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 March 2012

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Executive summary

This is the forty third monthly Environmental Monitoring and Audit (EM&A) Report for the river improvement works at Upper Tai Po River under Drainage Services Department Contract No. DC/2007/06 entitled "River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River". This report concludes the impact monitoring for the activities undertaken during the period from 1st March 2012 to 31st March 2012. Construction of box culverts, retaining wall TR2, TR3, TR5A, TR6, stilling basin, inclined gabion/no-fines mass concrete walls, gabion wall, footing of footbridge TB03 and erection of steel deck for footbridge TB06 were the major site activities being carried out in this reporting period.

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

The ecological impact monitoring was conducted on 16th January 2012 by the Ecologist Dr. Mark Shea. The ecological impact monitoring report prepared by the Ecologist is attached in Appendix K. Next ecological impact monitoring was arranged in July 2012. 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 are 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.

A non-compliance event issued by IEC regarding muddy water discharge was recorded in this reporting month. Details of the events and recommendations given please refer to Section 6.2

A complaint incident regarding deposited mud and dust on public road by

construction vehicles was referred by DSD on 30th March 2012. ET has conducted investigations for the incident and details of findings, recommendations and outcome please refer to Section 2.7 and Appendix J.

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

There was no reporting change for this month.

Construction of retaining walls, inclined gabion/no-fines mass concrete walls, abutements of footbridges and box culvert and installations of the pre-fabricated steel deck for footbridges would 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 forty third monthly Environmental Monitoring and Audit (EM&A) Report for the river improvement works at Upper Tai Po River under Drainage Services Department Contract No. DC/2007/06 entitled "River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River". The site layout plan is shown in Figure 2.1. The Environmental Team, Environmental Pioneers & Solutions Limited appointed by Chiu Hing Construction and Transportation Company Limited, prepares the report. The report is to be submitted to the Contractor, the Engineer and the IEC.

This report presents the results of the environmental monitoring of the project activities for Upper Tai Po River conducted during the month of March 2012. 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 starts from Ta Tit Yan of Yai Mo Shan, flows from southeast to northeast alongside Wilson Trail, turning northward before joining the Lam Tsuen River and then runs towards Tai Po Market. For the east of the river, there are active and abandoned cultivated lands. The village settlements are mainly located on the west and northeast side of the river bank, where the San Uk Ka and Lai Chi Shan establishment also lie. The Project site is indicated in **Figure 2.1.**

2.2 Construction programme

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

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

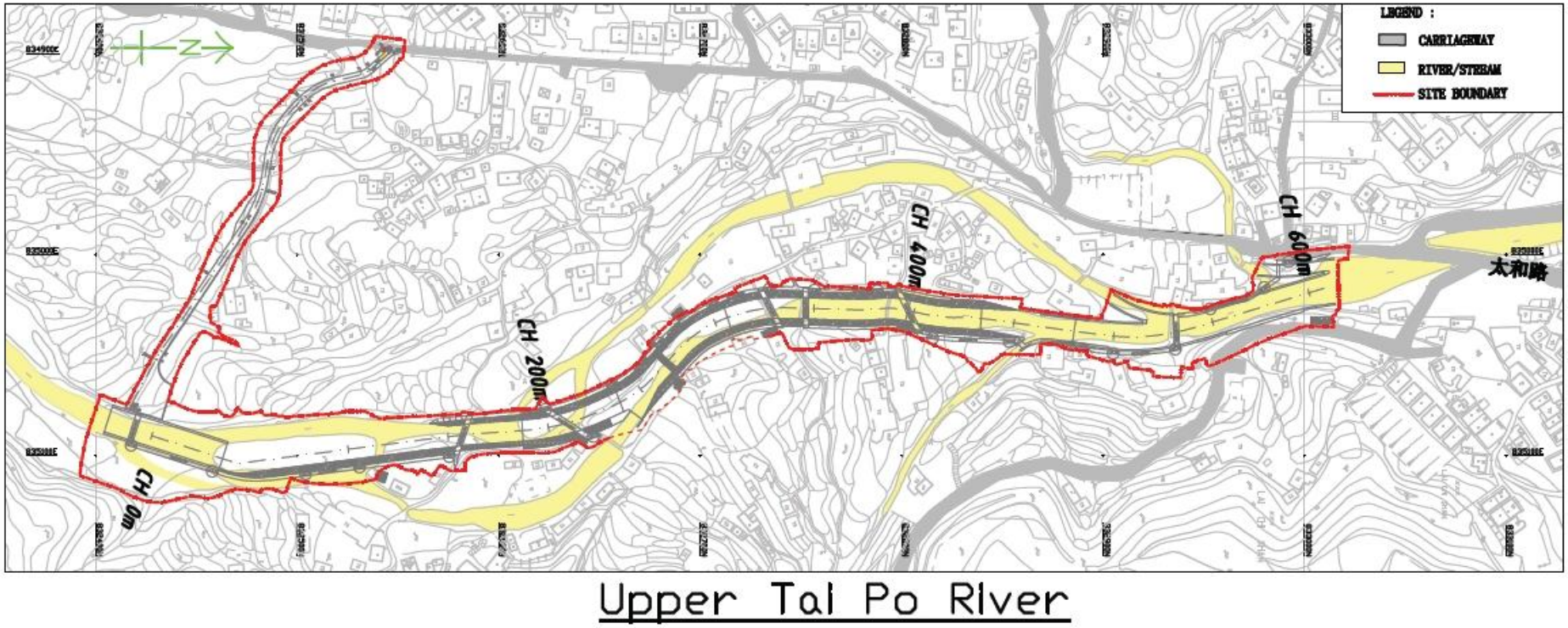
The construction of the proposed improvement works for Upper Tai Po River has been commenced on September 15th 2008 and anticipated to complete in April 2012.

2.3 Proposed construction sequences

The proposed construction sequences are shown in the following:

(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) Construction of additional boulder trap and additional stilling basins with baffle blocks
(5) Provision of riverbed treatment
(6) Re-provisioning of footbridges
(7) Construction of footpaths
(8) Landscaping works

Fig 2.1 Layout of construction area



2.4 Construction activities for the reporting period

Major construction activity carried out by the contractor during this reporting period includes:

1.) Construction of Box Culverts
2.) Construction of Retaining Wall TR2, TR3, TR5A, TR6
3.) Construction of Stilling Basin
4.) Construction of Inclined Gabion/No-Fines Mass Concrete Wall
5.) Construction of Gabion Wall
6.) Construction of Footing of Footbridge (TB03)
7.) Erection of Steel Deck for Footbridge TB06

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 Walls
2.) Construction of inclined gabion/no-fines mass concrete walls
3.) Abutements of Footbridges and Box Culvert
4.) Installations of the pre-fabricated steel deck for footbridges

2.6 Exceedance with the environmental performance limits

There was no exceedance 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

A complaint incident regarding deposited mud and dust on public road by construction vehicles was referred by DSD on 30th March 2012. ET has conducted investigation with representatives from Contractor, Resident Engineer and Independent Environmental Checker on 3rd April 2012 and recommendations were given to the Contractor to minimize environmental impacts generated from project works. The complaint investigation report with details of findings, recommendation and outcome was attached in Appendix J and was submitted to Environmental Protection Department (EPD) in accordance with the requirement stated in EM&A manual. In total, twenty-four 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 16th January 2012. The ecological impact monitoring report prepared by the Ecologist is attached in Appendix K.

4.0 Noise monitoring results

In accordance with the EM&A Manual, monitoring locations were established at 11 N.S.R. locations. The descriptions 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. The scheduled monitoring dates were 1st, 8th, 15th, 22nd and 29th March 2012. Measured $L_{eq\ (30min)}$ results ranged from 51.5dB(A) to 73.6dB(A).

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

5.0 Vibration monitoring results

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

6.0 Environmental issues and actions

6.1 Site inspections and key environmental issues

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

Within this reporting month, site inspections were conducted on 7th, 14th, 21st and 28th March 2012. A detailed checklist of each site inspections together with comments and relevant photos have been filed and kept for record. The findings from inspections were summarized in Table 6.1.

Ecological inspections by the Ecologist Dr. Mark Shea were carried out on 5th, 12th, 19th, 26th and 31st March 2012. Details of findings were summarized in Table 6.2.

Ad-hoc meeting amongst DSD, IEC, ET, ER and Contractor was held on 14 March 2012 regarding the recently received non-compliances/complaints on muddy water. Some additional measures had been proposed, including provision of sedimentation tank at TB02 & TB03 and stop discharge the muddy water directly into the river, improvement of earth bund and provision of sedimentation tank for treating the muddy water from wheel washing bay at ch.600, and provision of additional sedimentation tank at ch.600 to ensure sufficient capacity of the sedimentation process. A checklist for monitoring the implementation status of the abovementioned measures has been prepared by Contractor and weekly checking and updating of the checklist would be carried out by the Environmental Officer. The checklist is attached in Appendix L.

Table 6.1 Summary results of site inspections findings

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
6 Oct 11	Noise barriers were not yet erected by Contractor along UTPR.	Observation	Since more frequent construction works is expected in dry season, serious noise nuisance may be generated to the village nearby. Contractor was urged to install noise barriers to minimize the noise impact arisen from construction activities.	To be followed during the next reporting period.	Ongoing	--
22 Dec 11	Construction waste was observed near the river channel at ch.100.	Observation	Contractor was urged to remove the waste to avoid contaminating the river and assign designated area for temporary storage of construction material and waste.	The construction waste in the river channel at ch.100 removed.	7 Mar 12	--

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
27 Jan 12	The tree protective nets for the retained trees at ch.350 were damaged and the tree branches were tied by wires and ropes.	Observation	Contractor was recommended to repair the tree fences and remove the wires immediately for proper protection of the retained trees within the site.	The tree protective nets at ch.350 of UTPR were repaired.	7 Mar 12	--
8 Feb 12	The tree protective nets for the retained trees at ch.400 were damaged by stockpiles of construction material.	Observation	Contractor was recommended to repair the tree fences and relocate the construction material immediately for proper protection of the retained trees within the site.	The tree protective nets at ch.400 of UTPR were repaired.	7 Mar 12	--
22 Feb 12	The tree protective nets were observed to be damaged at ch.0 & 50 of UTPR and the condition of the retained trees was poor.	Observation	Contractor was recommended to closely monitor the retained trees and urged to repair or replace the fence for proper protection of the retained trees.	The tree protective nets at ch.0 were repaired. The protective net at ch.50 was still damaged.	Ongoing	--
22 Feb 12	The wheel washing bay at ch.600 of UTPR was full and muddy.	Non-compliance	As similar observation was still made in the inspection on 29 Feb 12, NC was issued. Contractor was advised to provide cleaning and maintenance for the wheel washing bay regularly to ensure proper and efficient wheel washing for the construction vehicle before leaving the site.	Maintenance of the wheel washing bay at ch.600 was provided by Contractor. No overflow of contaminated wheel washing water was observed.	7 Mar 12	NC issued by IEC
22 Feb 12	Oil containers were observed without secondary containment at ch.0.	Observation	Contractor was reminder to provide drip trays for storing of oil containers to prevent soil contamination as if leakage.	The oil container at ch.0 was removed.	21 Mar 12	--
22 Feb 12	Oil stain was observed on the haul road at ch.200.	Observation	Contractor was reminded to remove the contaminated soil as chemical waste as soon as possible.	The contaminated soil on the haul road at ch.200 was removed as chemical waste by Contractor.	7 Mar 12	--
22 Feb 12	Direct discharge of site water was observed to be caused by displacement of sandbag barriers at ch.600.	Observation	Contractor was urged to maintain the sandbag barrier as soon as possible to stop further discharge of site water. Contractor was reminded to provide de-silting facility with sufficient capacity for treating the contaminated site water before discharge into water body.	As reported by Contractor, there was no constructions works at ch.600 and therefore no contaminated site water was generated. As a result, sandbag barrier was not needed.	28 Mar 12	--
29 Feb 12	Muddy water was observed to be discharged from sump pits into the river at ch.600 without any treatment, which caused river pollution to the downstream area.	Non-compliance	Contractor was urged to stop generating and discharging muddy water into the river immediately by providing sand bags or bunding as barrier. Also, Contractor was seriously reminded to provide sedimentation tanks with sufficient capacity for treating the contaminated site water before discharge into water body.	No discharge of muddy water was observed from the sump pits at ch.600. The river quality was satisfactory.	7 Mar 12	NC issued by IEC
29 Feb 12	Direct discharge of muddy water was observed due to malfunction of sedimentation tank at ch.600.	Non-compliance	Contractor was urged to provide maintenance for the tank and properly treat site water before discharge to fulfill the Discharge License.	During the inspection on 7 Mar 12, the tank was not in operation and discharge of untreated site water. As inspected on 21 Mar 10,	21 Mar 12	NC issued by IEC

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
				the tank had been properly setup with an additional tank standby to ensure sufficient capacity of the sedimentation process		
7 Mar 12	Direct discharge of site water was observed at ch.200.	Non-compliance	Contractor was urged to provide de-silting facility with sufficient capacity for treating the contaminated site water before discharge into water body.	The site water was diverged to sedimentation tank for de-silting before discharge.	14 Mar 12	NC issued by IEC
14 Mar 12	Some construction material was observed to be placed inside the river channel at ch.100.	Observation	Contractor was urged to relocate the construction material away from the river as soon as possible to avoid river pollution and maintain good housekeeping.	To be followed during the next reporting period.	Ongoing	--
14 Mar 12	Muddy surface runoff was observed at ch.200 as insufficient bunding and geo-textile was observed leading to overflow of muddy water.	Observation	Contractor was advised to modify the bunding to avoid overflow of muddy water. Contractor was reminded to diverge the muddy runoff to sedimentation tank for proper treatment before discharged.	To be followed during the next reporting period.	Ongoing	--
21 Mar 12	The access road around ch.0 of UTPR was very dry and dusty.	Observation	Contractor was reminded to provide frequent water spraying for dust suppression.	To be followed during the next reporting period.	Ongoing	--
21 Mar 12	Improper installation of the sedimentation tank was observed at ch.600 as the second chamber of the tank was not connected.	Observation	Contractor was advised to properly setup the tank for more effective treatment of the site water. Contractor was reminded to provide regular checking and maintenance for sedimentation tanks within the site.	The sedimentation tank at ch.600 was properly setup. Moreover, additional sedimentation tank was provided to ensure there is sufficient capacity for treating the muddy water.	28 Mar 12	--

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
05 March 2012	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
12 March 2012	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
19 March 2012	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
26 March 2012	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A
31 March 2012	No Major findings for this inspection	No Advice is required	No Action is required to be taken	N/A

6.2 Non-compliance

A non-compliance event was issued by IEC on 9th March 2012 regarding muddy water discharge.

