1/2012	25/2/2012
1124	Formwork and rebar fixing for decking	12 days	28/1/2012	8/2/2012
1125	Concreting	1 day	9/2/2012	9/2/2012
1126	Stripping off formwork	14 days	10/2/2012	23/2/2012
1127	Railing installation	2 days	24/2/2012	25/2/2012
1128	Demolition of Bridge TB-A	3 days	26/2/2012	28/2/2012
1129	Demolition works	3 days	26/2/2012	28/2/2012
1130	Lighting at Footbridge TB04	36 days	26/2/2012	1/4/2012
1131	Construction of Drawpits / Ductings	18 days	26/2/2012	14/3/2012
1132	Public lighting Installation (CE2315)	12 days	15/3/2012	26/3/2012
1133	Public lighting Installation (CE2316)	12 days	15/3/2012	26/3/2012
1134	T&C	6 days	27/3/2012	1/4/2012
1135				
1136	Footbridge TB05 (ch 350)	440 days	14/1/2011	28/3/2012
1137	Construction of Abutment A (LHS)	21 days	4/2/2011	24/2/2011
1138	Excavation and Blinding	5 days	4/2/2011	8/2/2011
1139	Formwork and rebar fixing for base slab	4 days	9/2/2011	12/2/2011
1140	Concreting of base slab	1 day	13/2/2011	13/2/2011
1141	Stripping off formwork	3 days	14/2/2011	16/2/2011
1142	Rebar fixing and shuttering formwork for column	4 days	17/2/2011	20/2/2011
1143	Concreting of column	1 day	21/2/2011	21/2/2011
1144	Stripping off formwork	3 days	22/2/2011	24/2/2011
1145	Construction of Abutment B (RHS)	21 days	14/1/2011	3/2/2011
1146	Excavation and Blinding	5 days	14/1/2011	18/1/2011
1147	Formwork and rebar fixing for base slab	4 days	19/1/2011	22/1/2011
1148	Concreting of base slab	1 day	23/1/2011	23/1/2011
1149	Stripping off formwork	3 days	24/1/2011	26/1/2011
1150	Rebar fixing and shuttering formwork for column	4 days	27/1/2011	30/1/2011
1151	Concreting of column	1 day	31/1/2011	31/1/2011
1152	Stripping off formwork	3 days	1/2/2011	3/2/2011
1153	Construction of decking	29 days	10/2/2012	9/3/2012
1154	Formwork and rebar fixing for decking	12 days	10/2/2012	21/2/2012
1155	Concreting	1 day	22/2/2012	22/2/2012
1156	Stripping off formwork	14 days	23/2/2012	7/3/2012
1157	Railing installation	2 days	8/3/2012	9/3/2012
1158	Demolition of Bridge TB-B	3 days	10/3/2012	12/3/2012
1159	Demolition works	3 days	10/3/2012	12/3/2012
1160	Lighting at Footbridge TB05	19 days	10/3/2012	28/3/2012
1161	Construction of Drawpits / Ductings	12 days	10/3/2012	21/3/2012
1162	Public lighting Installation (CE2313)	6 days	22/3/2012	27/3/2012
1163	Public lighting Installation (CE2314)	6 days	22/3/2012	27/3/2012
1164	T&C	1 day	28/3/2012	28/3/2012
1165				
1166	Gabion Wall (Ch 330-350 LHS) TG2	16 days	25/2/2011	12/3/2011
1167	Excavation and Formation	6 days	25/2/2011	2/3/2011
1168	Gabion Wall Construction (Ch 330-350 LHS)	6 days	3/3/2011	8/3/2011
1169	Backfilling	4 days	9/3/2011	12/3/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

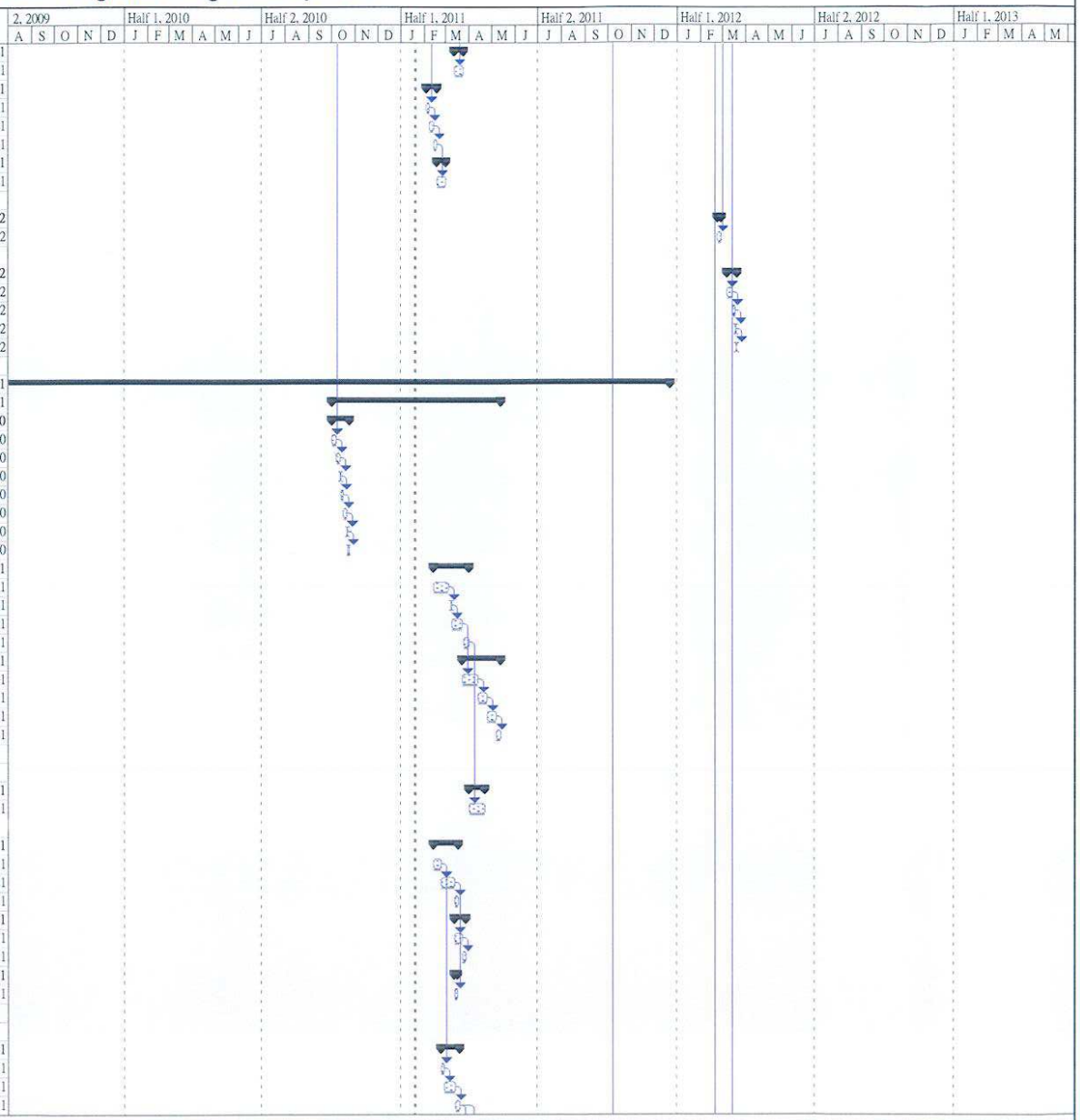
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1170	Drainage & Footpath (Ch 330-350 LHS)	12 days	13/3/2011	24/3/2011
1171	Construction of drainage & footpath	12 days	13/3/2011	24/3/2011
1172	Gabion Wall (Ch 330-345 RHS) TG2	14 days	4/2/2011	17/2/2011
1173	Excavation and Formation	4 days	4/2/2011	7/2/2011
1174	Gabion Wall Construction (Ch 260-270 LHS)	6 days	8/2/2011	13/2/2011
1175	Backfilling	4 days	14/2/2011	17/2/2011
1176	Drainage & Footpath (Ch 330-350 RHS)	12 days	18/2/2011	1/3/2011
1177	Construction of drainage & footpath	12 days	18/2/2011	1/3/2011
1178				
1179	River Bed formation (Ch 330-350)	5 days	24/2/2012	28/2/2012
1180	Placing Grade 500 toe Stone	5 days	24/2/2012	28/2/2012
1181				
1182	Step 4 (Ch 350)	13 days	8/3/2012	20/3/2012
1183	Excavation and Blinding	7 days	8/3/2012	14/3/2012
1184	Formwork and rebar fixing for base slab	4 days	15/3/2012	18/3/2012
1185	Concreting of base slab	1 day	19/3/2012	19/3/2012
1186	Stripping off formwork	1 day	20/3/2012	20/3/2012
1187				
1188	Ch 45-230	1547 days	28/9/2007	22/12/2011
1189	Footbridge TB02 (Ch 150)	224 days	2/10/2010	13/5/2011
1190	Construction of Abutment A (LHS)	23 days	2/10/2010	24/10/2010
1191	Excavation and Blinding	6 days	2/10/2010	7/10/2010
1192	Formwork and rebar fixing for base slab	5 days	8/10/2010	12/10/2010
1193	Concreting of base slab	1 day	13/10/2010	13/10/2010
1194	Stripping off formwork	3 days	14/10/2010	16/10/2010
1195	Rebar fixing and shuttering formwork for column	5 days	17/10/2010	21/10/2010
1196	Concreting of column	1 day	22/10/2010	22/10/2010
1197	Stripping off formwork	2 days	23/10/2010	24/10/2010
1198	Construction of decking	47 days	14/2/2011	1/4/2011
1199	Formwork and rebar fixing for decking	20 days	14/2/2011	5/3/2011
1200	Concreting	1 day	9/3/2011	9/3/2011
1201	Stripping off formwork	14 days	10/3/2011	23/3/2011
1202	Railing installation	7 days	26/3/2011	1/4/2011
1203	Lighting at Footbridge TB02	51 days	24/3/2011	13/5/2011
1204	Construction of Drawpits / Ductings	21 days	24/3/2011	13/4/2011
1205	Public lighting Installation (CE2308)	12 days	14/4/2011	25/4/2011
1206	Public lighting Installation (CE2309)	12 days	26/4/2011	7/5/2011
1207	Removal of existing lighting (VA2642-A1)	6 days	8/5/2011	13/5/2011
1208				
1209				
1210	River Bed formation (Ch 50-150)	21 days	2/4/2011	22/4/2011
1211	Placing Grade 500 toe Stone	21 days	2/4/2011	22/4/2011
1212				
1213	Gabion Wall (Ch 140-185 LHS) TG4	33 days	14/2/2011	18/3/2011
1214	Excavation and formation	10 days	14/2/2011	23/2/2011
1215	Gabion Wall construction (Ch 140-190 LHS)	18 days	24/2/2011	13/3/2011
1216	Backfilling	5 days	14/3/2011	18/3/2011
1217	Gabion Wall (Ch 185-230 LHS) Remaining Works	15 days	14/3/2011	28/3/2011
1218	Gabion Wall construction (Ch 190-230 LHS)	10 days	14/3/2011	23/3/2011
1219	Backfilling	5 days	24/3/2011	28/3/2011
1220	Maintainence Staircase (Ch 185 LHS)	4 days	14/3/2011	17/3/2011
1221	Formwork and concreting	4 days	14/3/2011	17/3/2011
1222				
1223				
1224	Gabion Wal (Ch 100-150 RHS) TG2	25 days	24/2/2011	20/3/2011
1225	Excavation and formation	4 days	24/2/2011	27/2/2011
1226	Gabion Wall construction (Ch 100-150 RHS)	15 days	28/2/2011	14/3/2011
1227	Backfilling	6 days	15/3/2011	20/3/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

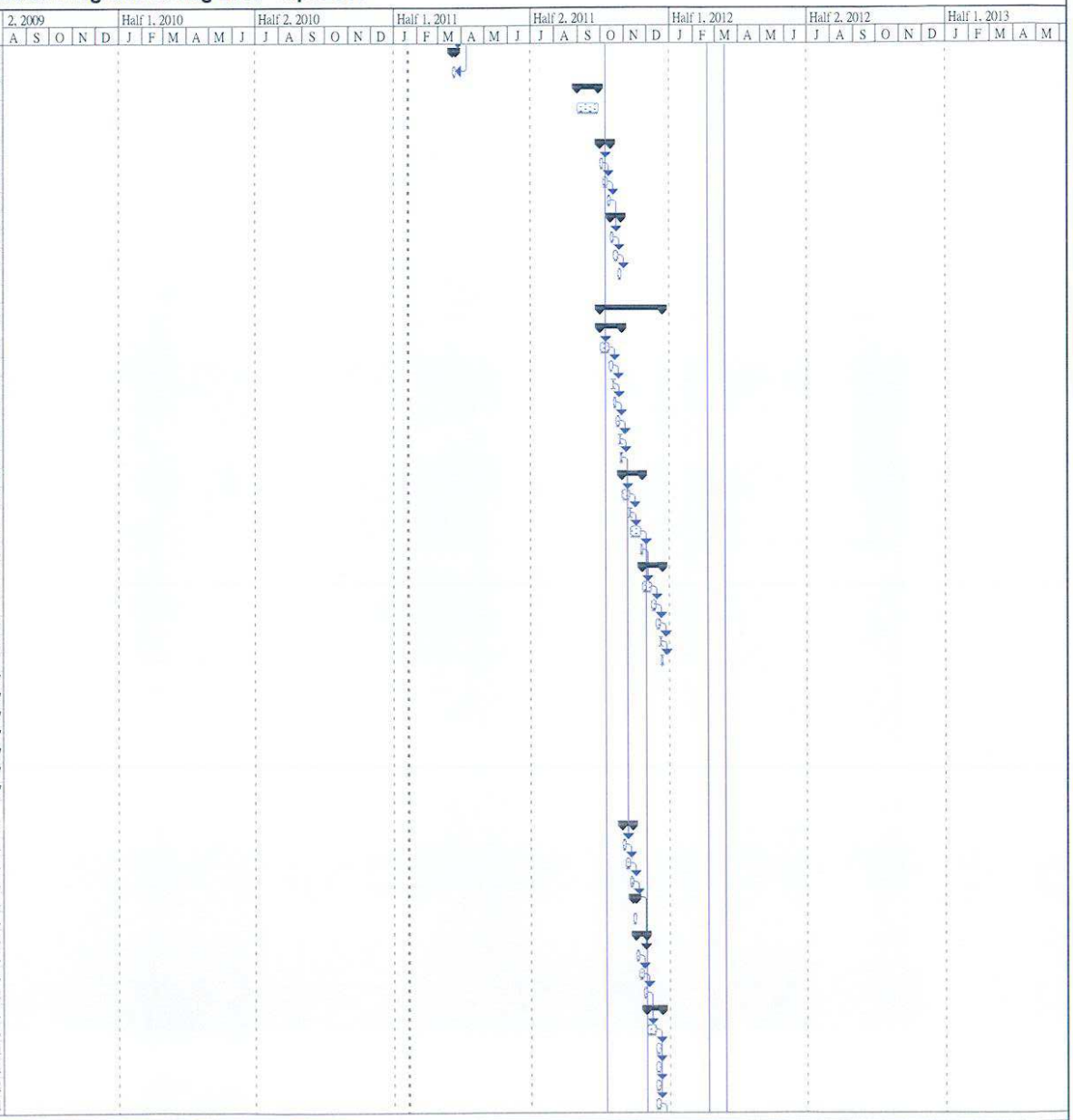
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1228	Maintainence Staircase (Ch 130 RHS)	4 days	21/3/2011	24/3/2011
1229	Formwork and concreting	4 days	21/3/2011	24/3/2011
1230	Drainage & Footpath (Ch 0-150 RHS)	28 days	1/9/2011	28/9/2011
1231	Construction of drainage & footpath	28 days	1/9/2011	28/9/2011
1232				
1233	Gabion Wall (Ch 150-160 RHS) TG4	14 days	1/10/2011	14/10/2011
1234	Excavation and formation	4 days	1/10/2011	4/10/2011
1235	Gabion Wall Construction (Ch 150-160 RHS)	6 days	5/10/2011	10/10/2011
1236	Backfilling	4 days	11/10/2011	14/10/2011
1237	Gabion Wall (Ch 160-185 RHS) TG4	14 days	15/10/2011	28/10/2011
1238	Excavation and formation	4 days	15/10/2011	18/10/2011
1239	Construction of Gabion Wall (Ch 160-185 RHS)	6 days	19/10/2011	24/10/2011
1240	Backfilling	4 days	25/10/2011	28/10/2011
1241				
1242	Footbridge TB03 (Ch 200)	83 days	1/10/2011	22/12/2011
1243	Construction of Abutment B (RHS)	29 days	1/10/2011	29/10/2011
1244	Excavation and Blinding	12 days	1/10/2011	12/10/2011
1245	Formwork and rebar fixing of base slab	5 days	13/10/2011	17/10/2011
1246	Concreting of base slab	1 day	18/10/2011	18/10/2011
1247	Stripping off formwork	3 days	19/10/2011	21/10/2011
1248	Rebar fixing and shuttering formwork for column	5 days	22/10/2011	26/10/2011
1249	Concreting	1 day	27/10/2011	27/10/2011
1250	Stripping off formwork	2 days	28/10/2011	29/10/2011
1251	Construction of Decking (TB03)	27 days	30/10/2011	25/11/2011
1252	Formwork and rebar fixing for decking	10 days	30/10/2011	8/11/2011
1253	Concreting	1 day	9/11/2011	9/11/2011
1254	Stripping off formwork	14 days	10/11/2011	23/11/2011
1255	Railing installation	2 days	24/11/2011	25/11/2011
1256	Lighting at Footbridge TB03	27 days	26/11/2011	22/12/2011
1257	Construction of Drawpits / Ductings	12 days	26/11/2011	7/12/2011
1258	Public lighting Installation (CE2321)	6 days	8/12/2011	13/12/2011
1259	Public lighting Installation (CE2322)	6 days	14/12/2011	19/12/2011
1260	T&C	1 day	20/12/2011	20/12/2011
1261	Removal of existing lighting (VA1309-Z1)	2 days	21/12/2011	22/12/2011
1262	Step 1 (Ch 180)	13 days	28/9/2007	10/10/2007
1263	Excavation and Blinding	7 days	28/9/2007	4/10/2007
1264	Formwork and rebar fixing for base slab	4 days	5/10/2007	8/10/2007
1265	Concreting of base slab	1 day	9/10/2007	9/10/2007
1266	Stripping off formwork	1 day	10/10/2007	10/10/2007
1267	River Bed formation (Ch 150-180)	6 days	11/10/2007	16/10/2007
1268	Placing Grade 500 toe Stone	6 days	11/10/2007	16/10/2007
1269				
1270	Gabion Wall (Ch 185-210 RHS) TG1	14 days	30/10/2011	12/11/2011
1271	Excavation and formation	4 days	30/10/2011	2/11/2011
1272	Construction of Gabion Wall (Ch 185-210 RHS)	6 days	3/11/2011	8/11/2011
1273	Backfilling	4 days	9/11/2011	12/11/2011
1274	Maintainence Staircase (Ch 180 LHS)	4 days	13/11/2011	16/11/2011
1275	Formwork and concreting	4 days	13/11/2011	16/11/2011
1276	Gabion Wall (Ch 210-225 RHS) TG1	14 days	17/11/2011	30/11/2011
1277	Excavation and formation	4 days	17/11/2011	20/11/2011
1278	Construction of Gabion Wall (Ch 210-225 RHS)	6 days	21/11/2011	26/11/2011
1279	Backfilling	4 days	27/11/2011	30/11/2011
1280	Lighting CH 175-250	21 days	1/12/2011	21/12/2011
1281	Construction of Drawpits / Ductings	12 days	1/12/2011	12/12/2011
1282	Public lighting Installation (CE2319)	6 days	13/12/2011	18/12/2011
1283	Public lighting Installation (CE2320)	6 days	13/12/2011	18/12/2011
1284	Public lighting Installation (CE2323)	6 days	13/12/2011	18/12/2011
1285	Public lighting Installation (CE2324)	6 days	13/12/2011	18/12/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

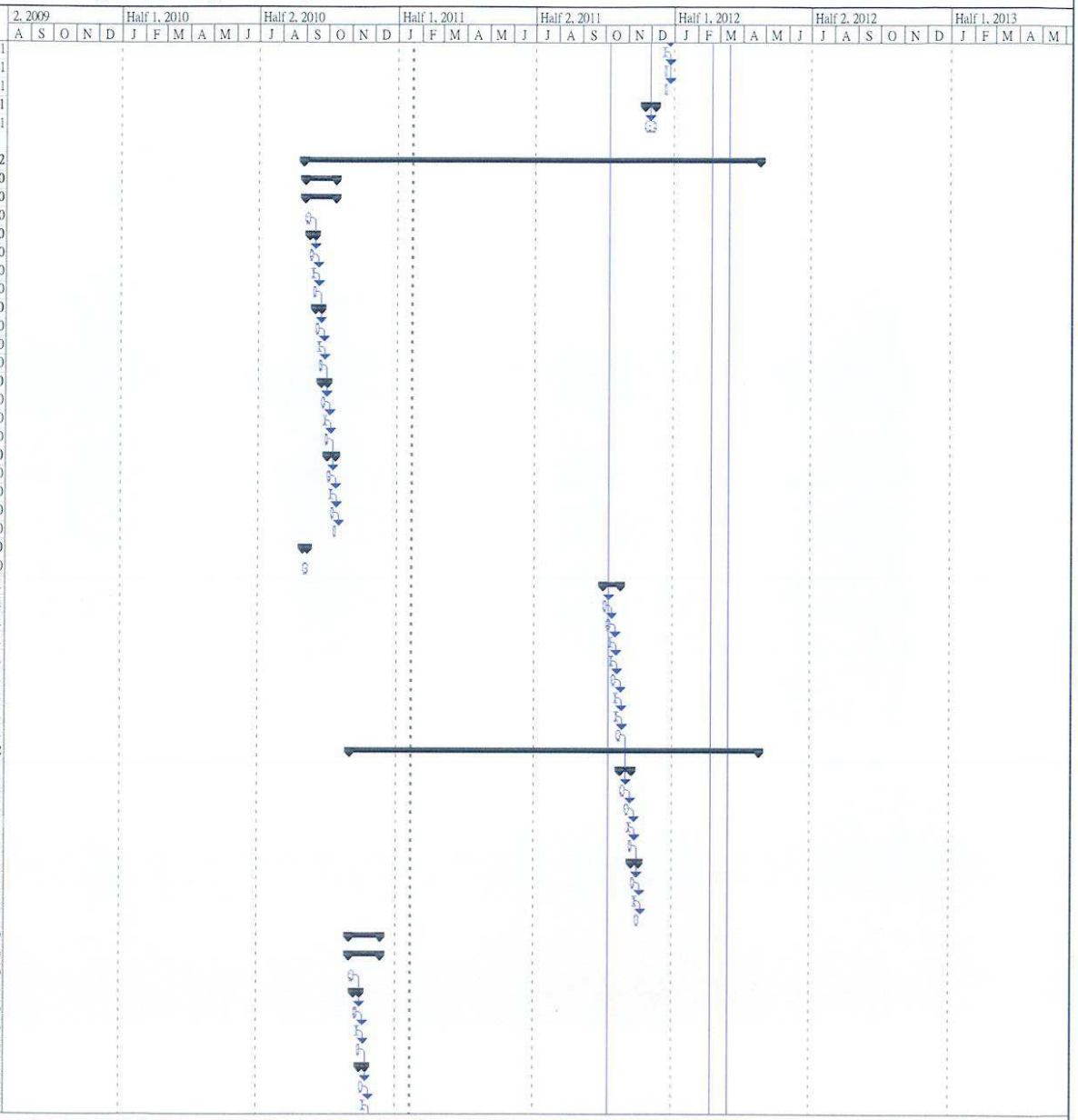
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1286	T&C	1 day	19/12/2011	19/12/2011
1287	Removal of existing lighting (VE2641-A1)	2 days	20/12/2011	21/12/2011
1288	Removal of existing lighting (VA1310-A1)	2 days	20/12/2011	21/12/2011
1289	River Bed formation (Ch 180-230)	14 days	24/11/2011	7/12/2011
1290	Placing Grade 500 toe Stone	14 days	24/11/2011	7/12/2011
1291				
1292	Ch -23-110	604 days	30/8/2010	24/4/2012
1293	Retaining Wall at Access D (Boulder Trap)	41 days	1/9/2010	11/10/2010
1294	Retaining Wall (RHS)	41 days	1/9/2010	11/10/2010
1295	Excavation and blinding	6 days	1/9/2010	6/9/2010
1296	Construction of Base Slab, Bay 2 and 4	8 days	7/9/2010	14/9/2010
1297	Formwork and rebar fixing	4 days	7/9/2010	10/9/2010
1298	Concreting	1 day	11/9/2010	11/9/2010
1299	Stripping off formwork	3 days	12/9/2010	14/9/2010
1300	Construction of Base Slab, Bay 1 and 3	8 days	15/9/2010	22/9/2010
1301	Formwork and rebar fixing	4 days	15/9/2010	18/9/2010
1302	Concreting	1 day	19/9/2010	19/9/2010
1303	Stripping off formwork	3 days	20/9/2010	22/9/2010
1304	Construction of Wall Stem, Bay 2 and 4	8 days	23/9/2010	30/9/2010
1305	Formwork and rebar fixing	4 days	23/9/2010	26/9/2010
1306	Concreting	1 day	27/9/2010	27/9/2010
1307	Stripping off formwork	3 days	28/9/2010	30/9/2010
1308	Construction of Wall Stem, Bay 1 and 3	11 days	1/10/2010	11/10/2010
1309	Formwork and rebar fixing	4 days	1/10/2010	4/10/2010
1310	Concreting	1 day	5/10/2010	5/10/2010
1311	Stripping off formwork	3 days	6/10/2010	8/10/2010
1312	Backfill the Retaining Wall	3 days	9/10/2010	11/10/2010
1313	Filling Work at Boulder Trap (RHS of downstream)	6 days	30/8/2010	4/9/2010
1314	Filling works	6 days	30/8/2010	4/9/2010
1315	Dwarf Wall (Ch 60-75) RHS	23 days	1/10/2011	23/10/2011
1316	Excavation and Blinding	4 days	1/10/2011	4/10/2011
1317	Formwork and rebar fixing of base slab	5 days	5/10/2011	9/10/2011
1318	Concreting of base slab	1 day	10/10/2011	10/10/2011
1319	Stripping off formwork	1 day	11/10/2011	11/10/2011
1320	Rebar fixing and shuttering formwork for column	5 days	12/10/2011	16/10/2011
1321	Concreting	1 day	17/10/2011	17/10/2011
1322	Stripping off formwork	1 day	18/10/2011	18/10/2011
1323	Backfill	5 days	19/10/2011	23/10/2011
1324	Box Culvert TB03 (Ch 45)	541 days	1/11/2010	24/4/2012
1325	Construction of Base Slab	15 days	24/10/2011	7/11/2011
1326	Excavation and Blinding	6 days	24/10/2011	29/10/2011
1327	Formwork and rebar fixing	5 days	30/10/2011	3/11/2011
1328	Concreting	1 day	4/11/2011	4/11/2011
1329	Stripping off formwork	3 days	5/11/2011	7/11/2011
1330	Construction of Wall Stem and Top Slab	10 days	8/11/2011	17/11/2011
1331	Formwork and rebar fixing	4 days	8/11/2011	11/11/2011
1332	Concreting	1 day	12/11/2011	12/11/2011
1333	Stripping off formwork	5 days	13/11/2011	17/11/2011
1334	Retaining Wall at Access D (Boulder Trap)	41 days	1/11/2010	11/12/2010
1335	Retaining Wall (LHS)	41 days	1/11/2010	11/12/2010
1336	Excavation and blinding	6 days	1/11/2010	6/11/2010
1337	Construction of Base Slab, Bay 2	8 days	7/11/2010	14/11/2010
1338	Formwork and rebar fixing	4 days	7/11/2010	10/11/2010
1339	Concreting	1 day	11/11/2010	11/11/2010
1340	Stripping off formwork	3 days	12/11/2010	14/11/2010
1341	Construction of Base Slab, Bay 1	8 days	15/11/2010	22/11/2010
1342	Formwork and rebar fixing	4 days	15/11/2010	18/11/2010
1343	Concreting	1 day	19/11/2010	19/11/2010



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 | 進度 | 里程碑 | 摘要 | 上顯型任務 | 上顯型里程碑 | 上顯型進度 | 分割 | 外部任務 | 專案摘要 | 摘要群組 | 期限