During the site inspection on 29th February 2012, muddy surface runoff from the worksite and excavated pit near ch.600 was entering directly into the river. Besides, muddy water overflowed from the wheel washing bay next to the river. Furthermore, the sedimentation tank near ch.600 had insufficient capacity for treating the muddy site water as the effluent was still observed to be muddy. The mitigation measures for muddy water discharge were considered to be insufficient and ineffective.

Recommendations were provided to Contractor for rectification. It was suggested that discharge of muddy water should be stopped immediately and sedimentation tank should be provided for treating the muddy water before discharge into public drainage. Maintenance of wheel washing bay should be provided regularly to ensure efficient wheel washing. Checking and maintenance of sedimentation tank should be provided regularly to ensure sufficient capacity for treating the muddy water.

In the subsequent site inspection on 7th March 2012, some follow-up actions were implemented by Contractor. During the site inspection on 7th March 2012, it was observed that additional geo-textile had been provided by Contractor and no muddy surface runoff was identified near ch.600. No observation regarding muddy water was made during the inspection. Also, additional bunding was provided for the wheel washing bay and the water level was reduced to avoid overflow of contaminated water. However, the sedimentation tank at ch.600 was not in operation and leading to untreated water discharge. Moreover, direct discharge of site water without treatment from sump pit was observed near ch.250. Although the water appeared to be clear, Contractor was still requested to provide de-silting facility for treating the site water before discharge.

As there were still some defects not yet rectified and direct discharge was still observed, the above mal-practices were considered as non-compliance event under Water Pollution Control Ordinance (WPCO)(Cap.358) and Effluent Discharge Permits (no. 3678 for Upper Tai Po River) issued under the WPCO to the Contractor. No effective mitigation measures were implemented according to advices given by RE, IEC and ET.

Further actions had been taken by Contractor for the abovementioned deficiencies. During the inspection on 14th March 2012, a sedimentation tank had been provided at ch.400 for treating the site water. Also, the unused sedimentation tank at ch.600 had been properly setup with an additional sedimentation tank standby to ensure sufficient capacity of the sedimentation process during the inspection on 21st March 2012. No observation regarding muddy water was made during the inspection.

Contractor was reminded to be aware of the implementation of measures to avoid soil erosion and untreated water discharged and to prevent pollution to the river water.

6.3 Recommendations

Contractor was reminded that all the measures stated in the Environmental Permit should be followed. Contractor was advised that excavation work shall be carried out in sections and in enclosed dewatered condition. Dewatering of the excavation area should be carried out prior to excavation work. All site water shall be well de-silted and treated before discharge. Also, sufficient temporary earth bunds and barriers should be used to entirely enclose the excavation area and exposed slope surface should be covered (e.g. by tarpaulin sheet) to prevent river contamination. Contractor was reminded that discharge of contaminated water is an environmental offence and should be prohibited.

Contractor should also implement necessary measures to mitigate air quality impact from construction works. Earthy stockpiles should be covered with tarpaulin coverings and dusty static area should be dampened regularly for dust suppression.

In order to minimize the noise impact to the noise sensitive receivers, Contractor was reminded to implement proper mitigation measures as stated in Environmental Permit and EM&A Manual, i.e. erecting 2m high noise barriers at locations stated in Environmental Permit, orientating noisy plants away from the nearby NSRs, using movable barriers and acoustic mat, etc.

6.4 Implementation status and effectiveness of the mitigation measures

Referring to the table 6.1 and Section 6.2, contractor was seriously recommended to implement necessary mitigation measures to address environmental problem arisen from site activities.

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 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, all the C&D materials generated were reused at Lam Tsuen River for rock filling. No inert waste was disposed from the Project. The non-inert waste was sent to the North East New Territories (NENT) Landfill. Chemical waste were first collected by a black plastic bag with labeling (collection point, chemical name, producer's name), then placed into the Chemical Storing Area for temporary storage. A licensed collector was appointed for the collection and disposal of the chemical waste. All chemical waste was transported to the Chemical Waste Treatment Centre (CWTC). The following table showed the amount of waste generation, reused and disposed from this project site in this reporting month.

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 March 2012

Type of waste	Amount generated	Amount reused	Amount disposed
Inert waste	1401 m^3	1401 m^3	0 m^3
Non-inert waste	30 kg	0	30 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 by EP-223/2005/A
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 walls, inclined gabion/no-fines mass concrete walls, abutements of footbridges and box culvert and installations of the pre-fabricated steel deck for footbridges would be carried out in the upcoming month. The construction activities for these items will generate environmental impacts in several aspects.

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.

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.

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 box culverts, retaining wall TR2, TR3, TR5A, TR6, stilling basin, inclined gabion/no-fines mass concrete wall, gabion wall, footing of footbridge TB03 and erection of steel deck for footbridge TB06 were the major site activities being carried out 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.

The ecological impact monitoring was conducted on 16th January 2012 by the Ecologist Dr. Mark Shea. The ecological impact monitoring report prepared by the Ecologist is attached in Appendix K. The next ecological impact monitoring was scheduled in July 2012

A non-compliance event issued by IEC regarding muddy water discharge was recorded in this reporting month.

A complaint incident regarding deposited mud and dust on public road by construction vehicles was referred by DSD on 30th March 2012.

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	67.1	69.3	59.5	1-Mar-12	13:26-13:56	Soil sorting Rock breaking	- Background noise - Traffic noise	Cloudy	Façade
UTP 2	56.4	59.2	42.6	1-Mar-12	12:54-13:24	Rock breaking	- Background noise - Traffic noise	Cloudy	Façade
UTP 3	59.9	61.5	50.1	1-Mar-12	14:00-14:30	Rock breaking	- Background noise	Cloudy	Façade
UTP 4	63.8	65.6	58.0	1-Mar-12	14:33-15:03	N/A	- Background noise	Cloudy	Façade
UTP 5	62.9	63.9	46.3	1-Mar-12	15:07-15:37	N/A	- Background noise	Cloudy	Façade
UTP 6	65.0	65.8	41.6	1-Mar-12	11:33-12:03	Soil sorting	- Background noise	Cloudy	Façade
UTP 7	61.9	62.9	52.4	1-Mar-12	11:03-11:33	Drilling Soil sorting	- Background noise	Cloudy	Façade
UTP 8	57.5	60.5	46.8	1-Mar-12	10:30-11:00	N/A	- Background noise	Cloudy	Façade
UTP 9	57.8	61.2	48.5	1-Mar-12	10:00-10:30	Rock breaking	- Background noise	Cloudy	Façade
UTP 10	58.6	60.8	38.5	1-Mar-12	9:22-9:52	N/A	- Background noise	Cloudy	Façade
UTP 11	51.5	54.9	40.1	1-Mar-12	8:52-9:22	N/A	- Background noise	Cloudy	***Free field**

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	69.7	71.3	58.3	8-Mar-12	13:25-13:55	Soil sorting	- Traffic noise - Background noise	Cloudy	Façade
UTP 2	62.1	63.7	48.3	8-Mar-12	12:53-13:23	Soil sorting	- Traffic noise - Background noise	Cloudy	Façade
UTP 3	73.6	75.4	64.4	8-Mar-12	13:55-14:25	Soil sorting	- Background noise	Cloudy	Façade
UTP 4	69.3	70.4	61.7	8-Mar-12	11:45-12:15	N/A	- Background noise	Cloudy	Façade
UTP 5	60.9	66.3	49.0	8-Mar-12	14:27-14:57	N/A	- Background noise	Cloudy	Façade
UTP 6	70.1	71.2	59.2	8-Mar-12	11:15-11:45	Soil sorting	- Background noise	Cloudy	Façade
UTP 7	63.6	64.7	53.2	8-Mar-12	10:45-11:15	Soil sorting	- Background noise	Cloudy	Façade
UTP 8	63.8	64.1	57.7	8-Mar-12	10:13-10:43	Soil sorting	- Background noise	Cloudy	Façade
UTP 9	67.0	70.5	58.0	8-Mar-12	9:42-10:12	Soil sorting	- Background noise	Cloudy	Façade
UTP 10	56.3	54.1	42.8	8-Mar-12	9:03-9:33	N/A	- Background noise	Cloudy	Façade
UTP 11	58.2	60.4	45.3	8-Mar-12	8:33-9:03	N/A	- Background noise	Cloudy	***Free field**

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	70.9	74.3	59.2	15-Mar-12	13:22-13:52	Soil transfer	-Traffic noise - Background noise	Cloudy	Façade
UTP 2	62.9	62.4	51.3	15-Mar-12	12:50-13:20	N/A	-Traffic noise - Background noise	Cloudy	Façade
UTP 3	72.3	65.0	53.3	15-Mar-12	13:54-14:24	N/A	- Background noise	Cloudy	Façade
UTP 4	72.5	76.8	60.7	15-Mar-12	14:30-15:00	Soil transfer	- Background noise	Cloudy	Façade
UTP 5	72.1	75.7	58.4	15-Mar-12	15:03-15:33	Soil transfer	- Background noise	Cloudy	Façade
UTP 6	64.1	66.7	54.5	15-Mar-12	11:10-11:40	N/A	- Background noise	Cloudy	Façade
UTP 7	63.5	62.2	50.1	15-Mar-12	11:40-12:10	N/A	- Background noise	Cloudy	Façade
UTP 8	72.9	75.3	66.4	15-Mar-12	10:37-11:07	Steel bar transfer	- Background noise	Cloudy	Façade
UTP 9	73.6	74.7	57.6	15-Mar-12	10:07-10:37	Soil transfer	- Background noise	Cloudy	Façade
UTP 10	66.9	69.6	44.5	15-Mar-12	9:25-9:55	N/A	- Background noise	Cloudy	Façade
UTP 11	63.4	66.0	47.6	15-Mar-12	8:55-9:25	N/A	- Background noise	Cloudy	***Free field**

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	71.7	72.4	59.1	22-Mar-12	13:30-14:00	Rock breaking	-Traffic noise - Background noise	Sunny	Façade
UTP 2	62.4	63.2	51.0	22-Mar-12	12:58-13:28	N/A	-Traffic noise - Background noise	Sunny	Façade
UTP 3	61.4	62.9	54.7	22-Mar-12	14:02-14:32	N/A	- Background noise	Sunny	Façade
UTP 4	69.5	70.3	60.3	22-Mar-12	14:32-15:02	River sorting	- Background noise	Sunny	Façade
UTP 5	63.9	66.3	58.0	22-Mar-12	15:07-15:37	Soil sorting	- Background noise	Cloudy	Façade
UTP 6	67.9	70.3	62.2	22-Mar-12	11:45-12:15	Cement modeling	- Background noise	Cloudy	Façade
UTP 7	68.1	72.5	54.9	22-Mar-12	11:15-11:45	N/A	- Background noise	Cloudy	Façade
UTP 8	61.6	64.3	51.8	22-Mar-12	10:42-11:12	N/A	- Background noise	Cloudy	Façade
UTP 9	57.3	59.6	50.2	22-Mar-12	10:12-10:42	N/A	- Background noise	Cloudy	Façade
UTP 10	68.5	70.6	45.8	22-Mar-12	9:30-10:00	N/A	- Background noise	Cloudy	Façade
UTP 11	61.4	64.4	47.4	22-Mar-12	9:00-9:30	N/A	- Background noise	Cloudy	***Free field**

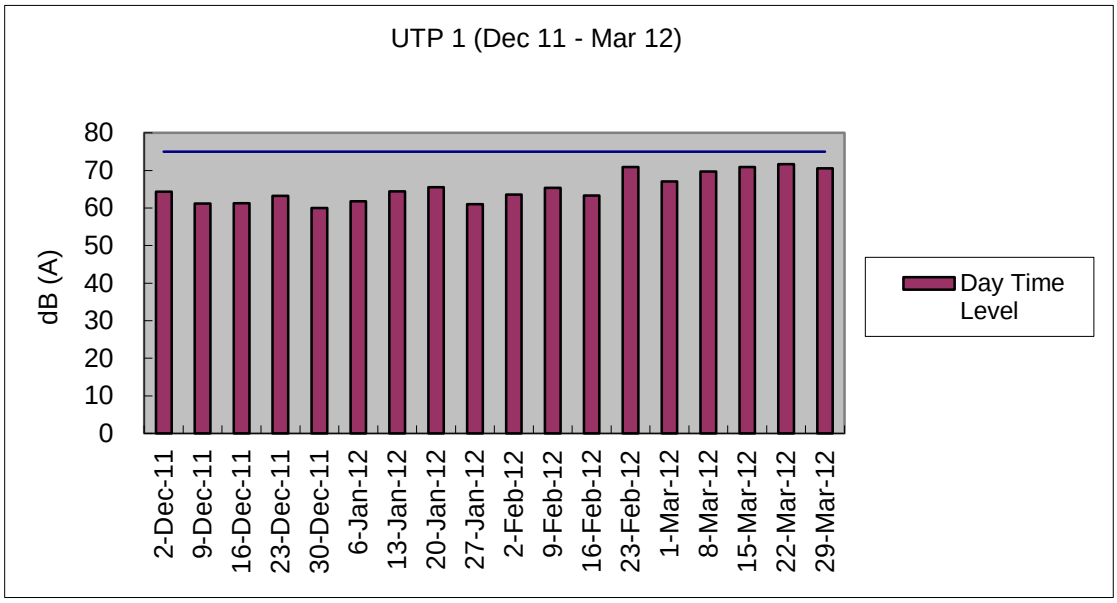
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

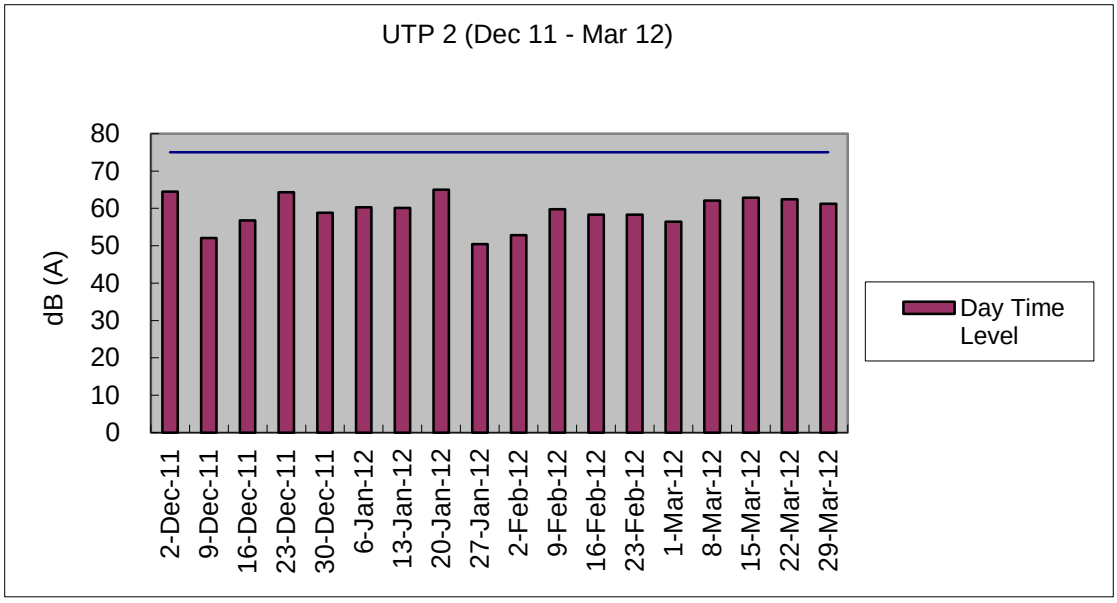
Location	Leq 30min	L_{10} 30min	L_{90} 30min	Date	Time Duration	Major Construction Noise	Other Noise source	Weather	Location description
UTP 1	70.6	73.3	59.2	29-Mar-12	13:30-14:00	N/A	-Traffic noise - Background noise	Sunny	Façade
UTP 2	61.2	63.4	48.8	29-Mar-12	12:56-13:26	N/A	-Traffic noise - Background noise	Sunny	Façade
UTP 3	66.2	69.6	57.2	29-Mar-12	14:02-14:32	Soil transfer	- Background noise	Sunny	Façade
UTP 4	67.2	70.4	58.9	29-Mar-12	14:35-15:05	Slope forming	- Background noise	Sunny	Façade
UTP 5	59.1	62.9	51.3	29-Mar-12	15:05-15:35	Slope forming	- Background noise	Sunny	Façade
UTP 6	64.5	64.0	54.0	29-Mar-12	11:30-12:09	Cement modeling	- Background noise	Sunny	Façade
UTP 7	61.0	62.8	51.1	29-Mar-12	11:09-11:39	Cement modeling	- Background noise	Sunny	Façade
UTP 8	65.6	64.0	54.4	29-Mar-12	10:36-11:06	N/A	- Background noise	Sunny	Façade
UTP 9	65.2	67.7	53.3	29-Mar-12	10:06-10:36	Soil sorting	- Background noise	Sunny	Façade
UTP 10	64.6	69.1	49.4	29-Mar-12	9:27-9:57	N/A	- Background noise	Sunny	Façade
UTP 11	60.6	63.0	50.5	29-Mar-12	8:57-9:27	N/A	- Background noise	Sunny	***Free field**

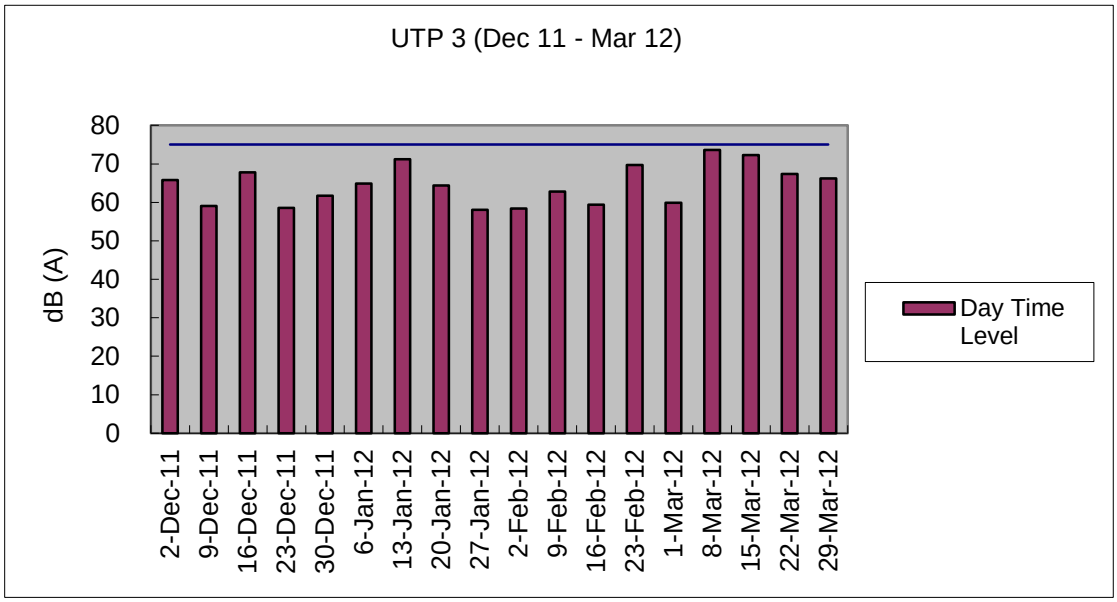
Note* An Additional of 3dB(A) had been added to the measurement result due to Free Field Correction

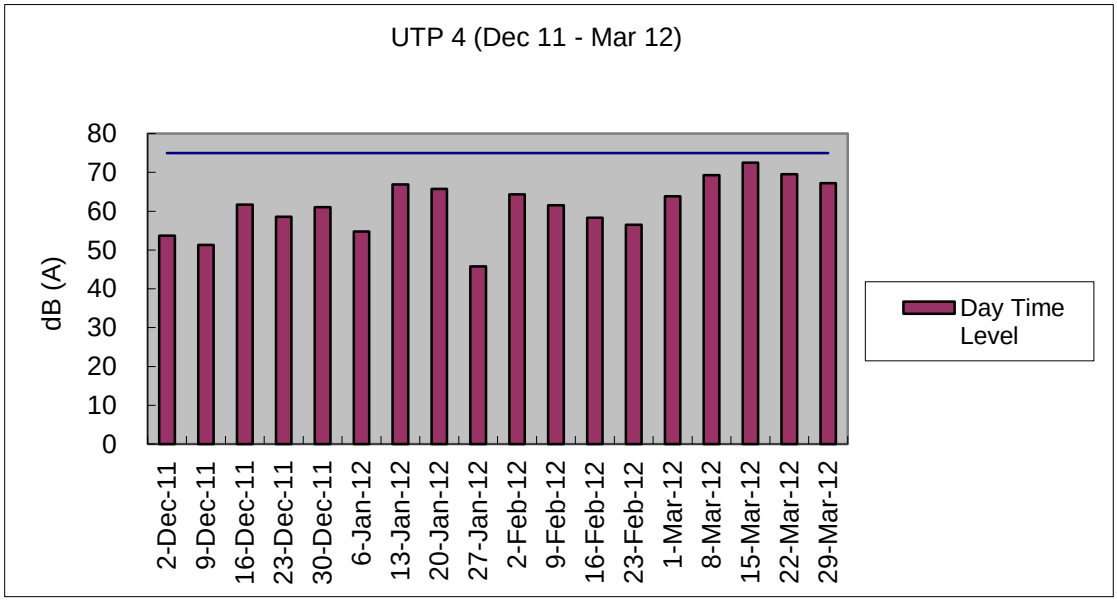
Graphical plot for noise measurements

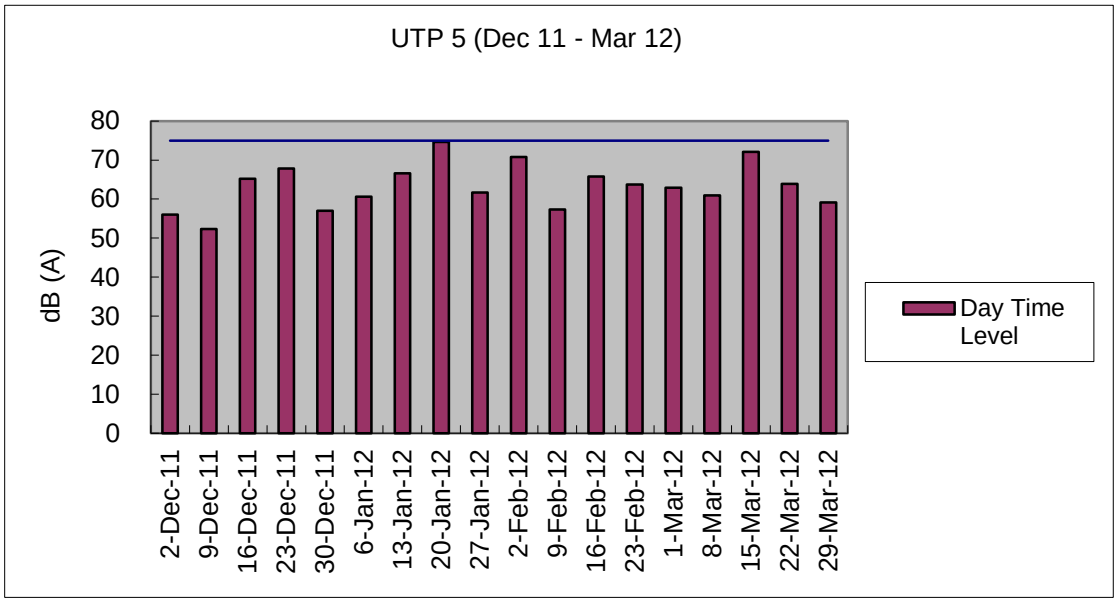
The followings were the graphical plots for the 11 monitoring locations. Each plot showed the date of measurement taken, day time limit of 75 dB(A) as well as the measured daytime level for each location. The graphs contain the data recorded from December 2011 to March 2012.