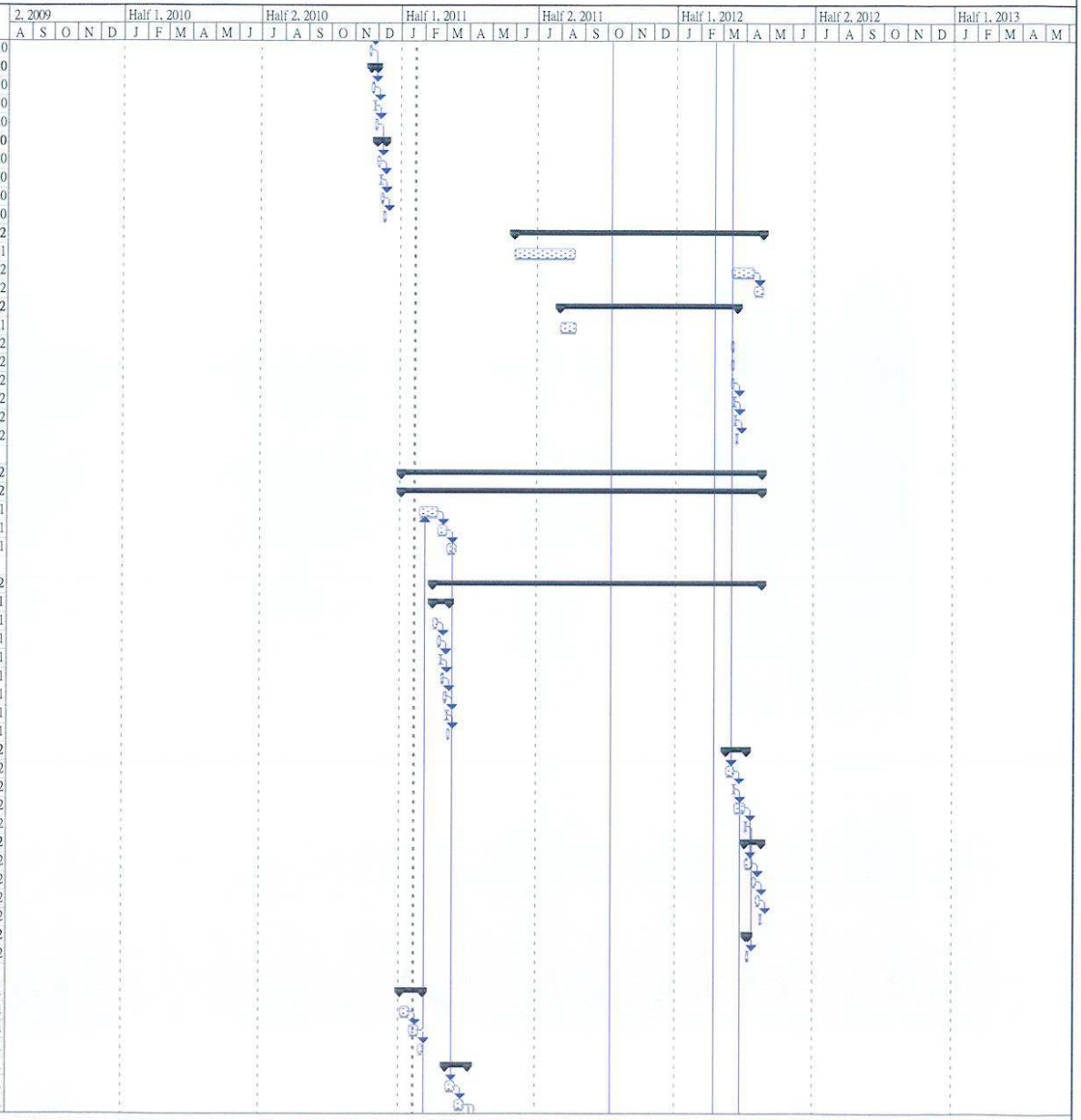
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1344	Stripping off formwork	3 days	20/11/2010	22/11/2010
1345	Construction of Wall Stem, Bay 2	8 days	23/11/2010	30/11/2010
1346	Formwork and rebar fixing	4 days	23/11/2010	26/11/2010
1347	Concreting	1 day	27/11/2010	27/11/2010
1348	Stripping off formwork	3 days	28/11/2010	30/11/2010
1349	Construction of Wall Stem, Bay 1	11 days	1/12/2010	11/12/2010
1350	Formwork and rebar fixing	4 days	1/12/2010	4/12/2010
1351	Concreting	1 day	5/12/2010	5/12/2010
1352	Stripping off formwork	3 days	6/12/2010	8/12/2010
1353	Backfill the Retaining Wall	3 days	9/12/2010	11/12/2010
1354	Vehicular Access D	329 days	1/6/2011	24/4/2012
1355	Road Kerb and formation	80 days	1/6/2011	19/8/2011
1356	Pavement	30 days	14/3/2012	12/4/2012
1357	Railing and street furniture	12 days	13/4/2012	24/4/2012
1358	Lighting at Access D	234 days	1/8/2011	21/3/2012
1359	Construction of Drawpits / Ductings	21 days	1/8/2011	21/8/2011
1360	Public lighting Installation (CE2300)	3 days	14/3/2012	16/3/2012
1361	Public lighting Installation (CE2301)	3 days	14/3/2012	16/3/2012
1362	Public lighting Installation (CE2302)	3 days	14/3/2012	16/3/2012
1363	T&C	1 day	17/3/2012	17/3/2012
1364	Removal of existing lighting (VA1278-A1)	2 days	18/3/2012	19/3/2012
1365	Removal of existing lighting (VA1279-A1)	2 days	20/3/2012	21/3/2012
1366				
1367	Ch 350-450	477 days	3/1/2011	23/4/2012
1368	Retaining Wall (Ch 345-400 LHS) TR1 (replaced by AD1)	477 days	3/1/2011	23/4/2012
1369	Excavation and Foramtion	24 days	27/1/2011	19/2/2011
1370	Laying concrete blocks and gabion blocks	12 days	20/2/2011	3/3/2011
1371	Backfilling	12 days	4/3/2011	15/3/2011
1372				
1373	Footbridge TB06 (Ch 400)	435 days	14/2/2011	23/4/2012
1374	Construction of Abutment A (LHS)	22 days	14/2/2011	7/3/2011
1375	Excavation and Blinding	6 days	14/2/2011	19/2/2011
1376	Formwork and rebar fixing of base slab	4 days	20/2/2011	23/2/2011
1377	Concreting of base slab	1 day	24/2/2011	24/2/2011
1378	Stripping off formwork	3 days	25/2/2011	27/2/2011
1379	Rebar fixing and shuttering formwork for column	4 days	28/2/2011	3/3/2011
1380	Concreting	1 day	4/3/2011	4/3/2011
1381	Stripping off formwork	3 days	5/3/2011	7/3/2011
1382	Construction of decking	27 days	8/3/2012	3/4/2012
1383	Formwork and rebar fixing for decking	10 days	8/3/2012	17/3/2012
1384	Concreting	1 day	18/3/2012	18/3/2012
1385	Stripping off formwork	14 days	19/3/2012	1/4/2012
1386	Railing installation	2 days	2/4/2012	3/4/2012
1387	Lighting at Footbridge TB06	22 days	2/4/2012	23/4/2012
1388	Construction of Drawpits / Ductings	10 days	2/4/2012	11/4/2012
1389	Public lighting Installation (CE2311)	5 days	12/4/2012	16/4/2012
1390	Public lighting Installation (CE2310)	5 days	17/4/2012	21/4/2012
1391	T&C	2 days	22/4/2012	23/4/2012
1392	Demolition of Bridge TB-C	3 days	4/4/2012	6/4/2012
1393	Demolition works	3 days	4/4/2012	6/4/2012
1394				
1395	Retaining Wall (Ch 400-450 RHS) TR1 (replaced by AD1)	30 days	3/1/2011	1/2/2011
1396	Excavation and Formation	12 days	3/1/2011	14/1/2011
1397	Laying concrete blocks and gabion blocks	12 days	15/1/2011	26/1/2011
1398	Backfilling	6 days	27/1/2011	1/2/2011
1399	Retaining Wall (Ch 400-450 LHS) TR1 (replaced by AD1)	30 days	4/3/2011	2/4/2011
1400	Excavation and Foramtion	12 days	4/3/2011	15/3/2011
1401	Laying concrete blocks and gabion blocks	12 days	16/3/2011	27/3/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

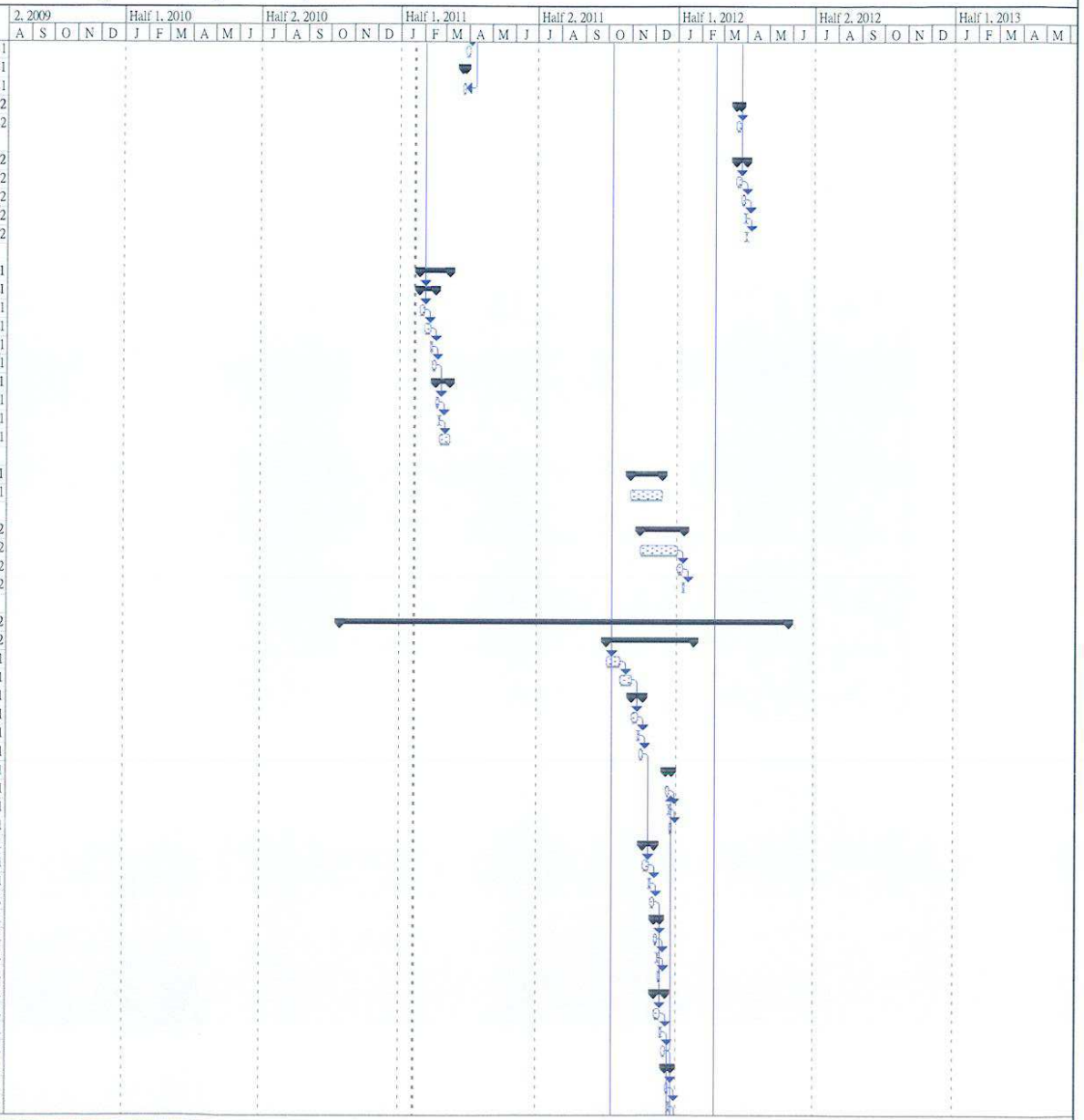
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1402	Backfilling	6 days	28/3/2011	2/4/2011
1403	Maintainence Staircase (Ch 420 LHS)	4 days	24/3/2011	27/3/2011
1404	Formwork and concreting	4 days	24/3/2011	27/3/2011
1405	River Bed formation (Ch 400-450)	6 days	19/3/2012	24/3/2012
1406	Placing Grade 500 toe Stone	6 days	19/3/2012	24/3/2012
1407				
1408	Step 5 (Ch 410)	14 days	19/3/2012	1/4/2012
1409	Excavation and Blinding	7 days	19/3/2012	25/3/2012
1410	Formwork and rebar fixing for base slab	5 days	26/3/2012	30/3/2012
1411	Concreting of base slab	1 day	31/3/2012	31/3/2012
1412	Stripping off formwork	1 day	1/4/2012	1/4/2012
1413				
1414	Box Culvert TB01 (Ch 450)	40 days	27/1/2011	7/3/2011
1415	Construction of Base Slab	21 days	27/1/2011	16/2/2011
1416	Excavation and Blinding	6 days	27/1/2011	1/2/2011
1417	Formwork and rebar fixing	8 days	2/2/2011	9/2/2011
1418	Concreting	2 days	10/2/2011	11/2/2011
1419	Stripping off formwork	5 days	12/2/2011	16/2/2011
1420	Construction of Wall Stem and Top Slab	19 days	17/2/2011	7/3/2011
1421	Formwork and rebar fixing	4 days	17/2/2011	20/2/2011
1422	Concreting	1 day	21/2/2011	21/2/2011
1423	Stripping off formwork	14 days	22/2/2011	7/3/2011
1424				
1425	Drainage & Footpath (Ch350-450) LHS & RHS	42 days	1/11/2011	12/12/2011
1426	Drainage & Footpath (Ch350-450) LHS & RHS	42 days	1/11/2011	12/12/2011
1427				
1428	Lighting at CH 350-380	58 days	14/11/2011	10/1/2012
1429	Construction of Drawpits / Ductings	49 days	14/11/2011	1/1/2012
1430	Public lighting Installation (CE2312)	7 days	2/1/2012	8/1/2012
1431	T&C	2 days	9/1/2012	10/1/2012
1432				
1433	Ch 450-525	592 days	15/10/2010	28/5/2012
1434	Retaining Wall (ch 450-500) TR2	115 days	1/10/2011	23/1/2012
1435	Demolition of House 2 Sha Po Tsai	18 days	1/10/2011	18/10/2011
1436	Excavation and Formation	15 days	19/10/2011	2/11/2011
1437	Base Slab Construction Bay 1	15 days	3/11/2011	17/11/2011
1438	Formwork and rebar fixing	8 days	3/11/2011	10/11/2011
1439	Concreting	2 days	11/11/2011	12/11/2011
1440	Stripping off formwork	5 days	13/11/2011	17/11/2011
1441	Wall Stem Construction Bay 1 (LHS, RHS)	8 days	18/12/2011	25/12/2011
1442	Formwork and rebar fixing	4 days	18/12/2011	21/12/2011
1443	Concreting	1 day	22/12/2011	22/12/2011
1444	Stripping off formwork	3 days	23/12/2011	25/12/2011
1445	Base Slab Construction Bay 2	15 days	18/11/2011	2/12/2011
1446	Formwork and rebar fixing	8 days	18/11/2011	25/11/2011
1447	Concreting	2 days	26/11/2011	27/11/2011
1448	Stripping off formwork	5 days	28/11/2011	2/12/2011
1449	Wall Stem Construction Bay 2 (LHS, RHS)	8 days	3/12/2011	10/12/2011
1450	Formwork and rebar fixing	4 days	3/12/2011	6/12/2011
1451	Concreting	1 day	7/12/2011	7/12/2011
1452	Stripping off formwork	3 days	8/12/2011	10/12/2011
1453	Base Slab Construction Bay 3	15 days	3/12/2011	17/12/2011
1454	Formwork and rebar fixing	8 days	3/12/2011	10/12/2011
1455	Concreting	2 days	11/12/2011	12/12/2011
1456	Stripping off formwork	5 days	13/12/2011	17/12/2011
1457	Wall Stem Construction Bay 3 (LHS, RHS)	8 days	18/12/2011	25/12/2011
1458	Formwork and rebar fixing	4 days	18/12/2011	21/12/2011
1459	Concreting	1 day	22/12/2011	22/12/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 進度 里程碑 摘要 上顯型任務 上顯型里程碑 上顯型進度 分割 外部任務 專案摘要 摘要群組 期限

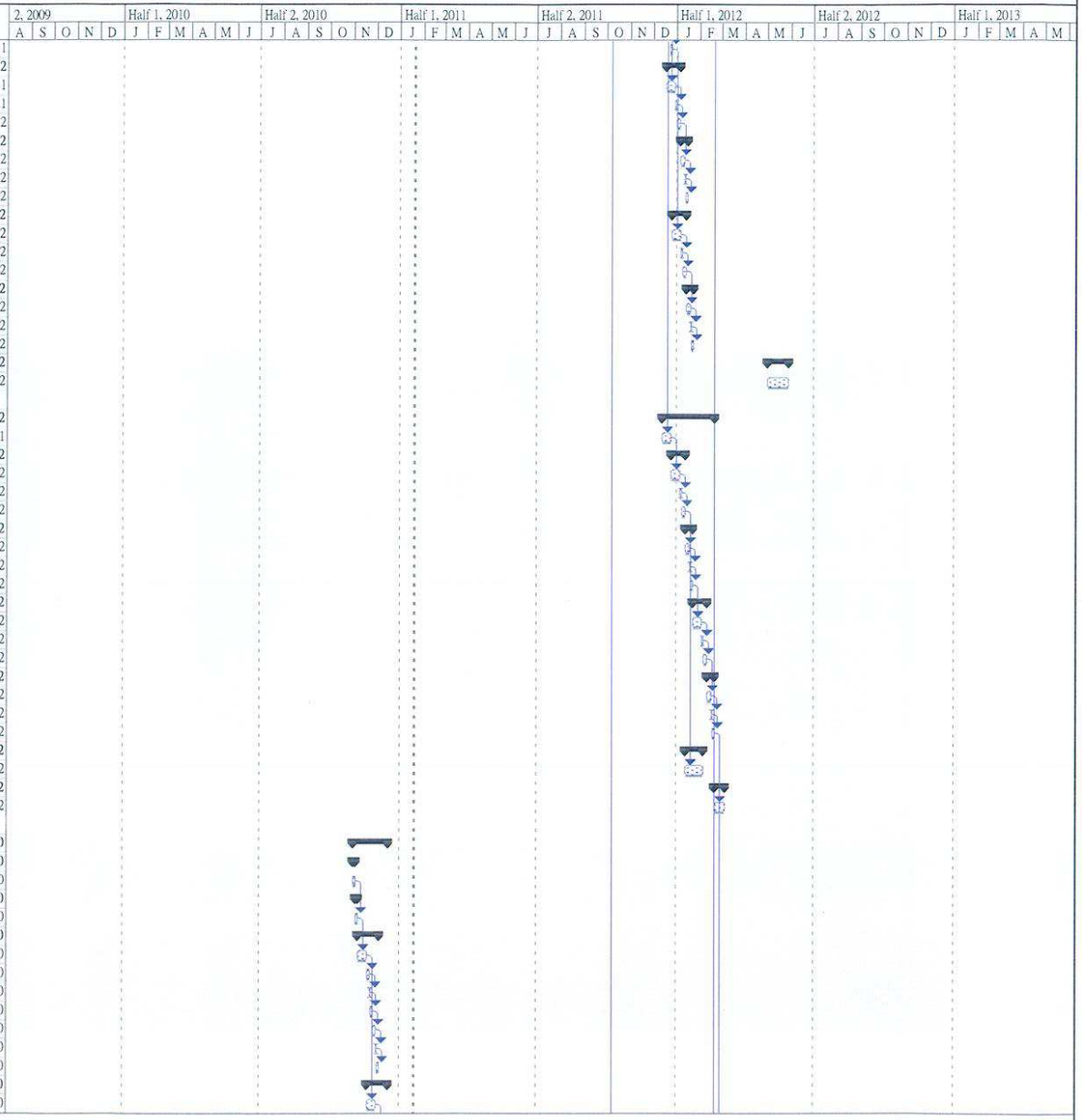
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1460	Stripping off formwork	3 days	23/12/2011	25/12/2011
1461	Base Slab Construction Bay 4 (incl. Step 6)	19 days	18/12/2011	5/1/2012
1462	Formwork and rebar fixing	12 days	18/12/2011	29/12/2011
1463	Concreting	2 days	30/12/2011	31/12/2011
1464	Stripping off formwork	5 days	1/1/2012	5/1/2012
1465	Wall Stem Construction Bay 4 (LHS, RHS)	10 days	6/1/2012	15/1/2012
1466	Formwork and rebar fixing	6 days	6/1/2012	11/1/2012
1467	Concreting	1 day	12/1/2012	12/1/2012
1468	Stripping off formwork	3 days	13/1/2012	15/1/2012
1469	Base Slab Construction Bay 5 (incl. Step 6)	19 days	26/12/2011	13/1/2012
1470	Formwork and rebar fixing	12 days	26/12/2011	6/1/2012
1471	Concreting	2 days	7/1/2012	8/1/2012
1472	Stripping off formwork	5 days	9/1/2012	13/1/2012
1473	Wall Stem Construction Bay 5 (LHS, RHS)	10 days	14/1/2012	23/1/2012
1474	Formwork and rebar fixing	6 days	14/1/2012	19/1/2012
1475	Concreting	1 day	20/1/2012	20/1/2012
1476	Stripping off formwork	3 days	21/1/2012	23/1/2012
1477	Drainage & Footpath (Ch 450-490 RHS)	28 days	1/5/2012	28/5/2012
1478	Construction of drainage & footpath	28 days	1/5/2012	28/5/2012
1479				
1480	Retaining Wall (Ch 500-530 LHS) TR3	70 days	13/12/2011	20/2/2012
1481	Excavation and Formation	12 days	13/12/2011	24/12/2011
1482	Base Slab Construction Bay 1 (incl. Step 7)	19 days	25/12/2011	12/1/2012
1483	Formwork and rebar fixing	12 days	25/12/2011	5/1/2012
1484	Concreting	2 days	6/1/2012	7/1/2012
1485	Stripping off formwork	5 days	8/1/2012	12/1/2012
1486	Wall Stem Construction Bay 1 (LHS, RHS)	10 days	13/1/2012	22/1/2012
1487	Formwork and rebar fixing	6 days	13/1/2012	18/1/2012
1488	Concreting	1 day	19/1/2012	19/1/2012
1489	Stripping off formwork	3 days	20/1/2012	22/1/2012
1490	Base Slab Construction Bay 2 (incl. Step 7)	19 days	23/1/2012	10/2/2012
1491	Formwork and rebar fixing	12 days	23/1/2012	3/2/2012
1492	Concreting	2 days	4/2/2012	5/2/2012
1493	Stripping off formwork	5 days	6/2/2012	10/2/2012
1494	Wall Stem Construction Bay 2 (LHS, RHS)	10 days	11/2/2012	20/2/2012
1495	Formwork and rebar fixing	6 days	11/2/2012	16/2/2012
1496	Concreting	1 day	17/2/2012	17/2/2012
1497	Stripping off formwork	3 days	18/2/2012	20/2/2012
1498	Cascades (Ch 500 LHS)	24 days	13/1/2012	5/2/2012
1499	Construction of Step	24 days	13/1/2012	5/2/2012
1500	Drainage & Footpath (Ch 490-525 RHS)	14 days	21/2/2012	5/3/2012
1501	Construction of drainage & footpath	14 days	21/2/2012	5/3/2012
1502				
1503	Footbridge TB07 (Ch 525)	46 days	1/11/2010	16/12/2010
1504	Temporary Pedestrian Division	3 days	1/11/2010	3/11/2010
1505	Temporary Pedestrain Division	3 days	1/11/2010	3/11/2010
1506	Demolition of existing Footbridge TB-D (Ch 525)	3 days	4/11/2010	6/11/2010
1507	Demolition works	3 days	4/11/2010	6/11/2010
1508	Construction of Abutment A	28 days	7/11/2010	4/12/2010
1509	Excavation and Blinding	12 days	7/11/2010	18/11/2010
1510	Formwork and rebar fixing for base slab	4 days	19/11/2010	22/11/2010
1511	Concreting of base slab	1 day	23/11/2010	23/11/2010
1512	Stripping off formwork	3 days	24/11/2010	26/11/2010
1513	Rebar fixing and shuttering formwork for column	4 days	27/11/2010	30/11/2010
1514	Concreting	1 day	1/12/2010	1/12/2010
1515	Stripping off formwork	3 days	2/12/2010	4/12/2010
1516	Construction of Abutment B	28 days	19/11/2010	16/12/2010
1517	Excavation and Blinding	12 days	19/11/2010	30/11/2010



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

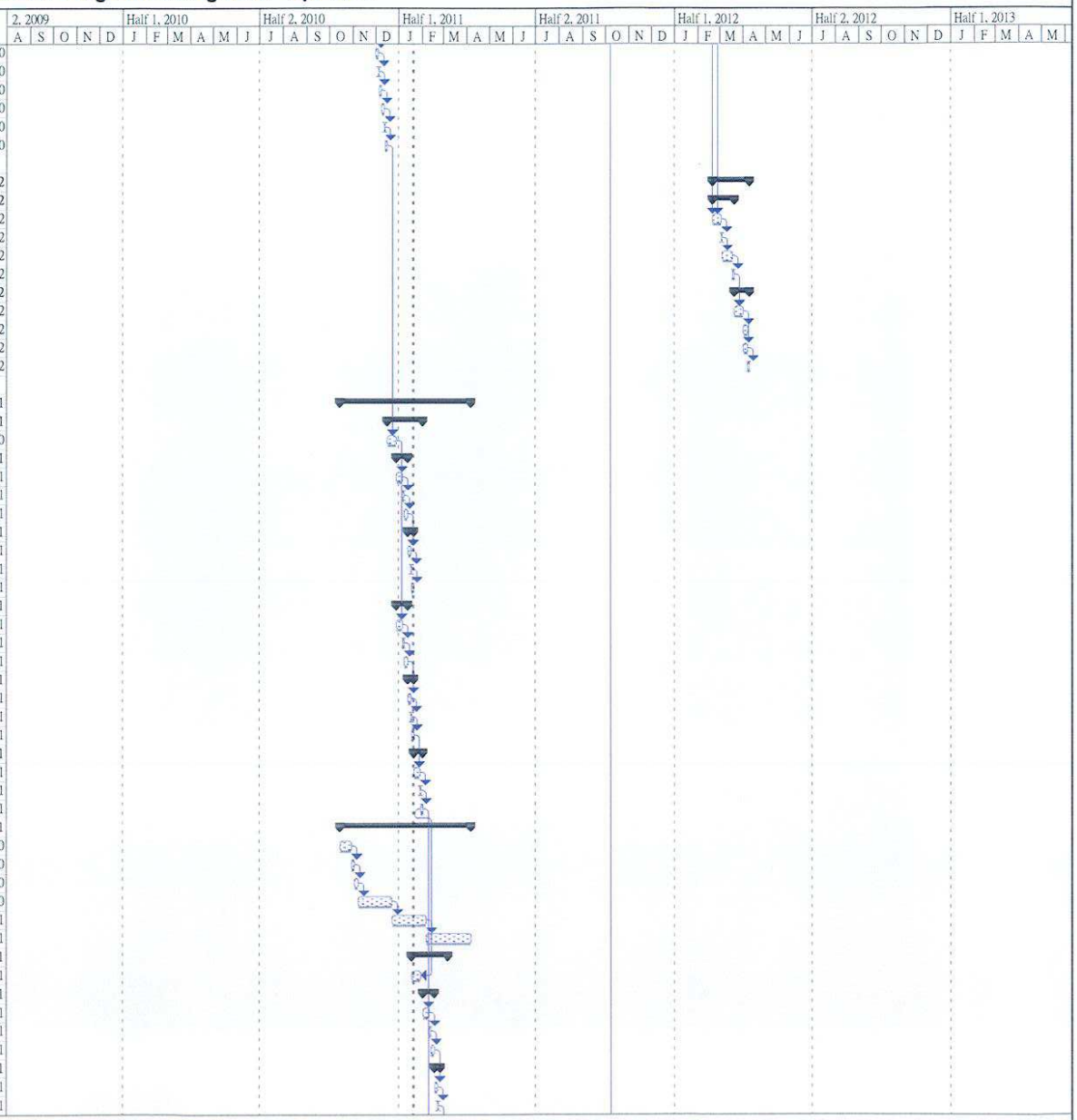
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1518	Formwork and rebar fixing for base slab	4 days	1/12/2010	4/12/2010
1519	Concreting of base slab	1 day	5/12/2010	5/12/2010
1520	Stripping off formwork	3 days	6/12/2010	8/12/2010
1521	Rebar fixing and shuttering formwork for column	4 days	9/12/2010	12/12/2010
1522	Concreting	1 day	13/12/2010	13/12/2010
1523	Stripping off formwork	3 days	14/12/2010	16/12/2010
1524				
1525	Footbridge TB07 (Ch 525)	49 days	21/2/2012	9/4/2012
1526	Construction of decking	29 days	21/2/2012	20/3/2012
1527	Formwork and rebar fixing for decking	12 days	21/2/2012	3/3/2012
1528	Concreting	1 day	4/3/2012	4/3/2012
1529	Stripping off formwork	14 days	5/3/2012	18/3/2012
1530	Railing installation	2 days	19/3/2012	20/3/2012
1531	Footbridge TB07 Lighting	20 days	21/3/2012	9/4/2012
1532	Construction of Drawpits / Ducting	12 days	21/3/2012	1/4/2012
1533	Public lighting Installation (CE2328)	6 days	2/4/2012	7/4/2012
1534	Public lighting Installation (CE2329)	6 days	2/4/2012	7/4/2012
1535	T&C	2 days	8/4/2012	9/4/2012
1536				
1537	Ch 525-615	174 days	15/10/2010	6/4/2011
1538	Retaining Wall (Ch 535-555 LHS) TR4	47 days	17/12/2010	1/2/2011
1539	Excavation and Formation	12 days	17/12/2010	28/12/2010
1540	Base Slab Construction Bay 1	15 days	29/12/2010	12/1/2011
1541	Formwork and rebar fixing	8 days	29/12/2010	5/1/2011
1542	Concreting	2 days	6/1/2011	7/1/2011
1543	Stripping off formwork	5 days	8/1/2011	12/1/2011
1544	Wall Stem Construction Bay 1 (LHS, RHS)	8 days	13/1/2011	20/1/2011
1545	Formwork and rebar fixing	4 days	13/1/2011	16/1/2011
1546	Concreting	1 day	17/1/2011	17/1/2011
1547	Stripping off formwork	3 days	18/1/2011	20/1/2011
1548	Base Slab Construction Bay 2	15 days	29/12/2010	12/1/2011
1549	Formwork and rebar fixing	8 days	29/12/2010	5/1/2011
1550	Concreting	2 days	6/1/2011	7/1/2011
1551	Stripping off formwork	5 days	8/1/2011	12/1/2011
1552	Wall Stem Construction Bay 2 LHS	8 days	13/1/2011	20/1/2011
1553	Formwork and rebar fixing	4 days	13/1/2011	16/1/2011
1554	Concreting	1 day	17/1/2011	17/1/2011
1555	Stripping off formwork	3 days	18/1/2011	20/1/2011
1556	Wall Stem Construction Bay 2 RHS (Skin Wall)	12 days	21/1/2011	1/2/2011
1557	Formwork and rebar fixing	8 days	21/1/2011	28/1/2011
1558	Concreting	1 day	29/1/2011	29/1/2011
1559	Stripping off formwork	3 days	30/1/2011	1/2/2011
1560	Retaining Wall TR5 Ch 555-595 LHS) TR5 (AD)	174 days	15/10/2010	6/4/2011
1561	Construction of temp haul road	15 days	15/10/2010	29/10/2010
1562	Demolition of Existing structure at slope crest	4 days	30/10/2010	2/11/2010
1563	Construction of temporary ground beam	5 days	3/11/2010	7/11/2010
1564	Trimming of rock slope (from downstream to upstream)	45 days	8/11/2010	22/12/2010
1565	Install rock dowel	45 days	23/12/2010	5/2/2011
1566	Construction of skin wall (from D/S to U/S, from toe to crest)	60 days	6/2/2011	6/4/2011
1567	Retaining Wall TR5A CH555-595 LHS	48 days	18/1/2011	6/3/2011
1568	Excavation and Formation	12 days	18/1/2011	30/1/2011
1569	Base Slab Construction TR5A Bay 1 LHS	15 days	2/2/2011	16/2/2011
1570	Formwork and rebar fixing	8 days	2/2/2011	9/2/2011
1571	Concreting	2 days	10/2/2011	11/2/2011
1572	Stripping off formwork	5 days	12/2/2011	16/2/2011
1573	Wall Stem Construction TR5A Bay 1 LHS	8 days	17/2/2011	24/2/2011
1574	Formwork and rebar fixing	4 days	17/2/2011	20/2/2011
1575	Concreting	1 day	21/2/2011	21/2/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