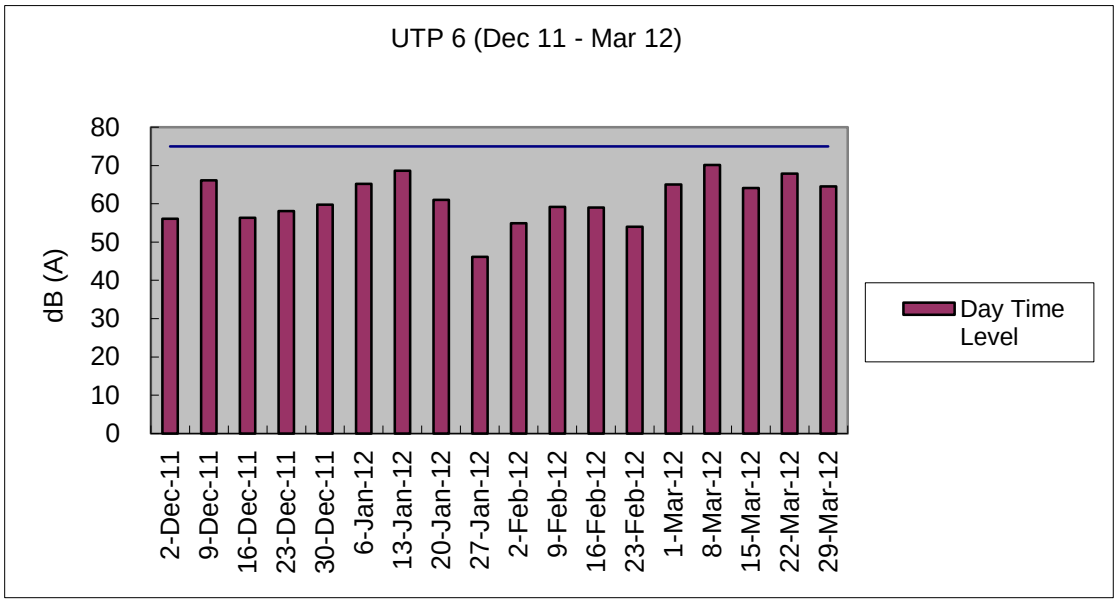


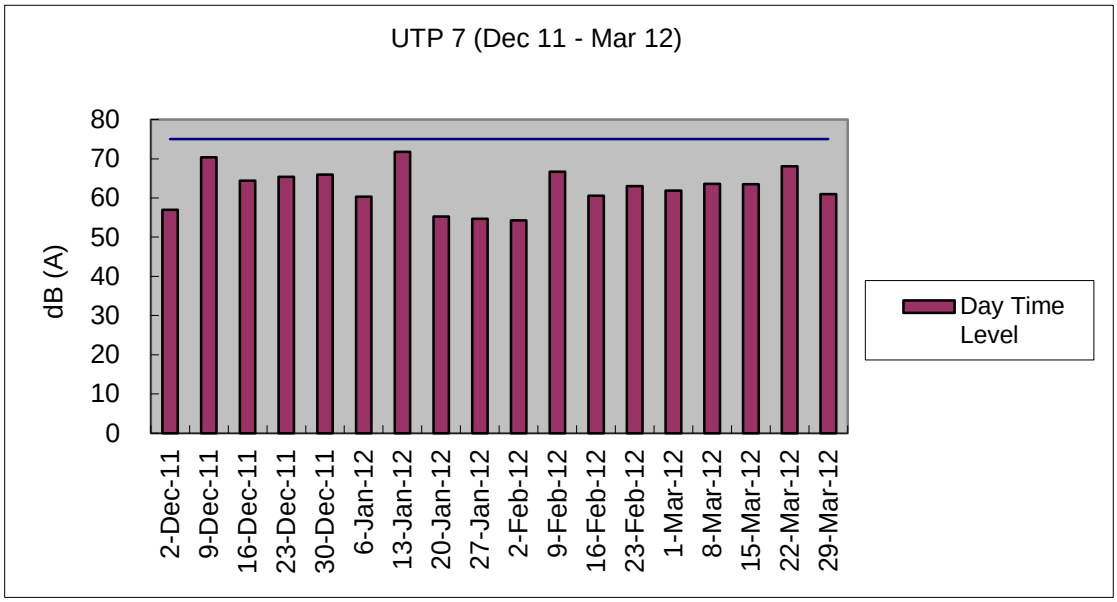


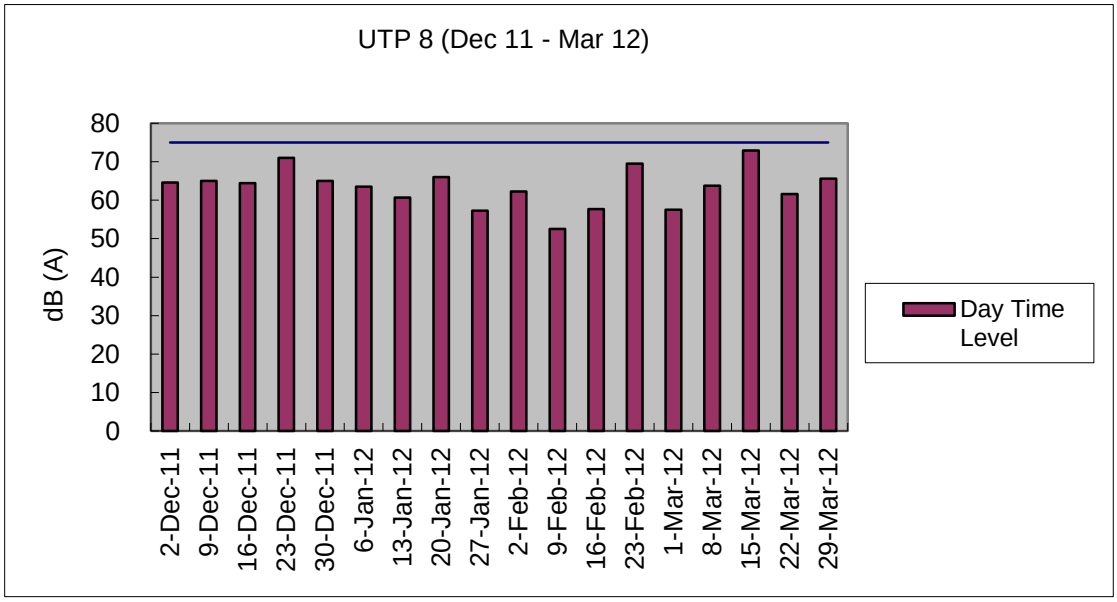

UTP 3 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level

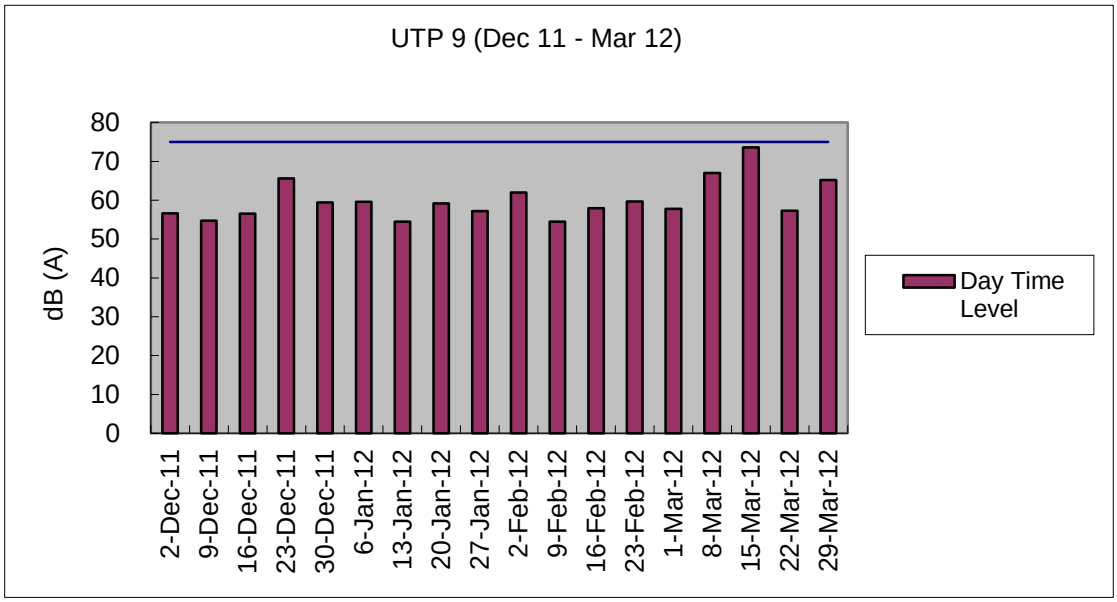

UTP 4 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level

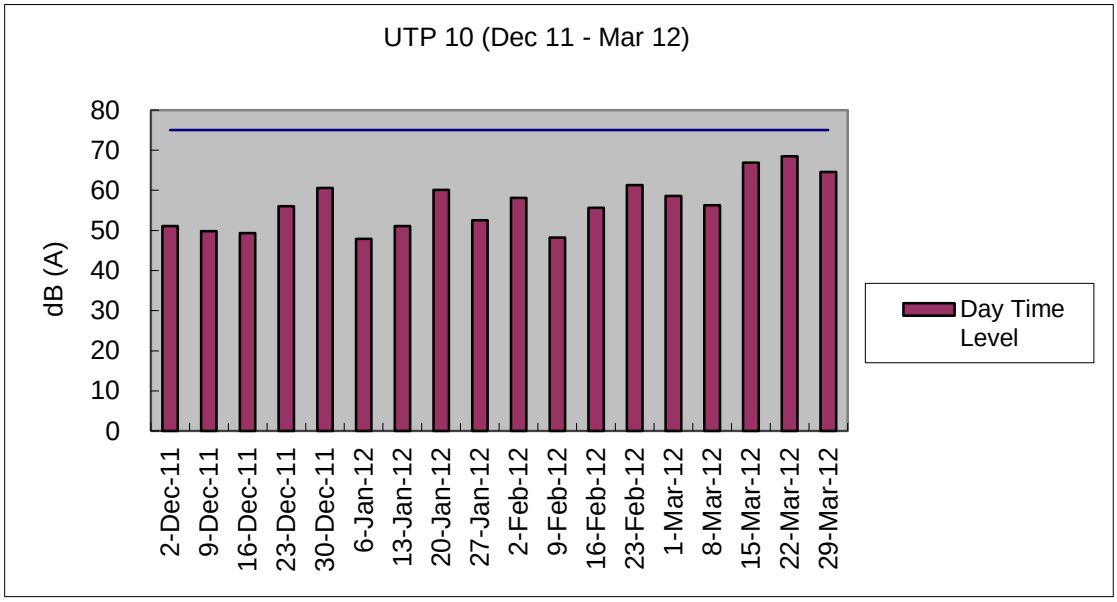

UTP 5 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level

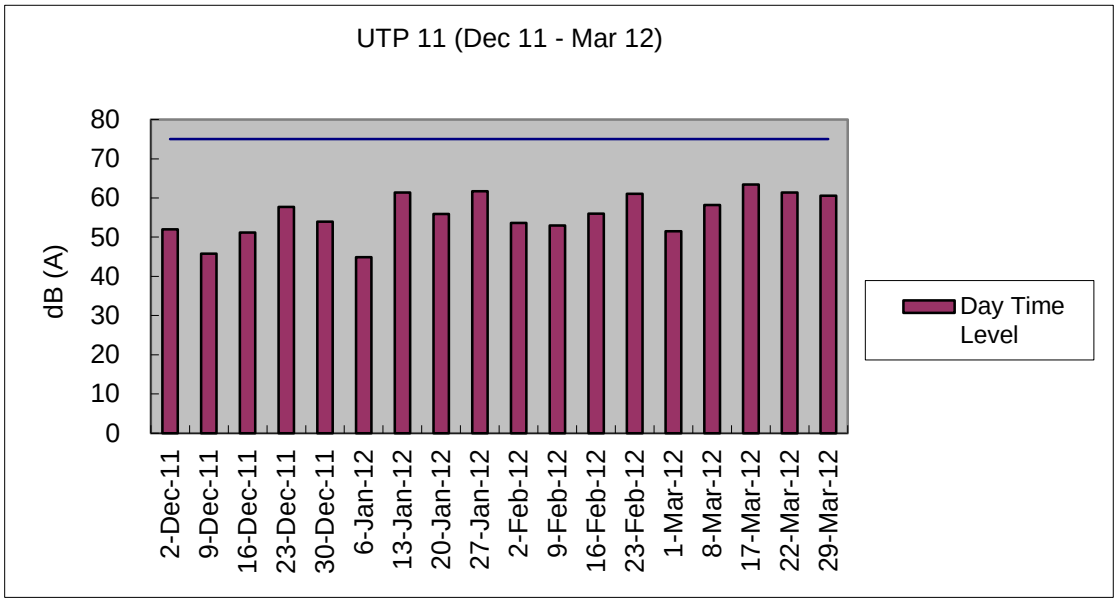

UTP 6 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level

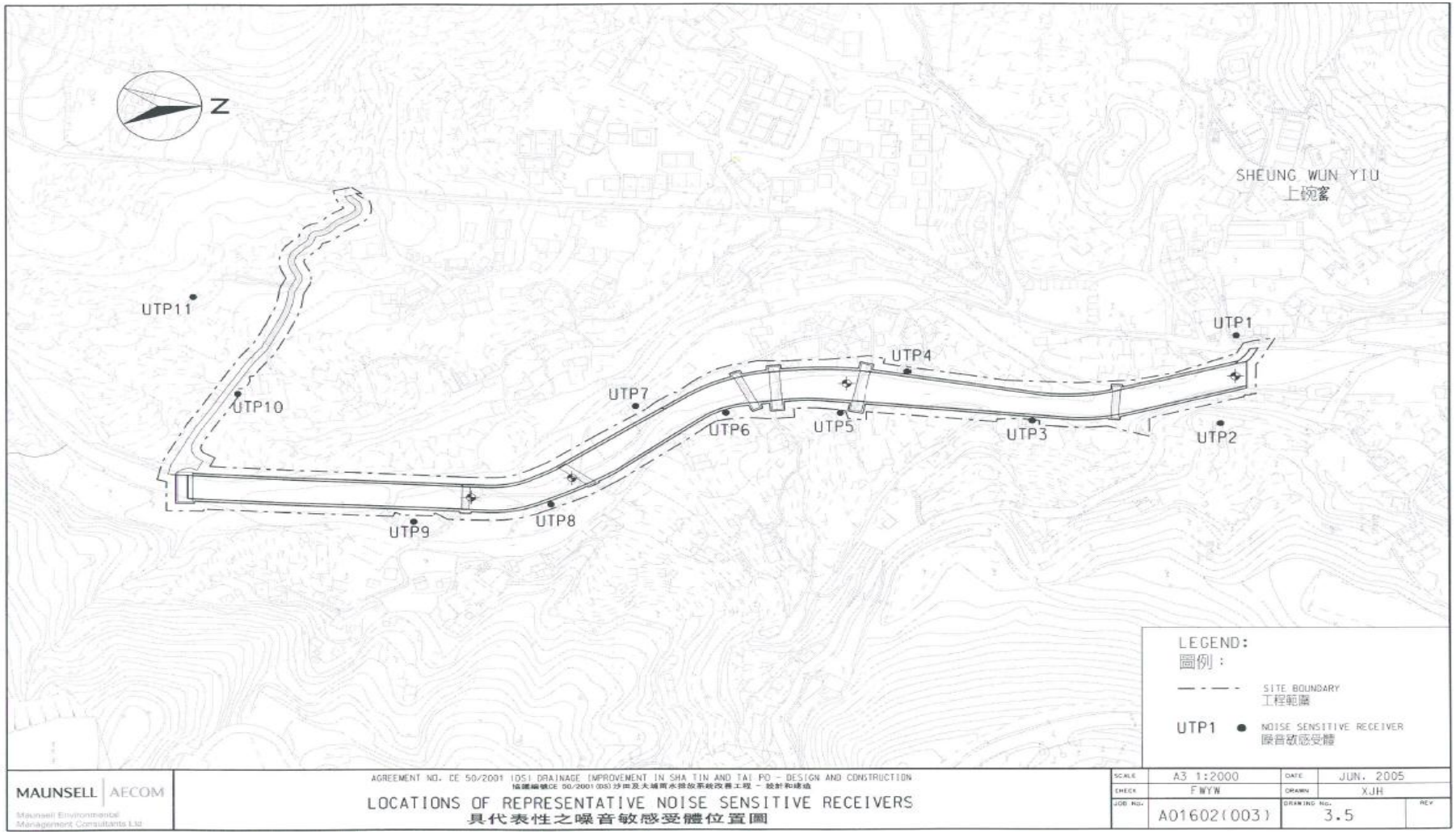

UTP 7 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level


UTP 8 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level


UTP 9 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level


UTP 10 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
15-Mar-12
22-Mar-12
29-Mar-12
Day Time Level


UTP 11 (Dec 11 - Mar 12)
dB (A)
80
70
60
50
40
30
20
10
0
2-Dec-11
9-Dec-11
16-Dec-11
23-Dec-11
30-Dec-11
6-Jan-12
13-Jan-12
20-Jan-12
27-Jan-12
2-Feb-12
9-Feb-12
16-Feb-12
23-Feb-12
1-Mar-12
8-Mar-12
17-Mar-12
22-Mar-12
29-Mar-12
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
協議編號CE 50/2001 (DS) 沙田及大埔雨水排放系統改善工程 – 設計和建造
LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS
具代表性之噪音敏感受體位置圖
SCALE A3 1:2000
DATE JUN. 2005
CHECK FWYW
DRAWN XJH
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 March 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01/03	02/03	03/03
				Noise Monitoring		
04/03	05/03	06/03	07/03	08/03	09/0	10/03
	Ecological site inspection		Site inspection at afternoon	Noise Monitoring		
11/03	12/03	13/03	14/03	15/03	16/03	17/03
	Ecological site inspection and		Ad-hoc Meeting and Site inspection at afternoon	Noise Monitoring		
18/03	19/03	20/03	21/03	22/03	23/03	24/03
	Ecological site inspection		Site inspection and SSEMC at afternoon	Noise Monitoring		
25/03	26/03	27/03	28/03	29/03	30/03	31/03
	Ecological site inspection		Site inspection at afternoon	Noise Monitoring		Ecological site inspection