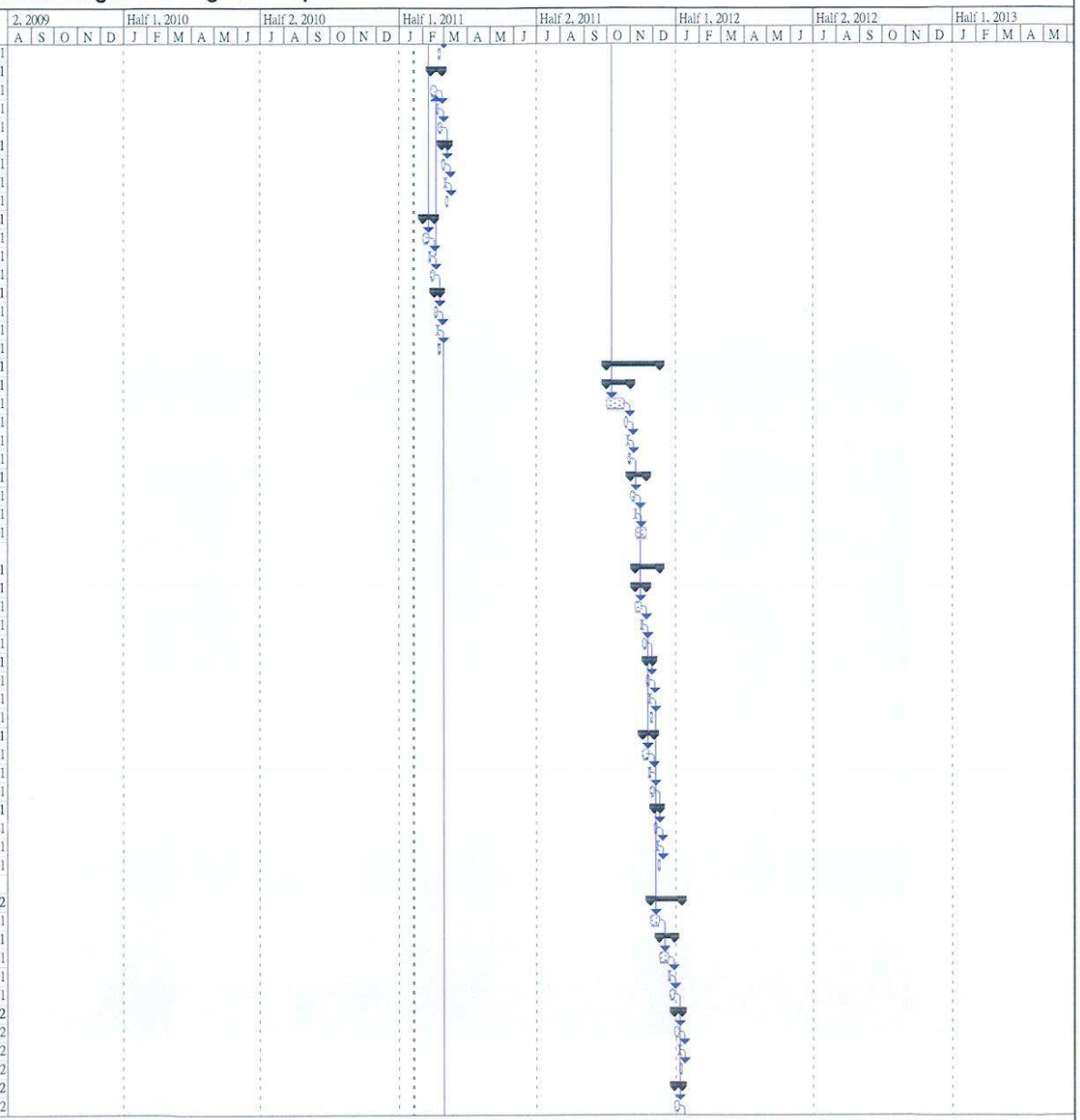
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1576	Stripping off formwork	3 days	22/2/2011	24/2/2011
1577	Base Slab Construction TR5A Bay 2 LHS	15 days	12/2/2011	26/2/2011
1578	Formwork and rebar fixing	8 days	12/2/2011	19/2/2011
1579	Concreting	2 days	20/2/2011	21/2/2011
1580	Stripping off formwork	5 days	22/2/2011	26/2/2011
1581	Wall Stem Construction TR5A Bay 2 LHS	8 days	27/2/2011	6/3/2011
1582	Formwork and rebar fixing	4 days	27/2/2011	2/3/2011
1583	Concreting	1 day	3/3/2011	3/3/2011
1584	Stripping off formwork	3 days	4/3/2011	6/3/2011
1585	Base Slab Construction TR5A Bay 3 LHS	15 days	2/2/2011	16/2/2011
1586	Formwork and rebar fixing	8 days	2/2/2011	9/2/2011
1587	Concreting	2 days	10/2/2011	11/2/2011
1588	Stripping off formwork	5 days	12/2/2011	16/2/2011
1589	Wall Stem Construction TR5A Bay 3 LHS	8 days	17/2/2011	24/2/2011
1590	Formwork and rebar fixing	4 days	17/2/2011	20/2/2011
1591	Concreting	1 day	21/2/2011	21/2/2011
1592	Stripping off formwork	3 days	22/2/2011	24/2/2011
1593	Box Culvert TB02 (ch 580)	71 days	1/10/2011	10/12/2011
1594	Construction of Base Slab	32 days	1/10/2011	1/11/2011
1595	Excavation and Blinding	24 days	1/10/2011	24/10/2011
1596	Formwork and rebar fixing	4 days	25/10/2011	28/10/2011
1597	Concreting	1 day	29/10/2011	29/10/2011
1598	Stripping off formwork	3 days	30/10/2011	1/11/2011
1599	Construction of Wall Stem and Top Slab	21 days	2/11/2011	22/11/2011
1600	Formwork and rebar fixing	6 days	2/11/2011	7/11/2011
1601	Concreting	1 day	8/11/2011	8/11/2011
1602	Stripping off formwork	14 days	9/11/2011	22/11/2011
1603				
1604	Retaining Wall TR5B & TR6 CH585-595 LHS	33 days	8/11/2011	10/12/2011
1605	Base Slab Construction Bay 1 LHS	15 days	8/11/2011	22/11/2011
1606	Formwork and rebar fixing	8 days	8/11/2011	15/11/2011
1607	Concreting	2 days	16/11/2011	17/11/2011
1608	Stripping off formwork	5 days	18/11/2011	22/11/2011
1609	Wall Stem Construction TR5B Bay 1 LHS	8 days	23/11/2011	30/11/2011
1610	Formwork and rebar fixing	4 days	23/11/2011	26/11/2011
1611	Concreting	1 day	27/11/2011	27/11/2011
1612	Stripping off formwork	3 days	28/11/2011	30/11/2011
1613	Base Slab Construction Bay 2 LHS	15 days	18/11/2011	2/12/2011
1614	Formwork and rebar fixing	8 days	18/11/2011	25/11/2011
1615	Concreting	2 days	26/11/2011	27/11/2011
1616	Stripping off formwork	5 days	28/11/2011	2/12/2011
1617	Wall Stem Construction TR5B Bay 2 LHS	8 days	3/12/2011	10/12/2011
1618	Formwork and rebar fixing	4 days	3/12/2011	6/12/2011
1619	Concreting	1 day	7/12/2011	7/12/2011
1620	Stripping off formwork	3 days	8/12/2011	10/12/2011
1621				
1622	Retaining Wall (ch 595-615) TR3	42 days	28/11/2011	8/1/2012
1623	Excavation and formation	12 days	28/11/2011	9/12/2011
1624	Construction of Base Slab Bay 3	20 days	10/12/2011	29/12/2011
1625	Formwork and rebar fixing	12 days	10/12/2011	21/12/2011
1626	Concreting	2 days	22/12/2011	23/12/2011
1627	Stripping off formwork	6 days	24/12/2011	29/12/2011
1628	Construction of Wall Stem Bay 3 LHS	10 days	30/12/2011	8/1/2012
1629	Formwork and rebar fixing	6 days	30/12/2011	4/1/2012
1630	Concreting	1 day	5/1/2012	5/1/2012
1631	Stripping off formwork	3 days	6/1/2012	8/1/2012
1632	Construction of Wall Stem Bay 3 RHS	10 days	30/12/2011	8/1/2012
1633	Formwork and rebar fixing	6 days	30/12/2011	4/1/2012



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

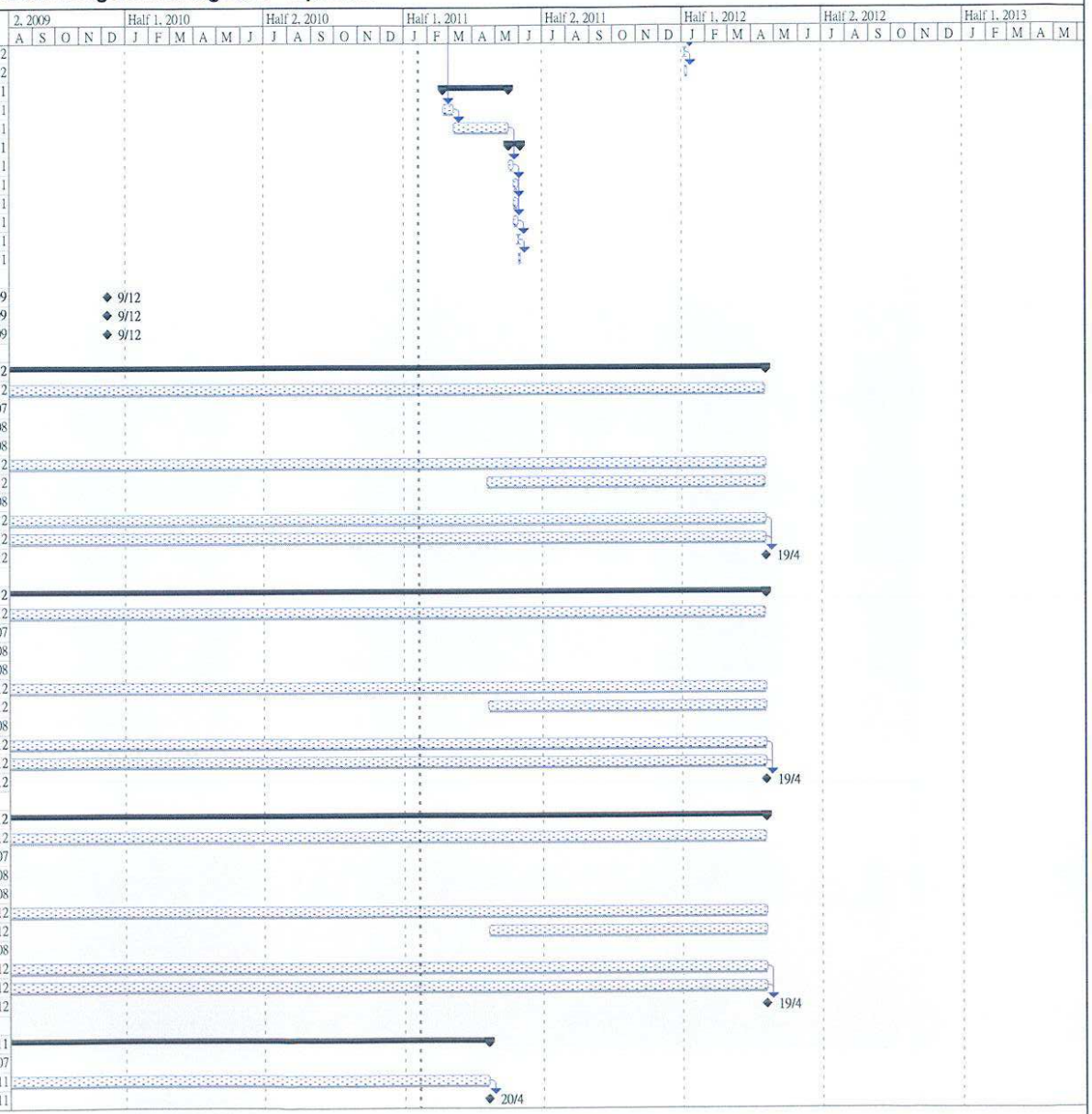
Drainage Services Department

Contract No. DC/2007/06

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

Revised Master Programme Aug 2010 - Apr 2013

ID	任務名稱	Duration	Start	Finish
1634	Concreting	1 day	5/1/2012	5/1/2012
1635	Stripping off formwork	3 days	6/1/2012	8/1/2012
1636	Drainage & Footpath (Ch 525-615 LHS & RHS)	86 days	22/2/2011	18/5/2011
1637	Backfill	14 days	22/2/2011	7/3/2011
1638	Construction of footpath & drainage works	72 days	8/3/2011	18/5/2011
1639	Lighting at CH 550-610	15 days	19/5/2011	2/6/2011
1640	Construction of Drawpits / Ducting	6 days	19/5/2011	24/5/2011
1641	Public lighting Installation (CE2325)	6 days	25/5/2011	30/5/2011
1642	Public lighting Installation (CE2326)	6 days	25/5/2011	30/5/2011
1643	Public lighting Installation (CE2327)	6 days	25/5/2011	30/5/2011
1644	T&C	1 day	31/5/2011	31/5/2011
1645	Removal of existing lighting (CE1600-B2)	2 days	1/6/2011	2/6/2011
1646				
1647	Section 4 - Box Culvert at Ping Long	0 days	9/12/2009	9/12/2009
1648	Section 4 - Box Culvert (Area A)	0 days	9/12/2009	9/12/2009
1649	Completion of Work at Section 4	0 days	9/12/2009	9/12/2009
1650				
1651	Section 5 - Landscape Establishemnt Works (Portion B, C, D, E, F, G, H & I)	1666 days?	28/9/2007	19/4/2012
1652	Section 5 Landscape Works	1665 days	28/9/2007	18/4/2012
1653	Commencement of Works	1 day	28/9/2007	28/9/2007
1654	Material Submission	120 days	29/9/2007	26/1/2008
1655	Submission Approval	0 days	9/2/2008	9/2/2008
1656	Landscaping Hardworks	1541 days?	31/1/2008	19/4/2012
1657	Landscaping Softworks	365 days	20/4/2011	18/4/2012
1658	Submission of Tree Survey	400 days	29/9/2007	1/11/2008
1659	Preservation and Protection of Preserved Trees	1265 days	2/11/2008	19/4/2012
1660	Landscape Establishment Works	1265 days	2/11/2008	19/4/2012
1661	Completion of Works	0 days	19/4/2012	19/4/2012
1662				
1663	Section 6 - Landscape Establishemnt Works (Portion J, K & M)	1666 days?	28/9/2007	19/4/2012
1664	Section 6 Landscape Works	1665 days	28/9/2007	18/4/2012
1665	Commencement of Works	1 day	28/9/2007	28/9/2007
1666	Material Submission	120 days	29/9/2007	26/1/2008
1667	Submission Approval	0 days	9/2/2008	9/2/2008
1668	Landscaping Hardworks	1161 days?	14/2/2009	19/4/2012
1669	Landscaping Softworks	365 days	21/4/2011	19/4/2012
1670	Submission of Tree Survey	400 days	29/9/2007	1/11/2008
1671	Preservation and Protection of Preserved Trees	1265 days	2/11/2008	19/4/2012
1672	Landscape Establishment Works	1265 days	2/11/2008	19/4/2012
1673	Completion of Works	0 days	19/4/2012	19/4/2012
1674				
1675	Section 7 - Landscape Establishemnt Works (Portion L, N & P)	1666 days?	28/9/2007	19/4/2012
1676	Section 7 Landscape Works	1665 days	28/9/2007	18/4/2012
1677	Commencement of Works	1 day	28/9/2007	28/9/2007
1678	Material Submission	120 days	29/9/2007	26/1/2008
1679	Submission Approval	0 days	9/2/2008	9/2/2008
1680	Landscaping Hardworks	1176 days?	30/1/2009	19/4/2012
1681	Landscaping Softworks	365 days	21/4/2011	19/4/2012
1682	Submission of Tree Survey	400 days	29/9/2007	1/11/2008
1683	Preservation and Protection of Preserved Trees	1265 days	2/11/2008	19/4/2012
1684	Landscape Establishment Works	1265 days	2/11/2008	19/4/2012
1685	Completion of Works	0 days	19/4/2012	19/4/2012
1686				
1687	Section 8 - All Remaining Work at All Portions	1301 days	28/9/2007	20/4/2011
1688	Commencement of Works	1 day	28/9/2007	28/9/2007
1689	All remaining works at all Area	1300 days	29/9/2007	20/4/2011
1690	Completion of Works	0 days	20/4/2011	20/4/2011



Revised Master Prog (Aug10-Apr1
日期: 19/1/2011

任務 里程碑 上顯型任務 上顯型進度 外部任務 摘要群組
進度 摘要 上顯型里程碑 分割 專案摘要 期限

Appendix J: Ecological Impact Monitoring Report for Upper Tai Po River

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

Ecological Impact Monitoring Report (No. 5)
Upper Tai Po River

January 2011

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

Contract No. DC/2007/06

Ecological Impact Monitoring Report (No. 5) Upper Tai Po River

Table of Contents **Page**

1 Introduction

1.1 The project of Drainage Improvement Works in Upper Tai Po River requires to carry out an ecological impact monitoring programme when the project commenced. The collected data was used to assess ecological impact during construction period.