Master Schedule of EM&A works in April 2012

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

Appendix F: Cumulative complaint log

Environmental Parameters	Cumulative no. Brought forward	No. of complaint March 2012	Overall Total
Air/Dust	7	0	7
Noise	5	0	5
Water	11	0	11
House Keeping Hygiene	0	1	1
Chemical waste	0	0	0
Total	23	1	24

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	Deficient	Ongoing
Fugitive Dust Emission	-Implement regular watering and vehicle washing facilities	Deficient	Ongoing
	-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	Deficient	Ongoing
	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	Deficient	Ongoing
	Provide silt trap and oil interceptor to remove the oil, lubricants, grease,	Implemented	Not required

	silt, grit and debris from the wastewater before pumped to the public storm water drainage system		
	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	Deficient	Ongoing
Vibration	Percussive piling is to be replaced by bore-hole piling to minimize vibration impacts to the two identified Declared monuments	Not applicable at this stage	Not required
	Carrying out of vibration monitoring to ensure that vibration associated with the construction phase do not exceed the threshold limit otherwise contractor have to review the work method and construction activities have to be slow down or rescheduled to reduce the impacts	Not applicable at this stage	Not required
	Close monitoring and measurement on the cracks of the external wall of Fan Sin Temple during construction works will be carried out. Any changes on the cracks will be recorded for the contractor to slow down the construction activities accordingly; and to review the work methods and equipments immediately	Not Applicable at this stage	Not required

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

Environmental Aspect	Protection / Mitigation Measures	Implementation status	Follow-up action
Ecology	Large boulders will be returned to the riverbed following the excavation works.	Not applicable	Not required
	Construction works from Ch. 0.0m – Ch. 150m would be along one side of the river only	Not applicable	Not required
	Approximately 150m of the existing natural riverbank on the western side of the river would be retained.	Implemented	Not required
	Excavation works within the river channel should be restricted to an enclosed dewater section of the river, and would be limited to sections 50-100m long at any one time.	Implemented	Not required
	Flows to the area downstream shall be maintained at all times during the construction phase	Implemented	Not required
	Capture survey shall be conducted within the Tai Po River before commencement of works. The captured target species shall be relocated to areas of the watercourse upstream of the watercourse upstream of the Tai Po River	Capture surveys had been conducted at the beginning of the Contract, during the wet season July/August 2008 and 4th November 2008	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

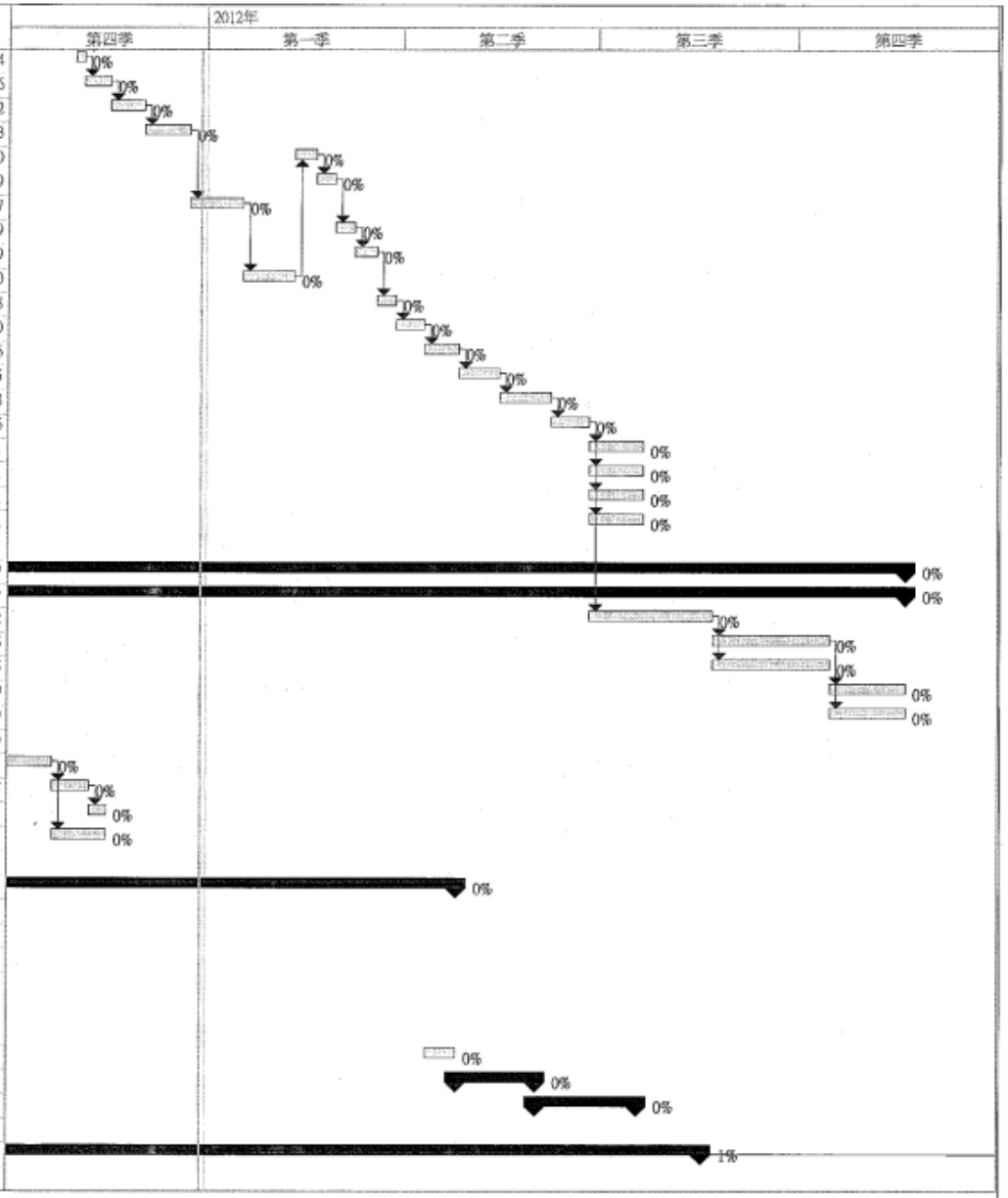
Cumulative waste flow table showing amount of wastes generated, reused and disposed since 15th September 2008

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	36.9 m^3	0	36.9 m^3	2.000 tonnes	0	2.000 tonnes	20kg	20kg
Year 2010	1955 m^3	1955m^3	0	0.192 tonnes	0	0.192 tonnes	0	0
Year 2011	5505 m^3	5490 m^3	51.9 m^3	0.376 tonnes	0	0.376 tonnes	3kg	3kg
January 2012	1920 m^3	1920 m^3	0	0.030 tonnes	0	0.030 tonnes	2kg	2kg
February 2012	2110 m^3	2110 m^3	0	0.020 tonnes	0	0.020 tonnes	1kg	1kg
March 2012	1401 m^3	1401 m^3	0	0.030 tonnes	0	0.030 tonnes	0	0
Total	**12927.9 m^3**	**12876 m^3**	**88.8 m^3**	**2.648 tonnes**	**0**	**2.648 tonnes**	**26kg**	**26kg**

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. 18)

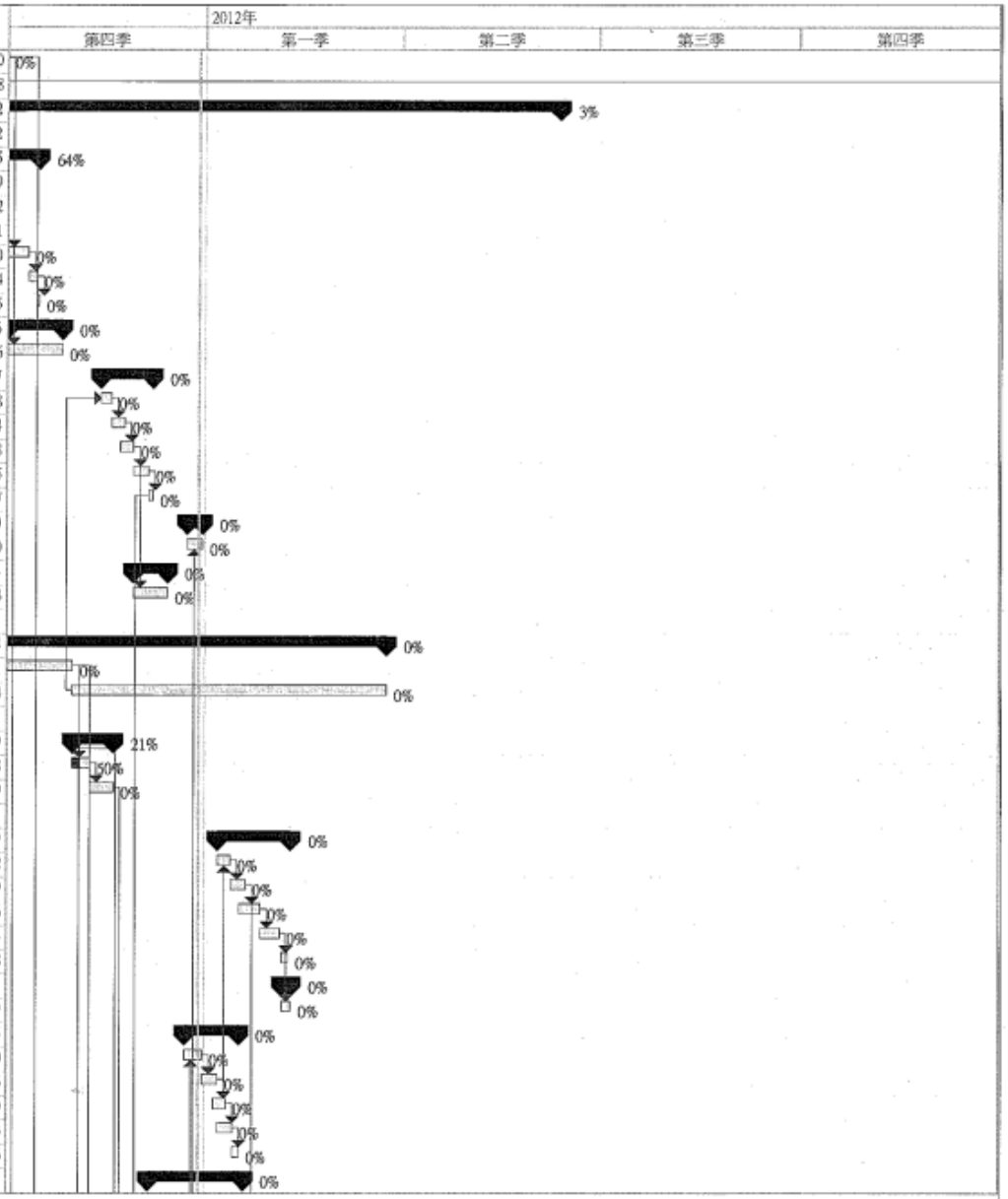
識別碼	任務名稱	工期	開始時間	完成時間
1118	River Diversion	4 days	2011/11/1	2011/11/4
1119	Construct Haul Road to RHS	10 days	2011/11/5	2011/11/16
1120	Remove Existing Gabion	14 days	2011/11/17	2011/12/2
1121	Piling (right bank)	18 days	2011/12/3	2011/12/23
1122	Pile cap (right bank)	8 days	2012/2/11	2012/2/20
1123	Pier (right bank)	8 days	2012/2/21	2012/2/29
1124	Piling (middle)	18 days	2011/12/24	2012/1/17
1125	Pile cap (middle)	8 days	2012/3/1	2012/3/9
1126	Pier (middle)	8 days	2012/3/10	2012/3/19
1127	Piling (left bank)	18 days	2012/1/18	2012/2/10
1128	Pile cap (left bank)	8 days	2012/3/20	2012/3/28
1129	Pier (left bank)	8 days	2012/3/29	2012/4/10
1130	Bridge deck	14 days	2012/4/11	2012/4/26
1131	Reinstatement of Gabion	14 days	2012/4/27	2012/5/15
1132	Const. Dwarf Wall	21 days	2012/5/16	2012/6/8
1133	Construct Drainage & Footpath	14 days	2012/6/9	2012/6/26
1134	Utility Installation	21 days	2012/6/27	2012/7/21
1135	Public Lighting Installation	21 days	2012/6/27	2012/7/21
1136	WSD installation	21 days	2012/6/27	2012/7/21
1137	PCCW installation	21 days	2012/6/27	2012/7/21
1138				
1139	**Section 2 - She Shan River (Area K) Ch 1850 to 1550**	**735 days**	**2010/7/20**	**2012/11/19**
1140	**From CHL 1850 to CHL 1550**	**442 days**	**2011/5/31**	**2012/11/19**
1141	Dwarf wall (CH1755-1857)(VO178)	48 days	2012/6/27	2012/8/22
1142	Footpath construction at LHS (Ch1550 to 1850)	45 days	2012/8/23	2012/10/15
1143	Drainage pipe and U-channel construction (Ch1550-1850)	45 days	2012/8/23	2012/10/15
1144	Install Handrails/Chainage Markers	28 days	2012/10/16	2012/11/19
1145	Chainlink fencing	28 days	2012/10/16	2012/11/19
1146	Footbridge SB01 - Dwarf Wall	60 days	2011/5/31	2011/8/10
1147	Drawpit and Ducting Construction	60 days	2011/8/11	2011/10/21
1148	Public Lighting Installation (CE2278/79)	14 days	2011/10/22	2011/11/7
1149	T&C	7 days	2011/11/8	2011/11/15
1150	Watermain Diversion	21 days	2011/10/22	2011/11/15
1151				
1152	**Variation Order No. 116**	**564 days**	**2010/7/20**	**2012/4/25**
1153	Fabrication of Precast Concrete Planter	35 days	2010/7/20	2010/8/23
1154	Material delivery	14 days	2010/8/24	2010/9/6
1155	Temp. drainage diversion/ haul rd	14 days	2011/6/1	2011/6/17
1156	Blinding layer	3 days	2011/6/18	2011/6/21
1157	PVC sheeting	3 days	2011/6/22	2011/6/24
1158	Installation of Planters	14 days	2011/6/25	2011/7/12
1159	Infill of Planting Soil	12 days	2012/4/12	2012/4/25
1160	**Variation Order No. 232**	**30 days**	**2012/4/26**	**2012/6/1**
1168	**Variation Order No. 145**	**38 days**	**2012/6/2**	**2012/7/18**
1173				
1174	**Programme of Upper Tai Po River**	**768 days**	**2010/4/1**	**2012/8/17**
1175	Wet Season of 2010	214 days	2010/4/1	2010/10/31