1.2 Scope of ecological impact monitoring was detailed in the Particular Specification (PS) and EM & A Manual of the project. In brief, the survey need to collect data on abiotic such as water quality, substratum characteristics, water flow, and biotic data of flora and fauna.

1.3 China-Hong Kong Ecology Consultants was committed by Chiu Hing Construction and Transportation Co. Limited to undertake the ecological baseline survey in Oct 2007 and impact monitoring tasks for the project starting from January 2009.

1.4 This is the number 5 ecological impact monitoring report for the project conducted in January 2011. It contents the following subsections:

- Summary of major points
- Summary of the construction activities for the month
- Monitoring Methods and Results
- Audit/review of monitoring results
- Remedial measures adopted to restore the adverse condition
- Record of complaints and remedial measures
- Forecast of works programme and monitoring requirements; and
- Comments and conclusions

2 Summary of Major Points

- Field ecological monitoring was undertaken on 27th January 2011;
- Stream habitat at most sections of Upper Tai Po River (Photo 1,2) was changed due to drainage works; and
- During the impact monitoring, the man power deployed and survey duration was the same as pervious monitoring events. (i.e. 3 field workers from China-Hong Kong Ecology Consultant and 2 environmental assistant from Chiu Hing Construction & Transportation Co. Ltd).
- The number of target stream fauna (i.e., fish, *Parazacco spilurus*) recorded in January 2011 was lower than those recorded during baseline monitoring (before fish capture/relocation took place). Low fish population of *Parazacco spilurus* was partially due to habitat loss caused by drainage works and partially due to the fact that the target stream fauna have not restored to normal level after previous capture/relocation operations and heavy rainfall in 2010. The other target species including fish (*Pseudobagrus trilineatus*) and Hong Kong Newt (*Paramesotriton hongkongensis*) were not found within works area during both baseline and impact monitoring.

3 Summary of The Construction Activities

3.1 Major construction activities carried out by the contractor from July 2010 to Dec 2010 include:

1. Retain Wall
2. Footbridge
3. Gabion Wall
4. Box Culvert

4 Monitoring Methodology

4.1 Avifauna

Avifauna survey was conducted during the impact monitoring period. Special attention was given to those stream channel area where birds used as feeding and foraging habitat. In general, avifauna survey was taken in the morning or late afternoon when birds are more active (feeding and foraging). Numerical abundance was recorded at fixed count points within a fixed radium, e.g. 30-50m according to landscape feature and visual penetration extent. Duration of the point count of birds was standardised for 10 minutes at each location in order to collect comparable data. Transect count will also be used for the avifauna survey aimed to collect qualitative data. Binoculars and digital camera was the main instrument to be used. Nomenclature and protection status of the species followed those documented in the AFCD website (www.hkbiddiversity.net) and Carey et al (2001).

The point count was conducted at two locations with one located at the lower portion of the river channel ant the other located at the upper section of the river.

4.2 Fish and Newt Population

Fish community including target species (Three-lined Chinese Stream Catfish and Predaceous Chub) and Hong Kong Newt population at the specified river channel was monitored by live trapping (Photo 3), hand nets and direct observation methods. Active searching at night for *Pseudobagrus trilineatus* has also been carried out. Sampling was conducted at two proposed sampling locations, i.e. upper and lower sections of the river and covered major type of stream habitats, e.g. stream pool and riffle. The number of the captured or observed fish was estimated and recorded. Nomenclature and protection status of the species followed those documented in the AFCD website (www.hkbiddiversity.net) and Virginia et al (2004).

4.3 Aquatic Macro-invertebrates

Macro-invertebrates in the likely affected streams was surveyed. Two sampling sites within the affected stream sites was designed to collect necessary macroinvertebrate fauna for ecological impact monitoring information. Three replicates was taken at each sampling point and pool together for further sample process. Kick sampling (photo 4) and hand netting was the main survey methodologies for stream organisms. Dissection microscope, digital camera was used to aid identification and enumeration. Numerical abundance, species identity was recorded. Nomenclature and

protection status of the species will follow those documented in the AFCD website (www.hkiddiversity.net) and other literatures such as Dudgeon (1999)

4.4 Adult Odonate Survey

Adult Odonate survey was conducted within the monitoring area. Transect count was used for the survey. Binoculars, digital camera and hand net was utilized to aid identification. In general, all captured fauna was released immediately after on-site identification or taking photo. Numerical abundance, species identity and other notable behaviour was recorded. Nomenclature and protection status of the species followed those documented in the AFCD website (www.hkbiodiversity.net) and Keith (2003). Adult Odonate survey was conducted along line transects in parallel with river channel within works area where access was permitted

4.5 Riparian Vegetation

Riparian vegetation including aquatic and emergent was sampled by line a belt transects along the affected stream channel and riparian habitat. Species, relative abundance, average heights were recorded. Vegetation survey was conducted at two selected belt transects with one located at the lower portion of the river channel and the other at the upper section of the river respectively. The belt transects was run across the river channel and is aimed to collect quantitative data of vegetation. Similarly, qualitative data of plants was collected by recording plant species along line transect. Nomenclature and protection status of the species followed those documented in the AFCD website (www.hkbiodiversity.net) and Hong Kong Herbarium (2004).

4.6 Abiotic Data Collection

Water quality monitoring

Dissolved oxygen level, pH value, conductivity, salinity, BOD and nutrient level (nitrate and ammonium) was sampled and analyzed by conventional methods in situ or send to laboratory.

Sediment Characteristics

Sediment/substrate characteristics was recorded of sediment cover in percentage e.g. mud, sand, rock, boulder and cemented bottom in the stream bed at sampling sites.

Water flow

Water flow rates in river channel were measured by record of travel time of a floating material (e.g. floating ball) in a measured distance.

5 Monitoring Results

5.1 Vegetation

Vegetation growing along the affected stream was surveyed at Upper Tai Po River. About 34 flora species was recorded within the survey transects along the affected stream courses. All recorded floras were common species. Most vegetation along the stream section was cleared in order to construct temporal assess road and new embankment. Generally, the height of the dominated riparian grass and herb species were in a range from 0.2m to 5m. No rare or protected flora species was recorded. Results of vegetation survey and belt transect survey were given in **Table 5-1** and **Table 5-2**. Figure 1-1 to 1-3 shows the transect line for the flora surveys.

5.2 Fauna

5.2.1 Avifauna

Avifauna survey was undertaken along survey transects and at two selected point count locations. In total, 23 species of birds were recorded during bird surveys within project area. Transect and Point Count locations were shown on **Figure 1-1 to 1-3**. Result of bird survey was presented in the table 5-3

5.2.2 Adult Odonate Survey

Odonate survey was performed and species recorded at Upper Tai Po River were listed in **Table 5-4**. Only 1 species of dragonfly species were recorded during the surveys in current cold and dry season. The recorded species was common and abundant in Hong Kong (Keith, 2003). Sampling location was shown on **Figure 1-1 to 1-3**.

5.2.3 *Hong Kong Newt*

Survey of Hong Kong Newt was conducted at Upper Tai Po River. No Hong Kong Newt species was recorded.

5.2.4 Aquatic Macro-invertebrates

Upper Tai Po River was flowing with constant water during survey. Aquatic-net and kick sampling was performed at the stream.

The stream benthos fauna collected was mainly comprised of insects, mollusks and as well as fish. The mollusk fauna of the stream was dominated by snail species of *Physella acuta* at the river channel. Apparently, stream benthic fauna was temporally de-faunated as a result of engineering works and heavy rainfall last year. Details of recorded of stream benthic fauna refers to **Table 5-5.** Sampling location was shown on **Figure 1-1 to 1-3**.

5.2.5 *Stream Fish Fauna*

Fish surveys were performed at Upper Tai Po River during surveys. In total, 7 species freshwater fish were recorded. Fish such as *Pseudogastro myzon myersi* was commonly recorded in upper river section. The pelagic fish, *Parazacco spilurus* which have conservation interest, was restricted in the upper section of the surveyed river outside the works boundary where the water was unpolluted. Small number of juvenile *Parazacco spilurus* were recorded within the works area at upper stream section. It may be partially due to habitat loss caused by drainage works and partially due to the fact that the target stream fauna have not restored to normal level after previous

capture/relocation operations and heavy rainfall last year. Generally, most of the recorded fish fauna are common species in Hong Kong. *Parazacco spilurus* is a common freshwater fish species in Hong Kong but it was listed as vulnerable in China Red Data Book (hkbiodiversity website) and some of them were captures and released to an undisturbed upper stream habitat before construction works on 15th October 2010. The locally rare fish species of Three-lined Chinese Stream Catfish was not recorded at affected stream section during day and night time surveys during both baseline and impact monitoring periods Details of recorded of fish fauna refers to **Table 5-6.** Sampling location was shown on **Figure 1-1 to 1-3**.

5.3 Abiotic data

Data on water quality and major stream hydrological feature (water flow and substratum) of the stream were collected and given in the Table 5.7.

Generally, the water quality was found polluted at lower stream section mainly due to the domestic sewage discharge from villages. Concentration of nitrate and Ammonia were high (0.5 mg/L and 0.30 mg/L respectively) in lower stream section as shown in Table 4-7. DO was generally higher at upper stream section. Salinity was low, and it was indicated that the stream was not affected by tidal effect.

The stream substratum was comprised of over 80% stones or rocks at most of the stream sections with moderate water flow (up to 0.2m/second at pool and 0.6m/second at riffle). Most vegetation was cleared along the river channel and it would be planted or recolozised in late stage of the construction period.

6 Audit/review of monitoring results

Total population was decreased for the concerned Fish (*Parazacco spilurus*) population in the current monitoring period than those recorded in baseline ecology report. Reduced fish population including *Parazacco spilurus* was partially due to habitat loss caused by drainage works. The seasonality and the removal of fish from the previous capture/relocation exercise on 15th October 2010 were also partially causing the reduction fish population. Therefore, the total population for the concerned Fish was decreased.

7 Remedial measures adopted to restore the adverse condition

None

8 Record of complaints and remedial measures

There were some complaints at construction site for the Upper Tai Po river. The complaints were followed up with suitable mitigation measures by contractor. The complaints and remedial measures were shown on Appendix I & II.

9 Forecast of works programme and monitoring requirements

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

1. Retain wall
2. Gabion Wall

3. Footbridge
4. Box culvert

10 Comments and Conclusions

Ecological impact monitoring was carried out during January 2011 and relevant biotic and abiotic data was collected according to the project specification and the EM & A Manual. One of the three target freshwater fauna species, i.e., juvenile fish *Parazacco spilurus,* was recorded at upper stream section. The reduced population of the fish was partially due to habitat loss caused by drainage works and partially due to the fact that the target stream fauna have not restored to normal level after previous capture/relocation operations conducted on 15th October 2010 and heavy rainfall in 2010. The fish was commonly seen in more upper stream courses which would be the source for late re-colonization of the newly built river channel. The locally rare fish species of Three-lined Chinese Stream Catfish and the Hong Kong Newt were not recorded at the affected stream section during day and night time surveys conducted for both baseline and impact monitoring.

Most aquatic and riparian vegetation along the stream section was cleared due to construction works. Plant plantation along newly built up river banks would be undertaken at late stage of the project.

The water quality in the surveyed stream was found polluted at lower stream section mainly due to the domestic sewage discharge from villages. No significant change in water quality was detected except the increased sediments in water after comparing the results with baseline monitoring data.

11 REFERENCES

Carey, G.J., Chalmers, M.L., Diskin, D.A., Kennerley, P.R., Leader, P.J., Leven, M.R., Lewthwaite, R.W., Melville, D.S., Turnbull, M. and Yung, L.. (2001) *The Avifauna of Hong Kong*. Hong Kong Bird Watching Society.

Dudgeon, D. and Corlett, R. (1994). *Hills and Streams - An Ecology of Hong Kong*. Hong Kong University Press, Hong Kong.

Hong Kong Herbarium (2004), *Check List of Hong Kong Plants*, HKSAR

Keith D.P. Wilson (2003), *Field Guide to the Dragonflies of Hong Kong*, HKSAR.

Virginia L.F.LEE, Samuel K.S.Lam, Franco K.Y.NG, Tony K.T.CHAN and Maria L.C.YOUNG (2004), *Field Guide to the Freshwater Fish of Hong Kong*, HKSAR.

Hong Kong Biodiversity Website :
http://www.afcd.gov.hk/english/conservation/hkbiodiversity/hkbiodiversity.html

PHOTOS

	
Photo 1: General view of the works area	Photo 2: General view of the works area
	
Photo 3: Fish survey	Photo 4: Stream benthos sampling

TABLE

Table 5-1. Flora species recorded at the transect along the Upper Tai Po stream including riparian habitat.