專案: DC0706 River Prog
日期: 2011/12/29

要徑 任務 比較基準 里程碑 專案摘要報告 期限
要徑分隔 分割 比較基準分隔 摘要進度 外部任務
要徑進度 任務進度 比較基準里程碑 摘要 外部里程碑

識別碼	任務名稱	工期	開始時間	完成時間
1176	Wet Season of 2011	149 days	2011/4/1	2011/9/30
1177	Works Suspended Due to Villager's Rally	42 days	2010/11/7	2010/12/18
1178	Ch 230-350	412 days	2011/1/28	2012/6/12
1179	Gabion Wall (Ch 230-275 RHS) TG1/TG1A	40 days	2011/1/28	2011/3/12
1183	Retaining Wall (Ch 275-330 RHS) TR1 (replaced by AD1)	183 days	2011/3/7	2011/10/15
1184	Excavation and Formation	12 days	2011/3/7	2011/3/19
1185	Laying Concrete block and gabion units (Ch275-320 RHS)	12 days	2011/3/21	2011/4/2
1186	Backfilling	6 days	2011/4/4	2011/4/11
1187	Excavation and Formation	7 days	2011/10/1	2011/10/10
1188	Laying Concrete block and gabion units (Ch320-330 RHS)	4 days	2011/10/11	2011/10/14
1189	Backfilling	1 day	2011/10/15	2011/10/15
1190	Drainage & Footpath (CH 275-320 RHS)	21 days	2011/10/1	2011/10/26
1191	Construction of drainage & footpath	21 days	2011/10/1	2011/10/26
1192	Gabion Wall (Ch 315-330 LHS) TG2A (Inclined gabion)	21 days	2011/11/14	2011/12/7
1193	Remove Concrete Blocks and shotcrete + 1st No fine	5 days	2011/11/14	2011/11/18
1194	Excavation toe	5 days	2011/11/19	2011/11/24
1195	Mass concrete toe	5 days	2011/11/23	2011/11/28
1196	2nd stage no-fine concrete and inclined gabion	6 days	2011/11/29	2011/12/5
1197	Concrete blocks at slope toe and Backfilling	2 days	2011/12/6	2011/12/7
1198	Maintainence Staircase (Ch 315 LHS)	4 days	2011/12/24	2011/12/30
1199	Formwork and concreting	4 days	2011/12/24	2011/12/30
1200	Drainage & Footpath (Ch 307-330 LHS)	14 days	2011/11/29	2011/12/14
1201	Construction of drainage & footpath	14 days	2011/11/29	2011/12/14
1202				
1203	Temp Utiltiy and Pedestrian Diversion at Ch230	148 days	2011/9/27	2012/3/24
1204	Temp UU diversion near Ch230	29 days	2011/9/27	2011/10/31
1205	Implementation of Pedestrian diversion Scheme	119 days	2011/11/1	2012/3/24
1206				
1207	Demolition of Interim Footbridge at Ch230	17 days	2011/11/1	2011/11/19
1208	Construct Temp crossing at Ch230	7 days	2011/11/1	2011/11/8
1209	Demolition of Interim Footbridge	10 days	2011/11/9	2011/11/19
1210				
1211	Gabion Wall (Ch 230-257 LHS) TG2/TG2A/TG2B (Inclined gabion)	26 days	2012/1/7	2012/2/9
1212	Remove Concrete Blocks and shotcrete + 1st No fine	5 days	2012/1/7	2012/1/12
1213	Excavation toe	6 days	2012/1/13	2012/1/19
1214	Mass concrete toe	6 days	2012/1/17	2012/1/26
1215	2nd stage no-fine concrete and inclined gabion	8 days	2012/1/27	2012/2/4
1216	Concrete blocks at slope toe and Backfilling	3 days	2012/2/6	2012/2/8
1217	Maintainence Staircase (Ch 242 LHS)	4 days	2012/2/6	2012/2/9
1218	Formwork and concreting	4 days	2012/2/6	2012/2/9
1219	Gabion Wall (Ch 257-270 LHS) TG4 (Inclined gabion)	18 days	2011/12/23	2012/1/16
1220	Remove Concrete Blocks and shotcrete + 1st No fine	5 days	2011/12/23	2011/12/30
1221	Excavation toe	5 days	2011/12/31	2012/1/6
1222	Mass concrete toe	5 days	2012/1/5	2012/1/10
1223	2nd stage no-fine concrete and inclined gabion	6 days	2012/1/7	2012/1/13
1224	Concrete blocks at slope toe and Backfilling	2 days	2012/1/14	2012/1/16
1225	Retaining Wall (Ch 275-315 LHS) TR1 (replaced by AD1)	35 days	2011/12/6	2012/1/18



專案: DC0705 River Prog
日期: 2011/12/29

要徑 任務 比較基準 里程碑 專案摘要報告 期限
要徑分隔 分割 比較基準分隔 摘要進度 外部任務
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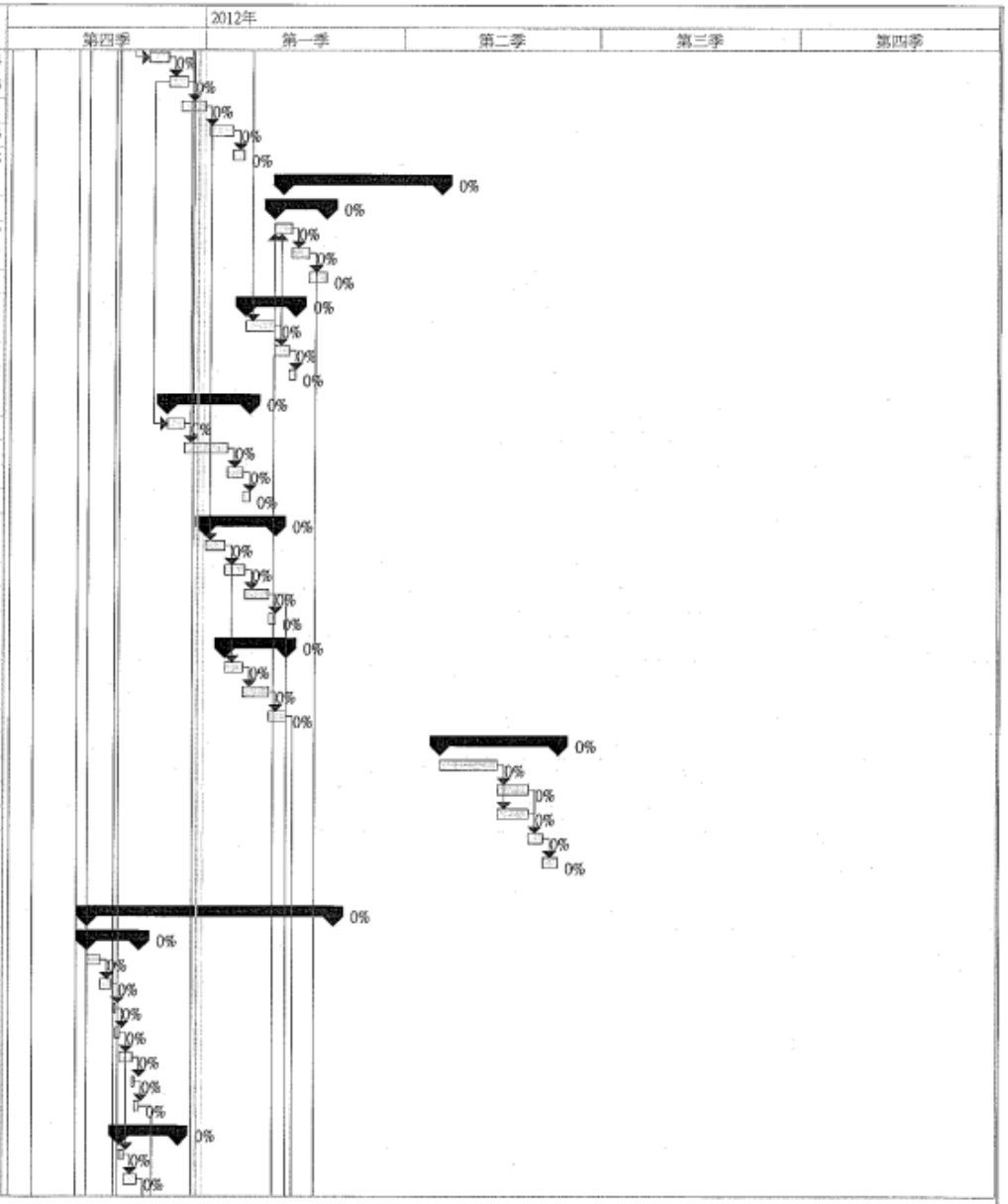
識別碼	任務名稱	工期	開始時間	完成時間
1226	Remove Concrete Blocks and shotcrete + 1st No fine	8 days	2011/12/6	2011/12/14
1227	Excavation toe	8 days	2011/12/15	2011/12/23
1228	Mass concrete toe	8 days	2011/12/21	2011/12/31
1229	2nd stage no-fine concrete and inclined gabion	10 days	2012/1/3	2012/1/13
1230	Concrete blocks at slope toe and Backfilling	4 days	2012/1/14	2012/1/18
1231	**Dminage & Footpath (Ch 200-307 LHS)**	**60 days**	**2012/2/6**	**2012/4/18**
1233	**River Bed formation (Ch205-236)**	**21 days**	**2012/2/2**	**2012/2/25**
1234	Excavation (Ch205-236)(From TB03 to Step2)	7 days	2012/2/2	2012/2/9
1235	Placement of Concrete Block at Embankment Toe	7 days	2012/2/10	2012/2/17
1236	Fixing steel meshes	7 days	2012/2/18	2012/2/25
1237	**Step 2 & Stilling Basin (Ch 236)**	**17 days**	**2012/1/20**	**2012/2/11**
1238	Construction of Step 2 (Assume Mass Concrete)	8 days	2012/1/20	2012/2/1
1239	Construction of Stilling Basin (base slab)	6 days	2012/2/2	2012/2/8
1240	Construction of Baffle Blocks	3 days	2012/2/9	2012/2/11
1241	**Cascade (Ch 275)**	**30 days**	**2011/12/15**	**2012/1/21**
1242	River Bed formation (Ch236-275)	7 days	2011/12/15	2011/12/22
1243	Construction of Cascade (Ch 275)	14 days	2011/12/23	2012/1/11
1244	Construction of Stilling Basin (base slab)	6 days	2012/1/12	2012/1/18
1245	Construction of Baffle Blocks	3 days	2012/1/19	2012/1/21
1246	**Step 3 (Ch 307)**	**24 days**	**2012/1/2**	**2012/2/2**
1247	River Bed formation (Ch275-307)	7 days	2012/1/2	2012/1/10
1248	Construction of Step 3 (Assume Mass Concrete)	8 days	2012/1/11	2012/1/19
1249	Construction of Stilling Basin (base slab)	6 days	2012/1/20	2012/1/30
1250	Construction of Baffle Blocks	3 days	2012/1/31	2012/2/2
1251	**River Bed formation (Ch 307-330)**	**21 days**	**2012/1/11**	**2012/2/7**
1252	Excavation (Ch205-236)(From 307-330)	7 days	2012/1/11	2012/1/18
1253	Placement of Concrete Block at Embankment Toe	7 days	2012/1/19	2012/1/30
1254	Fixing steel meshes	7 days	2012/1/31	2012/2/7
1255	**Lighting at CH 250-320**	**45 days**	**2012/4/19**	**2012/6/12**
1256	Construction of Drawpits / Ductings	21 days	2012/4/19	2012/5/15
1257	Public lighting Installation (CE2318)	12 days	2012/5/16	2012/5/29
1258	Public lighting Installation (CE2317)	12 days	2012/5/16	2012/5/29
1259	T&C	6 days	2012/5/30	2012/6/5
1260	Removal of existing lighting (VA1311-Z1)	6 days	2012/6/6	2012/6/12
1261				
1262	**Footbridge TB04 (Ch 330)**	**91 days**	**2011/11/9**	**2012/2/29**
1263	**Construction of Abutment A (RHS)**	**21 days**	**2011/11/9**	**2011/12/2**
1264	Excavation and Blinding	5 days	2011/11/9	2011/11/14
1265	Formwork and rebar fixing for base slab	5 days	2011/11/15	2011/11/19
1266	Concreting of base slab	1 day	2011/11/21	2011/11/21
1267	Stripping off formwork	2 days	2011/11/22	2011/11/23
1268	Rebar fixing and shuttering formwork for column	5 days	2011/11/24	2011/11/29
1269	Concreting of column	1 day	2011/11/30	2011/11/30
1270	Stripping off formwork	2 days	2011/12/1	2011/12/2
1271	**Construction of Abutment B (LHS)**	**23 days**	**2011/11/24**	**2011/12/20**
1272	Remove shotcrete	2 days	2011/11/24	2011/11/25
1273	Excavation and Blinding	5 days	2011/11/26	2011/12/1



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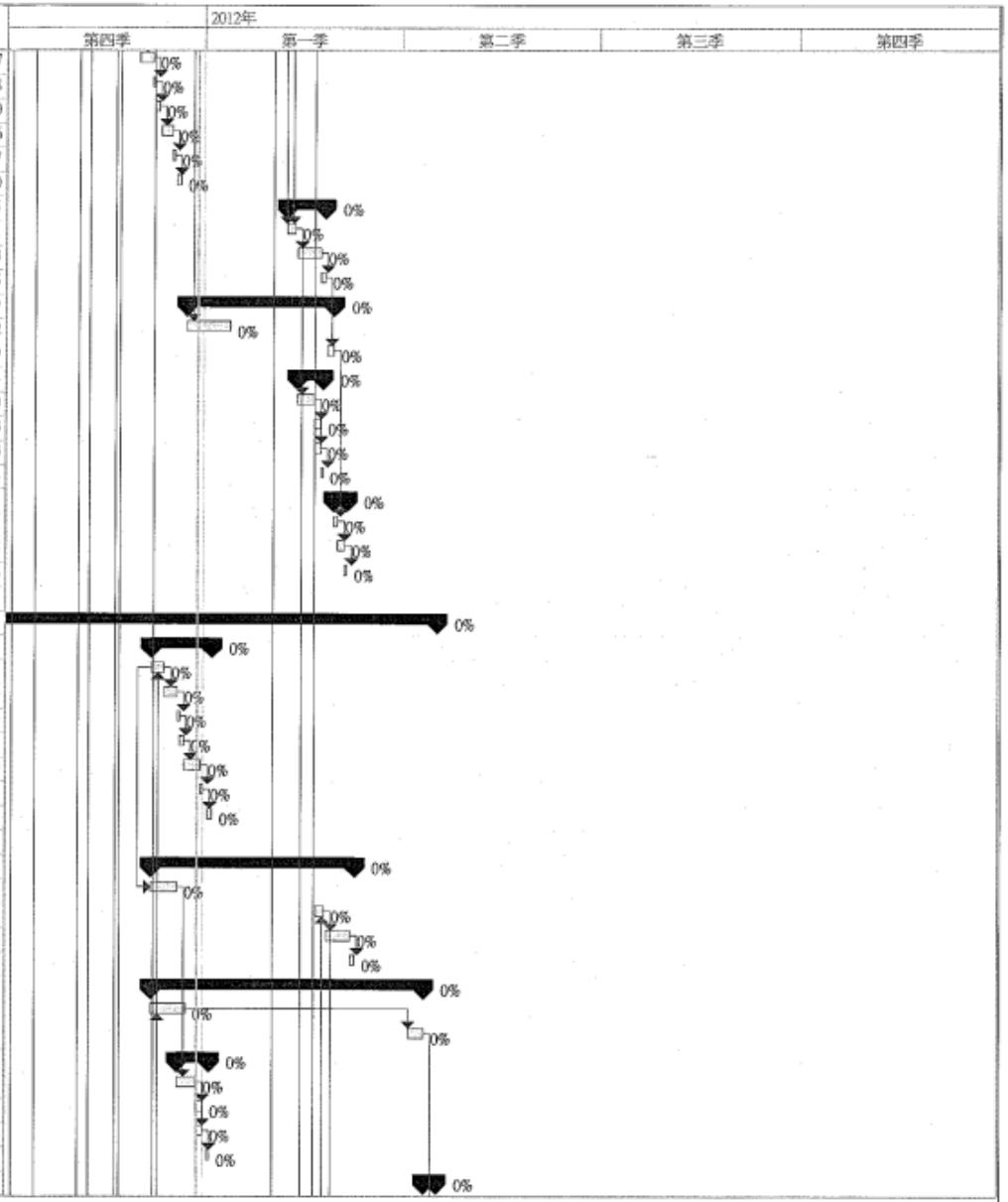
識別碼	任務名稱	工期	開始時間	完成時間
1274	Formwork and rebar fixing for base slab	5 days	2011/12/2	2011/12/7
1275	Concreting of base slab	1 day	2011/12/8	2011/12/8
1276	Stripping off formwork	2 days	2011/12/9	2011/12/10
1277	Rebar fixing and shuttering formwork for column	5 days	2011/12/12	2011/12/16
1278	Concreting of column	1 day	2011/12/17	2011/12/17
1279	Stripping off formwork	2 days	2011/12/19	2011/12/20
1280	**Construction of decking (steel deck)**	**16 days**	**2012/2/8**	**2012/2/25**
1281	Erection of steel deck+ conc deck	4 days	2012/2/8	2012/2/11
1282	Deck finishing	10 days	2012/2/13	2012/2/23
1283	Railing installation	2 days	2012/2/24	2012/2/25
1284	**Demolition of Bridge TB-A**	**52 days**	**2011/12/24**	**2012/2/29**
1285	Remove concrete pipes and reprovide footpath	14 days	2011/12/24	2012/1/12
1286	Complete removal of TB-A crossing	3 days	2012/2/27	2012/2/29
1287	**Lighting at Footbridge TB04**	**11 days**	**2012/2/13**	**2012/2/24**
1288	Construction of Drawpits / Ductings	7 days	2012/2/13	2012/2/20
1289	Public lighting Installation (CE2315)	3 days	2012/2/21	2012/2/23
1290	Public lighting Installation (CE2316)	3 days	2012/2/21	2012/2/23
1291	T&C	1 day	2012/2/24	2012/2/24
1292	**Construction of Gabion Wall at TB-A?**	**5 days**	**2012/3/1**	**2012/3/6**
1293	Excavation and Formation	2 days	2012/3/1	2012/3/2
1294	Gabion Wall Construction (adj TBA LHS)	2 days	2012/3/3	2012/3/5
1295	Backfilling	1 day	2012/3/6	2012/3/6
1296				
1297	**Footbridge TB05 (ch 350)**	**329 days**	**2011/3/10**	**2012/4/17**
1298	**Construction of Abutment A (LHS)**	**21 days**	**2011/12/8**	**2012/1/4**
1299	Excavation and Blinding	5 days	2011/12/8	2011/12/13
1300	Formwork and rebar fixing for base slab	5 days	2011/12/14	2011/12/19
1301	Concreting of base slab	1 day	2011/12/20	2011/12/20
1302	Stripping off formwork	2 days	2011/12/21	2011/12/22
1303	Rebar fixing and shuttering formwork for column	5 days	2011/12/23	2011/12/30
1304	Concreting of column	1 day	2011/12/31	2011/12/31
1305	Stripping off formwork	2 days	2012/1/3	2012/1/4
1306	**Construction of Abutment B (RHS)**	**19 days**	**2011/3/10**	**2011/3/31**
1314	**Construction of decking**	**75 days**	**2011/12/8**	**2012/3/10**
1315	Modification of table top	10 days	2011/12/8	2011/12/19
1316	Erection of steel deck+ conc deck	4 days	2012/2/22	2012/2/25
1317	Deck finishing	10 days	2012/2/27	2012/3/8
1318	Railing installation	2 days	2012/3/9	2012/3/10
1319	**Demolition of Bridge TB-B**	**99 days**	**2011/12/8**	**2012/4/11**
1320	Remove concrete pipes and reprovide footpath	14 days	2011/12/8	2011/12/23
1321	Remove concrete pipes and demolition works	3 days	2012/4/5	2012/4/11
1322	**Lighting at Footbridge TB05**	**10 days**	**2011/12/20**	**2012/1/3**
1323	Construction of Drawpits / Ductings	6 days	2011/12/20	2011/12/28
1324	Public lighting Installation (CE2313)	3 days	2011/12/29	2011/12/31
1325	Public lighting Installation (CE2314)	3 days	2011/12/29	2011/12/31
1326	T&C	1 day	2012/1/3	2012/1/3
1327	**Consturction of Gabion Wall at TB-B**	**5 days**	**2012/4/12**	**2012/4/17**



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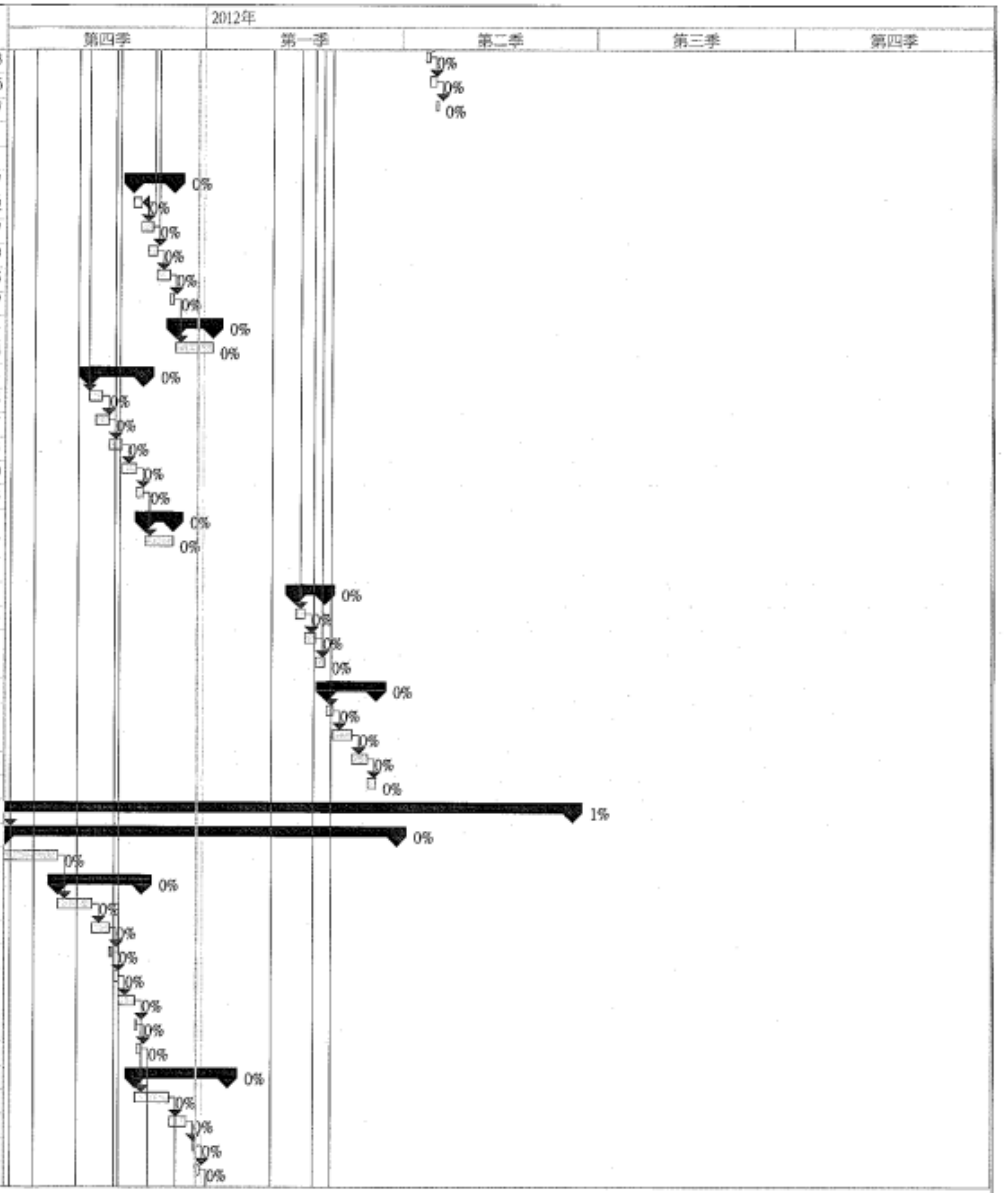
識別碼	任務名稱	工期	開始時間	完成時間
1328	Excavation and Formation	2 days	2012/4/12	2012/4/13
1329	Gabion Wall Construction (adj TBB LHS)	2 days	2012/4/14	2012/4/16
1330	Backfilling	1 day	2012/4/17	2012/4/17
1331				
1332				
1333	**Gabion Wall (Ch 335-345 LHS) TG2/TG2A**	**17 days**	**2011/11/29**	**2011/12/17**
1334	Remove Concrete Blocks and shotcrete + 1st No fine	4 days	2011/11/29	2011/12/2
1335	Excavation toe	4 days	2011/12/3	2011/12/7
1336	Mass concrete toe	4 days	2011/12/6	2011/12/9
1337	2nd stage no-fine concrete and inclined gabion	5 days	2011/12/10	2011/12/15
1338	Concrete blocks at slope toe and Backfilling	2 days	2011/12/16	2011/12/17
1339	**Drainage & Footpath (Ch 335-345 LHS)**	**12 days**	**2011/12/19**	**2012/1/4**
1340	Construction of drainage & footpath	12 days	2011/12/19	2012/1/4
1341	**Gabion Wall (Ch 330-345 RHS) TG2**	**22 days**	**2011/11/9**	**2011/12/3**
1342	Remove Concrete Blocks and shotcrete + 1st No fine	5 days	2011/11/9	2011/11/14
1343	Excavation toe	5 days	2011/11/12	2011/11/17
1344	Mass concrete toe	5 days	2011/11/18	2011/11/23
1345	2nd stage no-fine concrete and inclined gabion	6 days	2011/11/24	2011/11/30
1346	Concrete blocks at slope toe and Backfilling	3 days	2011/12/1	2011/12/3
1347	**Drainage & Footpath (Ch 330-340 RHS)**	**12 days**	**2011/12/5**	**2011/12/17**
1348	Construction of drainage & footpath	12 days	2011/12/5	2011/12/17
1349				
1350	**River Bed formation (Ch 330-350)**	**12 days**	**2012/2/13**	**2012/2/25**
1351	Excavation	4 days	2012/2/13	2012/2/16
1352	Placement of Concrete Block at Embankment Toe	4 days	2012/2/17	2012/2/21
1353	Fixing steel meshes	4 days	2012/2/22	2012/2/25
1354	**Step 4 (Ch 350)**	**20 days**	**2012/2/27**	**2012/3/20**
1355	River Bed formation (Ch340-350)	3 days	2012/2/27	2012/2/29
1356	Construction of Step 3 (Assume Mass Concrete)	8 days	2012/3/1	2012/3/9
1357	Construction of Stilling Basin (base slab)	6 days	2012/3/10	2012/3/16
1358	Construction of Baffle Blocks	3 days	2012/3/17	2012/3/20
1359	**Ch 45-230**	**506 days**	**2010/11/1**	**2012/6/20**
1360	**Additional Boulder Trap**	**149 days**	**2011/10/1**	**2012/3/30**
1361	Water diversion	20 days	2011/10/1	2011/10/25
1362	**Bay 1**	**34 days**	**2011/10/26**	**2011/12/3**
1363	Excavation and Blinding, temp work	14 days	2011/10/26	2011/11/10
1364	Formwork and rebar fixing of base slab	7 days	2011/11/11	2011/11/18
1365	Concreting of base slab	1 day	2011/11/19	2011/11/19
1366	Stripping off formwork	2 days	2011/11/21	2011/11/22
1367	Rebar fixing and shuttering formwork for Wall	7 days	2011/11/23	2011/11/30
1368	Concreting	1 day	2011/12/1	2011/12/1
1369	Stripping off formwork	2 days	2011/12/2	2011/12/3
1370	**Bay 2**	**34 days**	**2011/12/1**	**2012/1/12**
1371	Excavation and Blinding, temp work	14 days	2011/12/1	2011/12/16
1372	Formwork and rebar fixing of base slab	7 days	2011/12/17	2011/12/24
1373	Concreting of base slab	1 day	2011/12/28	2011/12/28
1374	Stripping off formwork	2 days	2011/12/29	2011/12/30