Family	Species name	Species name in Chinese	Oct-07	Jan-09	Jul-09	Jan-10
Euphorbiaceae	*Macaranga tanarius*	血桐	+	+	+	+
Musaceae	*Musa paradisiaca*	大蕉	+	+	+	+
Commelinaceae	*Commelina communis*	鴨跖草	+	+	+	+
Fabaceae	*Pueraria lobata*	野葛	+	+	+	+
Gramineae	*Panicum repens*	枯骨草	+	+	+	+
Asteraceae	*Bidens alba*	白花鬼針草	+	+	+	+
Araceae	*Alocasia odora*	海芋	+	+	+	+
Araceae	*Colocasia esculenta*	芋	+	+	+	+
Moraceae	*Ficus hispida*	對葉榕	+	+	+	+
Ulmaceae	*Celtis sinensis*	朴樹	+	+	+	+
Athyriaceae	*Callipteris esculenta*	菜蕨	+	+	+	+
Verbenaceae	*Lantana camara*	馬纓丹	+	+	+	+
Sapindaceae	*Dimocarpus longan*	龍眼	+	+	+	+
Solanaceae	*Solanum torvum*	水茄	+	+	+	+
Equisetaceae	*Equisetum debile*	筆管草	+	+	+	+
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨	+	+	+	+
Bombacaceae	*Bombax ceiba*	木棉	+	+	+	+
Lauraceae	*Cinnamomum camphora*	樟樹	+	+	+	+
Myrtaceae	*Psidium guajava*	番石榴	+	+	+	+
Caprifoliaceae	*Viburnum odoratissimum*	珊瑚樹	+	+	+	+
Sapindaceae	*Litchi chinensis*	荔枝	+	+	+	+
Rutaceae	*Clausena lansium*	黃皮	+	+	+	+
Lauraceae	*Litsea glutinosa*	潺槁樹	+	+	+	+
Euphorbiaceae	*Glochidion zeylanicum*	香港算盤子	+	+	+	+
Asteraceae	*Ageratum conyzoides*	勝紅薊	+	+	+	+
Urticaceae	*Boehmeria nivea*	苧麻	+	+	+	+
Convolvulaceae	*Ipomoea aquatica*	通菜	+	+	+	+
Gramineae	*Microstegium ciliatum*	剛秀竹	++	+	+	+
Asteraceae	*Mikania micrantha*	薇甘菊	++	+	+	+
Gramineae	*Pennisetum purpureum*	象草	+	+	+	+
Convolvulaceae	*Ipomoea cairica*	五爪金龍	+	+	+	+
Asteraceae	*Synedrella nodiflora*	金腰箭	+	+	+	+
Gramineae	*Coix lacryma-jobi*	薏苡	+	+	+	+
Amaranthaceae	*Alternanthera philoxeroides*	空心蓮子草	+	+	+	+
Asteraceae	*Wedelia chinensis*	蟛蜞菊	+	+	+	+
Polygonaceae	*Polygonum barbatum*	毛蓼	+	+	+	+
Myrtaceae	*Cleistocalyx operculatus*	水翁	+	+	+	+
Gramineae	*Phragmites karka*	卡開蘆	+	+	+	+
Solanaceae	*Solanum nigrum*	龍葵				+
Cucurbitaceae	*Benincasa hispida*	冬瓜				

Note:
+, occurred; ++, common; +++, abundant

Table 5-2. Flora species recorded from belt transect survey at the Upper Tai Po stream (T1- Upper stream sampling site and T2 - Lower stream sampling site)

			Baseline survey				Impact monitoring					
		Stream	Oct-07				Jan-09					
		Transect	T1		T2		Reference		T1		T2	
			Height (cm)	%	Height(cm)	%	Height(cm)	%	Height(cm)	%	Height(cm)	%
Family	Species	Chinese name										
Asteraceae	*Mikania micrantha*	薇甘菊	0.4	15	1	40	0.5	5	0.5	5		
Moraceae	*Ficus hispida*	對葉榕	1	2			5	5			2	10
Ulmaceae	*Celtis sinensis*	朴樹	5	2							6	15
Gramineae	*Microstegium ciliatum*	剛秀竹	1.2	45	1.2	30			0.8	10	0.5	12
Euphorbiaceae	*Macaranga tanarius*	血桐	2	2			5	5	3	5	1.5	4
Araceae	*Alocasia odora*	海芋	1.5	23							1.5	25
Araceae	*Colocasia esculenta*	芋	0.3	<1	0.4	<1	0.3	2				
Myrtaceae	*Cleistocalyx operculatus*	水翁					0.4	10	7	5		
Athyriaceae	*Callipteris esculenta*	菜蕨			0.6	1	0.8	10			0.4	10
Gramineae	*Phragmites karka*	卡開蘆					1.5	51				
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨	0.4	10							0.4	10
Equisetaceae	*Equisetum debile*	筆管草			0.6	<1	0.3	2				
Asteraceae	*Ageratum conyzoides*	勝紅薊							0.4	2		
Commelinaceae	*Commelina communis*	鴨跖草										
Solanaceae	*Solanum nigrum*	龍葵										
Euphorbiaceae	*Mallotus paniculatus*	白楸										
Gramineae	*Eleusine indica*	牛筋草										
Gramineae	*Pennisetum purpureum*	象草									3	4
Asteraceae	*Wedelia chinensis*	蟛蜞菊										
Asteraceae	*Bidens alba*	白花鬼針草										
Cucurbitaceae	*Benincasa hispida*	冬瓜										
Bare Gound								10		73		10

- Reference point was the sampling location outside the works area used to compare with the data within works area.

Table 5-2. Flora species recorded from belt transect survey at the Upper Tai Po stream (T1- Upper stream sampling site and T2 - Lower stream sampling site)

			Impact monitoring						Impact monitoring					
		Stream	Jul-09						Jan-10					
		Transect	Reference		T1		T2		Reference		T1		T2	
			Height(cm)	%	Height(cm)	%	Height(cm)	%	Height(cm)	%	Height(cm)	%	Height(cm)	%
Family	Species	Chinese name												
Asteraceae	*Mikania micrantha*	薇甘菊	0.5	5					0.5	3	0.2	5	0.2	2
Moraceae	*Ficus hispida*	對葉榕	5	5			2	10	5	5				
Ulmaceae	*Celtis sinensis*	朴樹					6	15						
Gramineae	*Microstegium ciliatum*	剛秀竹					0.7	30						
Euphorbiaceae	*Macaranga tanarius*	血桐	5	5	3	5	1.5	5	5	5				
Araceae	*Alocasia odora*	海芋					2	30						
Araceae	*Colocasia esculenta*	芋	0.3	2	0.8	5			0.3	1				
Myrtaceae	*Cleistocalyx operculatus*	水翁	0.4	10	7	5			0.4	10	7	5		
Athyriaceae	*Callipteris esculenta*	菜蕨	0.8	10			0.4	2	0.8	6				
Gramineae	*Phragmites karka*	卡開蘆	1.5	51					1.5	53				
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨					0.4	2						
Equisetaceae	*Equisetum debile*	筆管草	0.3	2					0.3	2				
Asteraceae	*Ageratum conyzoides*	勝紅薊			0.4	2					0.2	2		
Commelinaceae	*Commelina communis*	鴨跖草							0.2	5	0.2	5	0.2	5
Solanaceae	*Solanum nigrum*	龍葵											0.4	5
Euphorbiaceae	*Mallotus paniculatus*	白楸									0.3	5		
Gramineae	*Eleusine indica*	牛筋草			0.5	5						5		
Gramineae	*Pennisetum purpureum*	象草												
Asteraceae	*Wedelia chinensis*	蟛蜞菊												
Asteraceae	*Bidens alba*	白花鬼針草												
Cucurbitaceae	*Benincasa hispida*	冬瓜												
Bare Gound				10		78		6		10		73		88

- Reference point was the sampling location outside the works area used to compare with the data within works area.

Table 5-2. Flora species recorded from belt transect survey at the Upper Tai Po stream (T1- Upper stream sampling site and T2 - Lower stream sampling site)

			Impact monitoring					
		Stream	Jul-10					
		Transect	Reference		T1		T2	
			Height(cm)	%	Height(cm)	%	Height(cm)	%
Family	Species	Chinese name					0.5	10
Asteraceae	*Mikania micrantha*	薇甘菊	0.5	20	0.5	60		
Moraceae	*Ficus hispida*	對葉榕	5	5				
Ulmaceae	*Celtis sinensis*	朴樹					4m	5
Gramineae	*Microstegium ciliatum*	剛秀竹	1	35	1	5	0.5	10
Euphorbiaceae	*Macaranga tanarius*	血桐	5	5				
Araceae	*Alocasia odora*	海芋					2	10
Araceae	*Colocasia esculenta*	芋						
Myrtaceae	*Cleistocalyx operculatus*	水翁	0.4	10				
Athyriaceae	*Callipteris esculenta*	菜蕨	0.8	6				
Gramineae	*Phragmites karka*	卡開蘆	1.5	10				
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨						
Equisetaceae	*Equisetum debile*	筆管草						
Asteraceae	*Ageratum conyzoides*	勝紅薊						
Commelinaceae	*Commelina communis*	鴨跖草			0.5	20		
Solanaceae	*Solanum nigrum*	龍葵						
Euphorbiaceae	*Mallotus paniculatus*	白楸						
Gramineae	*Eleusine indica*	牛筋草						
Gramineae	*Pennisetum purpureum*	象草						
Asteraceae	*Wedelia chinensis*	蟛蜞菊						
Asteraceae	*Bidens alba*	白花鬼針草						
Cucurbitaceae	*Benincasa hispida*	冬瓜						
Bare Gound				9		15		65

- Reference point was the sampling location outside the works area used to compare with the data within works area.

Table 5-3 Avifauna recorded along survey transects and at two selected point count locations for Upper Tai Po River. (PC1- Upper stream section and PC2- Lower stream section)

					Baseline survey			Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring		
Common Name	**Species name**	**Chinese name**	**Status**	**Common-ness**	Oct-07			Jan-09			Jul-09			Jan-10			Jul-10		
					Abundance			Abundance			Abundance			Abundance			Abundance		
					T	PC1	PC2	T	PC1	PC2	T	PC1	PC2	T	PC1	PC2	T	PC1	PC2
Black Kite	*Milvus lineatus*	麻鷹	R	C	+									+					
Black -crown Night Heron	*Nycticorax nyxticorax*	夜鷺	R	U													+		
Black-necked Starling	*Sturnus nigricollis*	黑領椋鳥	R	C	+	1	1							+			+		1
Chinese Bulbul	*Pycnonotus sinensis*	白頭鵯	R	C	+	3	2	++	5	6	++	4	7	+++	7	6	+++	6	3
Chinese Pond Heron	*Ardeola bacchus*	池鷺	R	C	+			++	6	3	+	2	3	++	3	3	++	2	2
Common Kingfisher	*Alcedo atthis*	普通翠鳥	R	C	+												+		
Common Koel	*Eudynamys scolopacea*	噪鳥	R	C	+											2			
Common Sandpiper	*Actitis hypoleucos*	磯鷸	WV&PM	C	+														
Common Tailorbird	*Orthotomus sutorius*	長尾縫葉鶯	R	C	+		1	+	1	1	+		1	++		10	+	1	
Crested Myna	*Acridotheres cristatellus*	八哥	R	C		1											+		
Domestic pigeon	*Columba sp.*	鴿				3											+		
Great Coucal	*Centropus sinensis*	褐翅鴉鵑	R	C	+	1											+	1	
Grey Wagtail	*Motacilla cinerea*	灰鶺鴒	WV	C															
Japanese White Eye	*Zosterops japonica*	暗綠繡眼鳥	R	C		2		++	2	3	+	1	4	+++	4	6	++	3	2
Little Egret	*Egretta garzetta*	小白鷺	R	C	+			+	1		+		1	+		1	+	1	1
Rufous-backed Shrike	*Lanius schach*	棕背伯勞	R	C										+	1		+	1	
Magpie	*Pica pica*	喜鵲	R	C		1													
Magpie Robin	*Copsychus saularis*	鵲鴝	R	C	+	1	1				+	1	3	+	2	1	+	2	2
Olive Backed pipit	*Anthus hodgsoni*	樹鷚	WV	C	+			+	1	3									
Crested bulbul	*Pycnonotus jocosus*	紅耳鵯	R	C	+	2		+++	6	7	++	2	6	+++	4	5	++	3	2
Spotted Dove	*Streptopelia chinensis*	珠頸斑鳩	R	C	+		2	+	1		+	1	3	+	1	2	+	1	1
Spotted Munia	*Lonchura punctulata*	斑文鳥	R	U															
Tree Sparrow	*Passer montanus*	麻鷯	R	C	+	3	2							+			+	4	3
Violet Whistling Thrush	*Myiophoneus caeruleus*	紫嘯鶇	R	C	+														
White Wagtail	*Motacilla alba*	白鶺鴒	WV	C	+		1							++	2	3	+	1	1
White-breasted Waterhen	*Amaurornis phoenicurus*	白胸苦惡鳥	R	C	+									+		1	+		1
Yellow Bellid Prinia	*Prinia flaviventris*	灰頭鷦鶯	R	C	+														
Yellow Wagtail	*Motacilla flava*	黃鶺鴒	WV&PM	U		1													
Little Swift	*Apus affinis*	小白腰雨燕	R, SpM	C															
Green Sandpiper	*Tringa ochropus*	白腰草鷸	WV	U															
Barn Swallow	*Hirundo rustica*	家燕	PM	C															
Great Tit	*Parus major (commixtus)*	大山雀	R	C										+	2	1	+	1	
Blue Magpie	*Urocissa erythrorhyncha*	紅咀藍鵲	R	C										+		2			
Scarlet Minivet	*Pericrocotus flammeus*	赤紅山椒鳥	R	C										+					
Scarlet-backed Flowerpecker	*Dicaeum cruentatum*	朱背啄花鳥	R	C										+					
Common Blackbird	*Turdus merula*	烏鶇	WV	C															
Silver-eared Mesia	*Leiothrix argentauris*	銀耳相思鳥	R	C															
Number of birds									23	23		11	28		26	43		27	19
No. of species								8	8	6	8	6	8	18	9	13	19	13	11

Note: R – Resident; WV – Winter visitor; PM – Passage migrant; C – Common; U – Uncommon
SpM – Spring migrant; T – transect count; PC1 – Point count location 1; PC2 – Point count location 2

Table 5-4. Odonate species recorded at the Upper Tai Po stream

					Baseline survey	Impact monitoring			
Species	Common name	Chinese name	Status	Commonnes	Oct-07	Jan-09	Jul-09	Jan-10	Jul-10
Orthetrum chrysis	Red-faced Skimmer	華麗灰蜻	NP	VC		+	+		+
Crocothemis servilia servilia	Crimson Darter	红蜻	NP	VC	+		+		+
Copera marginipes	Yellow Featherlegs	黃狹扇蟌	NP	VC					
Prodasineura autumnalis	Black Threadtail	烏齒原蟌	NP	VC					
Trithemis festiva	Indigo Dropwing	慶褐蜻	NP	VC					
Neurobasis chinensis	Chinese Greenwing	華艷色蟌	NP	C					+
Rhinocypha perforata	Common Blue Jewel	三斑鼻蟌	NP	VC					+
Pantala flavescens	Wandering Glider	黃蜻	NP	VC	+		+	+	+
Orthetrum glaucum	Common blue skimmer	黑尾灰蜻	NP	VC	+	+	+		
Trithemis Aurora	Crimson dropwing	曉褐蜻	NP	VC	+				+

Note: NP – Not protected in Hong Kong

"VC" – Very Common; "UC" – Uncommon; "C" - Common

"+" – Species exists in the survey site

"++" – Species common in the survey site

"+++" – Species abundance in the survey site

Table 5-4. Odonate species recorded at the Upper Tai Po stream

Species	Common name	Chinese name	Jan-11
Orthetrum chrysis	Red-faced Skimmer	華麗灰蜻	
Crocothemis servilia servilia	Crimson Darter	红蜻	
Copera marginipes	Yellow Featherlegs	黃狹扇蟌	
Prodasineura autumnalis	Black Threadtail	烏齒原蟌	
Trithemis festiva	Indigo Dropwing	慶褐蜻	
Neurobasis chinensis	Chinese Greenwing	華艷色蟌	
Rhinocypha perforata	Common Blue Jewel	三斑鼻蟌	
Pantala flavescens	Wandering Glider	黃蜻	+
Orthetrum glaucum	Common blue skimmer	黑尾灰蜻	
Trithemis Aurora	Crimson dropwing	曉褐蜻	

Note: NP – Not protected in Hong Kong

"VC" – Very Common; "UC" – Uncommon; "C" - Common

"+" – Species exists in the survey site

"++" – Species common in the survey site

"+++" – Species abundance in the survey site

Table 5-5 Aquatic Macro invertebrates recorded at Upper Tai Po River (T1- Upper stream sampling site and T2- Lower stream sampling site)

				Baseline survey		Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring		
Species	Chinese name			Oct-07		Jan-09			Jul-09			Jan-10			Jul-10		
Invertebrates		Sampling point		T1	T2	Reference	T1	T2	Reference	T1	T2	Reference	T1	T2	Reference	T1	T2
Pomacea canaliculata	蘋果螺	NP	VC					+	+		++	+		+	+		++
Physella acuta	尖膀胱螺	NP	VC														
Melanoides tuberculata	瘤擬黑螺	NP	VC					+	+	+	+	+		+	+		++
Radix plicatulus	羅白螺	NP	VC		++			+			+		+	+		+	+
Biomphalaria sp.	--	NP	VC		+			+			+		+	+		+	+
Brotia hainanensis	--	NP	VC	++	+	++			++			++	+		++	+	
Sinotaia quadrata	田螺	NP	VC					++		+	++			++			+++
Indobaetis sp.	--	NP	VC	+		+			+			+	+		+	+	
Baetis sp.	--	NP	VC	+		+			+			+	+		+	+	
Chironomus sp.	蠓幼虫	NP	VC	+	+	+			+			+		+	+	+	+
Mnais sp.	--	NP	VC		+	+			+			+	+		+	+	
Orthetrum sp.	--	NP	VC	+	+	+			+			+	+		+	+	
Perla sp	--	NP	VC										+			+	
Aulocodes sp.	--	NP	VC										+			+	
Tipulidae spp.	--	NP	VC										+			+	
Arctopora sp.	--	NP	VC													+	
Anisocentropus sp.	--	NP	VC													+	
Crustacea																	
Macrobrachium hainanense	海南沼蝦	NP	VC			+			+			+	+		+	+	+
Caridina contonensis	廣東米蝦	NP	VC			+			+			+	++		+	++	+
Cryptopotamon anacoluthon	鰓刺溪蟹	*NP*	*C*			+			+			+			+	+	
Fish																	
Gambusia affinis	食蚊魚	NP	VC	+	+			+		+	+		+	++		+	++
Poecilia reticulata	孔雀花魚將	NP	VC	+	+			+			+		+	+++		+	+++
Schistura fasciolata	橫紋南鰍	NP	C			+			+	+		+	+		+	+	
Rhinogobius spp.	鰕虎魚	NP	C			+		+	+		+	+	++		+	++	

Note: NP – Not protected in Hong Kong

"VC" – Very Common; "UC" – Uncommon; "C" - Common

"+" – Species exists in the survey site

"++" – Species common in the survey site

"+++" – Species abundance in the survey site

- Reference point was the sampling location outside the works area used to compare the with the data within works area.

Table 5-6 Fish species recorded at Upper Tai Po River (T1- Upper stream sampling site and T2 - Lower stream sampling site)

				Baseline surve		Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring		
				Oct-07		Jan-09			Jul-09			Jan-10			Jul-10		
Species		Status	Commonness	T1	T2	Reference	T1	T2	Reference	T1	T2	Reference	T1	T2	Reference	T1	T2
Xiphophorus hellerii	劍尾魚	NP	C	++		+			+	+	++	+	+	++	+	+	+++
Puntius semifasciolatus	七星魚	NP	C	+		+	+		+	+	+	+	+	++	+	+	++
Poecilia reticulata	孔雀花魚將	NP	C	++	+			++			+		+	+++		+	++
Pseudogastromyzon myersi	麥氏擬腹吸鰍	NP	C	+		+			+			+			+	+	
Gambusia affinis	食蚊魚	NP	VC	+	++			+		+	+		+	++		+	+++
Xiphophorus variatus	雜色劍尾魚	NP	C	+													++
Parazacco spilurus	異鱲	V and NP	C	++		+	+		+			+			+	+	
Rhinogobius spp.	鰕虎魚	NP	C	+		+	+		+			+	++	+	+	++	+
Schistura fasciolata	橫紋南鰍	NP	C	+		+			+	+		+			+	+	
Oreochromis niloticus	尼羅口孵非鯽	NP	C	+													+
Misgurnus anguillicaudatus	泥鰍	NP				+			+			+			+		
Cyprinus carpio var. viridiviolaceus	錦鯉															+	
		2x2m fish number		70	60	15	8	25	10	20	100	10	2	8	10	7	100

Note: NP – Not protected in Hong Kong

“VC” – Very Common; “UC” – Uncommon; “C” - Common

“+” – Species exists in the survey site

“++” – Species common in the survey site

“+++” – Species abundance in the survey site

V – Listed as vulnerable in China Fish Red Data Book

- Reference point was the sampling location outside the works area used to compare with the data within works area.

Table 5-7 Abotic data for Upper Tai Po River (T1- Upper stream sampling site and T2- Lower stream sampling

Stream	Oct-07 (baseline	Jan-09		Jul-09		Jan-10		Jul-10	
Replicate	T1	T1	T2	T1	T2	T1	T2	T1	T2
DO (mg/L)	8.2	9	4	6.3	6	9.4	8.8	9	6.5
pH	6.9	7.18	6.86	7.28	6.96	8.2	8.5	7.3	7.2
Nitrate (mg N/L)	0.39	0.1	1.3	0.07	1.32	0.12	0.71	0.1	0.5
Ammonia (mg/L)	PO4-P (μg P/L): <100	PO4-P (μg P/L): <100		0.01	0.22	<0.01	0.2	0.1	0.2
Salinity (ppt)	<0.1	<0.1	0.1	0	0	0	0	0	0
Conductivity (mS/cm)	40	40	190	34	118	42	72	49	43
BOD (mg/L)	<2	<2	12	<2	<2	<2	2	<2	2
Water flow at pool	0.01-0.2	0.01-0.2		0.01-0.2		0.01-0.2		0.01-0.2	
Water flow at riffle	0.2-0.5	0.2-0.5		0.2-0.5		0.2-0.5		0.2-0.5	
Sand (%)	15	15		15	25	15	25	15	25
Stone (%)	80	80		80	70	80	70	80	70
Mud (%)	5	5		5	5	5	5	5	5
Concrete(%)	0	0	0	0	0	0	0	0	0

FIGURE

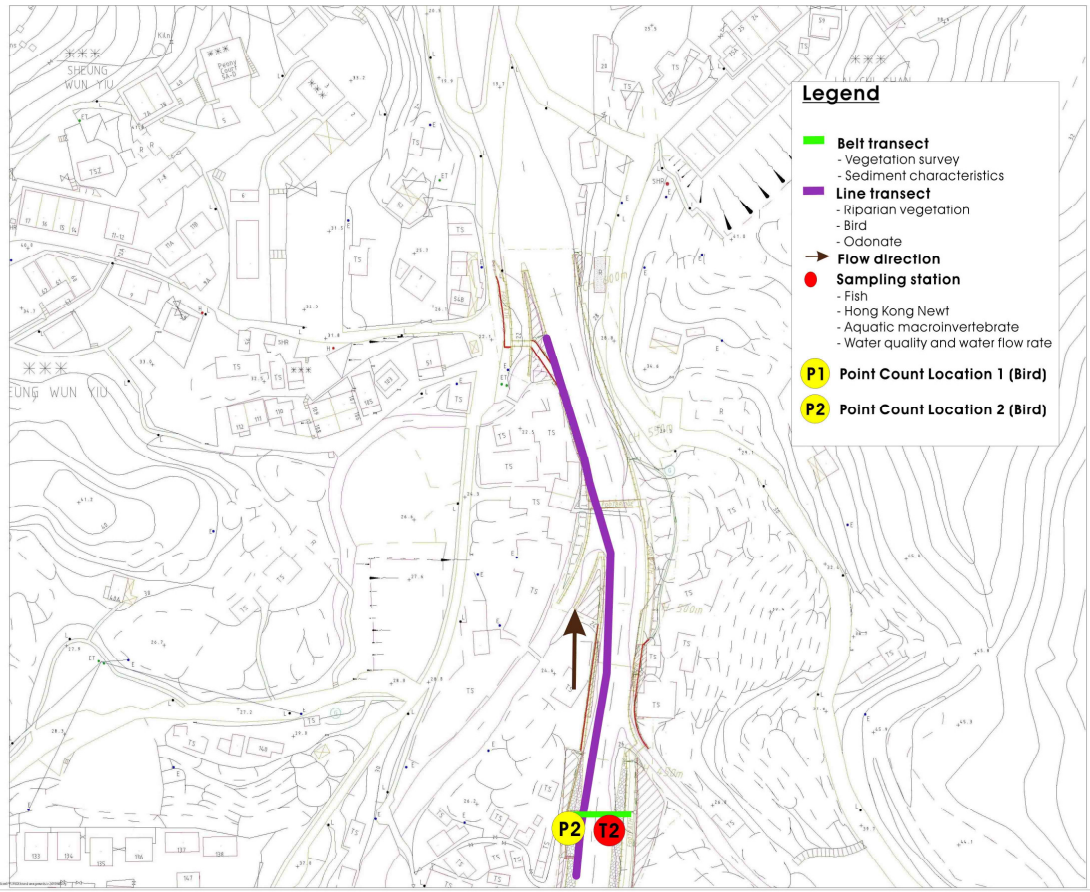


Figure 1-1. Sampling location of impact monitoring at Upper Tai Po River(Lower Section)

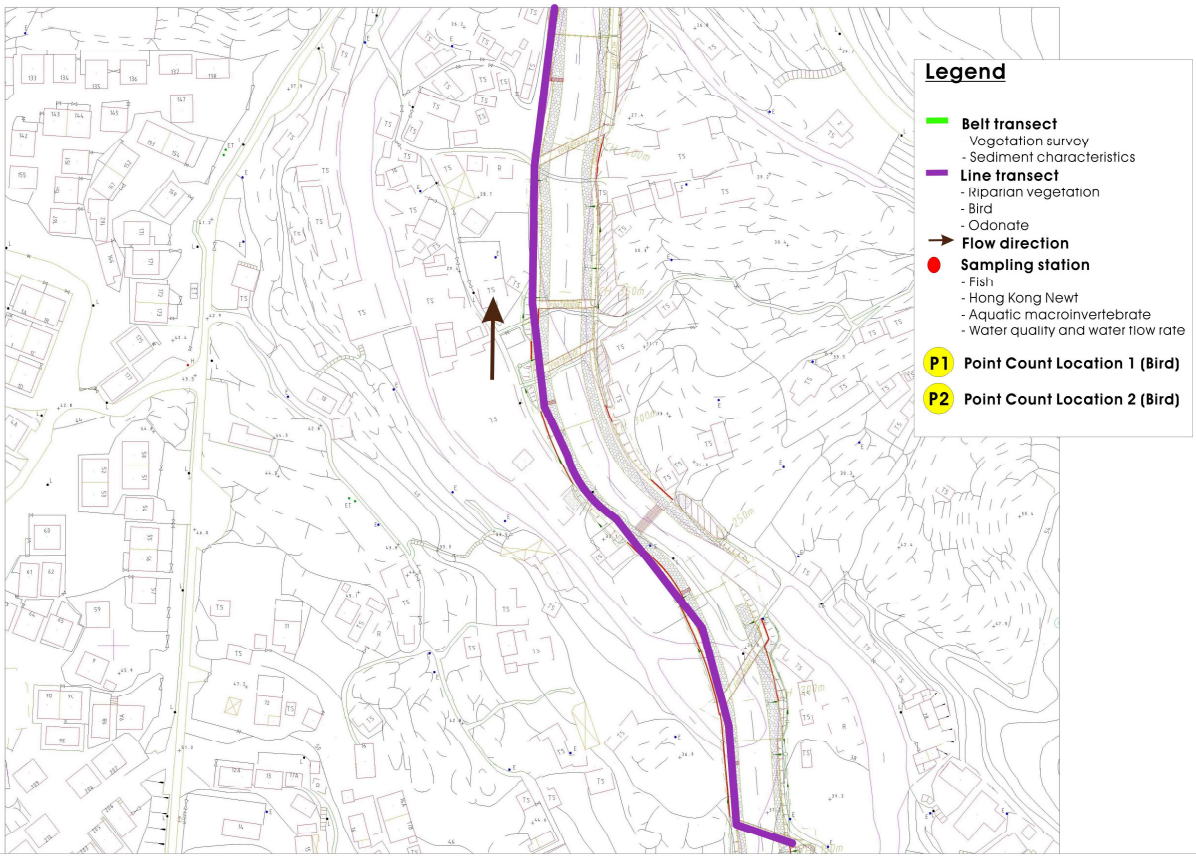


Figure 1-2. Sampling location of impact monitoring at Upper Tai Po River(Middle Section)

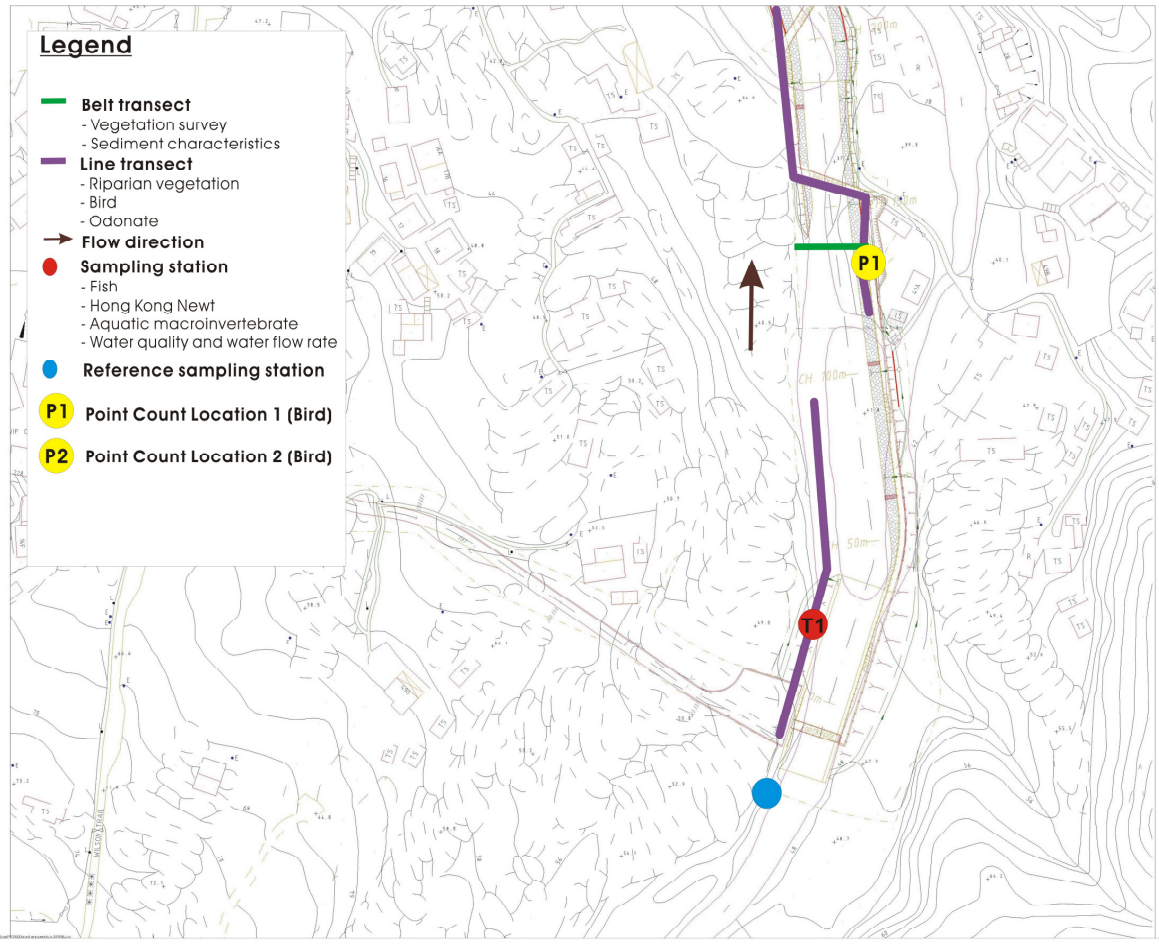


Figure 1-3. Sampling location of Impact monitoring at Upper Tai Po River(Upper Section)

Appendix II.: Summary of Total Accumulative Complaint Received

Case No.	EPD Complaint Reference	Date Received	Incident Location	Media/ Nature
34(E*)	EP3/N05/RN/00023471 -10	11/11/2010	Tai Po River	Muddy Water
35(E*)	EP3/N05/RN/00023818 -10	16/11/2010	Tai Po River	Muddy Water

* : transferred from EPD / DSD

Appendix II. The mitigation measure for Upper Tai Po River construction site.

1. Sufficient desilting facilities and protective measures had been deployed for site runoff to avoid discharge of muddy water.