專案: DC0706 River Prog
日期: 2011/12/29

要徑 任務 比較基準 里程碑 專案摘要報告 期限
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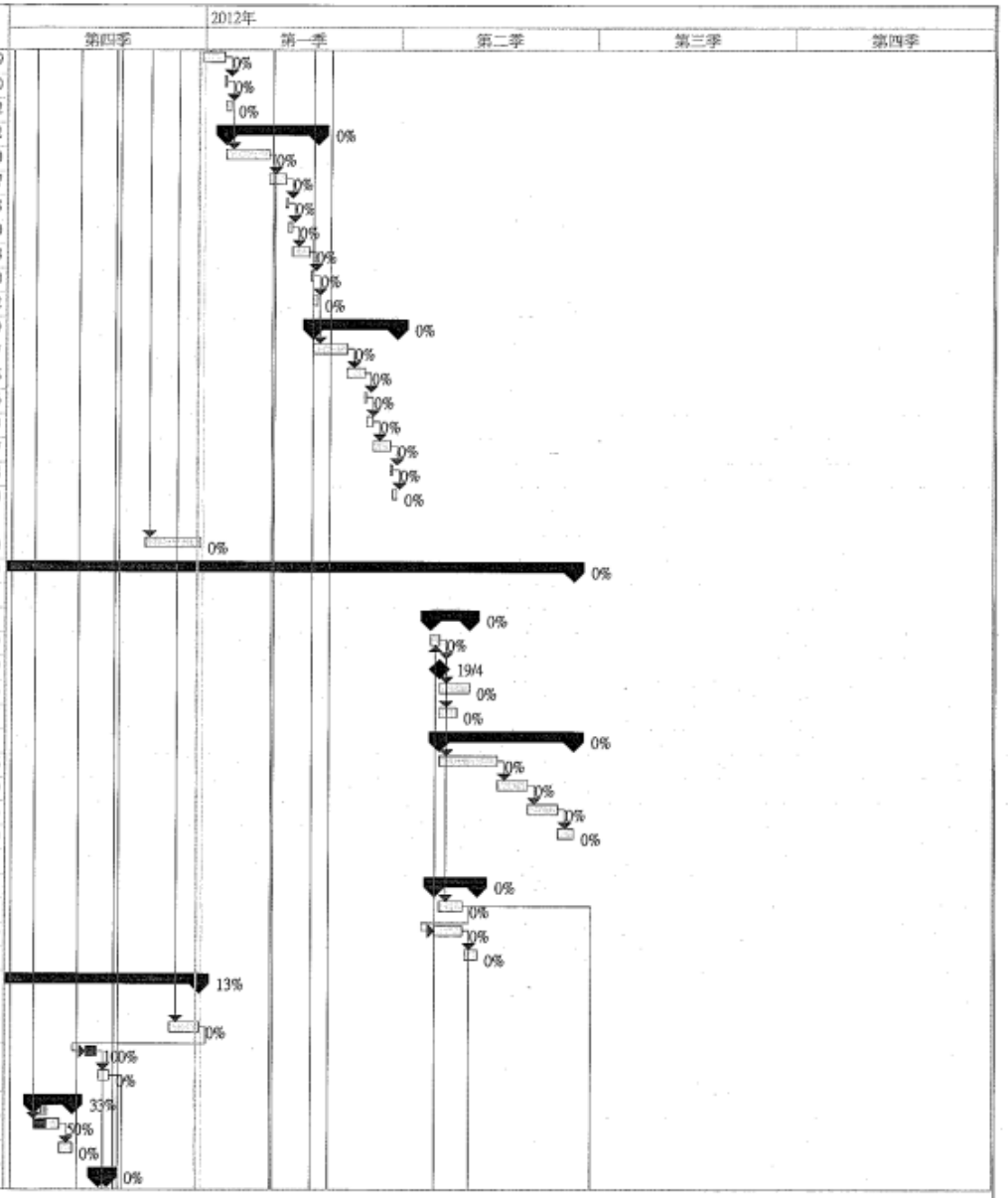
識別碼	任務名稱	工期	開始時間	完成時間
1375	Rebar fixing and shuttering formwork for Wall	7 days	2011/12/31	2012/1/9
1376	Concreting	1 day	2012/1/10	2012/1/10
1377	Stripping off formwork	2 days	2012/1/11	2012/1/12
1378	**Bay 3**	**34 days**	**2012/1/11**	**2012/2/22**
1379	Excavation and Blinding, temp work	14 days	2012/1/11	2012/1/30
1380	Formwork and rebar fixing of base slab	7 days	2012/1/31	2012/2/7
1381	Concreting of base slab	1 day	2012/2/8	2012/2/8
1382	Stripping off formwork	2 days	2012/2/9	2012/2/10
1383	Rebar fixing and shuttering formwork for Wall	7 days	2012/2/11	2012/2/18
1384	Concreting	1 day	2012/2/20	2012/2/20
1385	Stripping off formwork	2 days	2012/2/21	2012/2/22
1386	**Bay 4**	**34 days**	**2012/2/21**	**2012/3/30**
1387	Excavation and Blinding, temp work	14 days	2012/2/21	2012/3/7
1388	Formwork and rebar fixing of base slab	7 days	2012/3/8	2012/3/15
1389	Concreting of base slab	1 day	2012/3/16	2012/3/16
1390	Stripping off formwork	2 days	2012/3/17	2012/3/19
1391	Rebar fixing and shuttering formwork for Wall	7 days	2012/3/20	2012/3/27
1392	Concreting	1 day	2012/3/28	2012/3/28
1393	Stripping off formwork	2 days	2012/3/29	2012/3/30
1394				
1395	Access Road (LHS)	21 days	2011/12/5	2011/12/30
1396	**Footbridge TB02 (Ch 150)**	**506 days**	**2010/11/1**	**2012/6/20**
1397	**Construction of Abutment A (LHS)**	**23 days**	**2010/11/1**	**2010/11/23**
1405	**Construction of decking**	**14 days**	**2012/4/16**	**2012/5/3**
1406	Erection of steel deck+ conc deck	4 days	2012/4/16	2012/4/19
1407	XXConcreting	0 days	2012/4/19	2012/4/19
1408	Deck finishing	10 days	2012/4/20	2012/5/3
1409	Railing installation	7 days	2012/4/20	2012/4/27
1410	**Lighting at Footbridge TB02**	**51 days**	**2012/4/20**	**2012/6/20**
1411	Construction of Drawpits / Ductings	21 days	2012/4/20	2012/5/16
1412	Public lighting Installation (CE2308)	12 days	2012/5/17	2012/5/30
1413	Public lighting Installation (CE2309)	12 days	2012/5/31	2012/6/13
1414	Removal of existing lighting (VA2642-A1)	6 days	2012/6/14	2012/6/20
1415				
1416	**River Bed formation (Ch 100-150)**	**15 days**	**2012/4/18**	**2012/5/7**
1417	Excavation	8 days	2012/4/20	2012/4/30
1418	Placement of Concrete Block at Embankment Toe	10 days	2012/4/18	2012/4/30
1419	Fixing steel meshes	5 days	2012/5/2	2012/5/7
1420	**Gabion Wall (Ch 150-178 LHS) TG3A**	**222 days**	**2011/4/4**	**2011/12/30**
1421	Excavation and formation	19 days	2011/4/4	2011/4/29
1422	Construction of 450 Pipe/Pit at back of Gabion Wall	10 days	2011/12/17	2011/12/30
1423	Gabion Wall construction (Ch 150-178 LHS)	5 days	2011/11/8	2011/11/12
1424	Backfilling	5 days	2011/11/14	2011/11/18
1425	**Gabion Wall (Ch 178-230 LHS) TG5A/TG2**	**15 days**	**2011/10/15**	**2011/11/1**
1426	Gabion Wall construction (Ch 178-230 LHS)	10 days	2011/10/15	2011/10/26
1427	Backfilling	5 days	2011/10/27	2011/11/1
1428	**Maintainence Staircase (Ch 178 LHS)**	**4 days**	**2011/11/14**	**2011/11/17**



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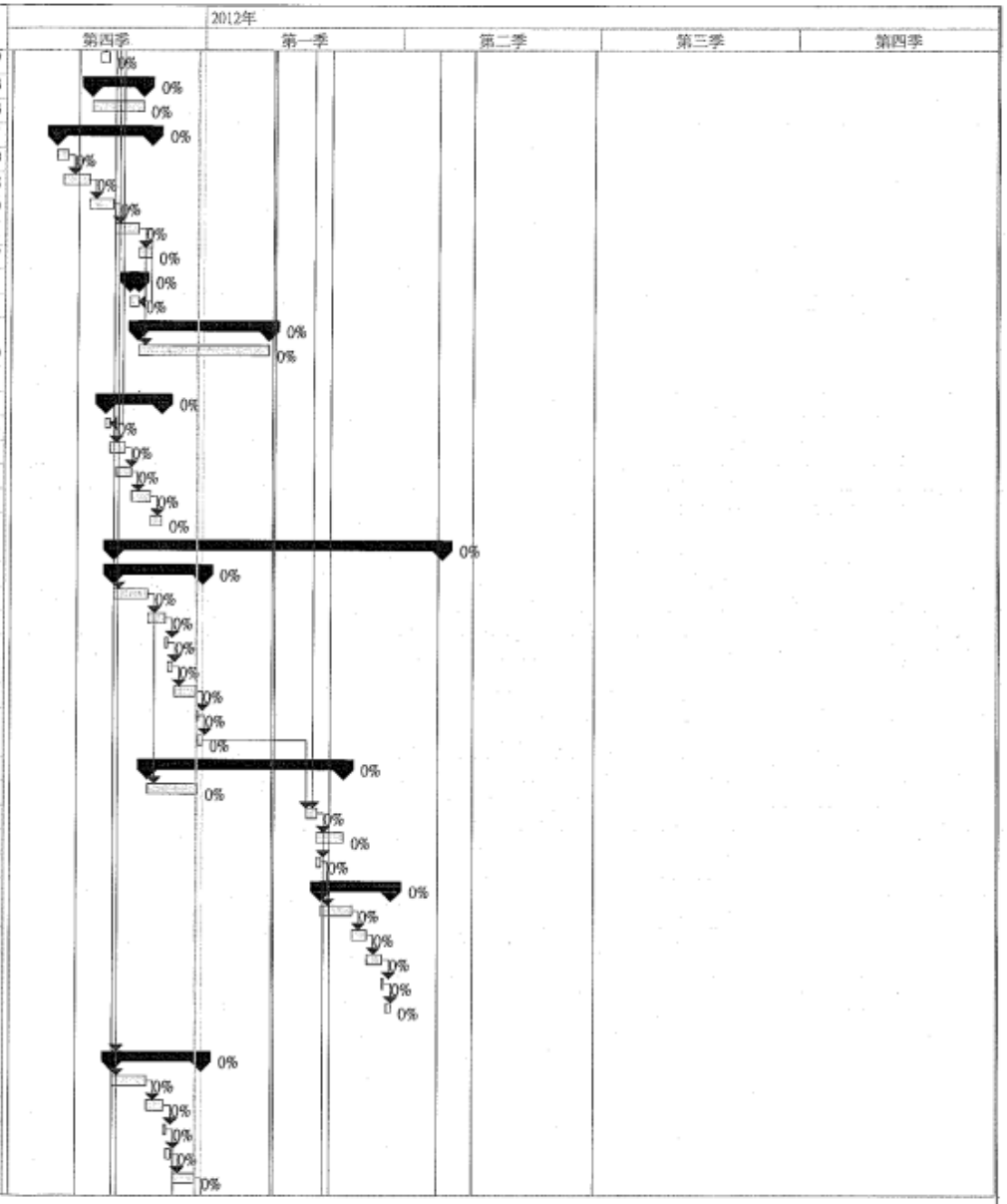
識別碼	任務名稱	工期	開始時間	完成時間
1429	Formwork and concreting	4 days	2011/11/14	2011/11/17
1430	**Drainage & Footpath (Ch 150-Ch230 LHS)**	**21 days**	**2011/11/10**	**2011/12/3**
1431	Drainage & Footpath	21 days	2011/11/10	2011/12/3
1432	**Gabion Wal (Ch 100-150 RHS) TG2**	**38 days**	**2011/10/25**	**2011/12/7**
1433	Remove Concrete Blocks and shotcrete + 1st No fine	5 days	2011/10/25	2011/10/29
1434	Excavation toe	10 days	2011/10/28	2011/11/8
1435	Mass concrete toe	10 days	2011/11/9	2011/11/19
1436	2nd stage no-fine concrete and inclined gabion	10 days	2011/11/21	2011/12/1
1437	Concrete blocks at slope toe and Backfilling	5 days	2011/12/2	2011/12/7
1438	**Maintainence Staircase (Ch 130 RHS)**	**4 days**	**2011/11/28**	**2011/12/1**
1439	Formwork and concreting	4 days	2011/11/28	2011/12/1
1440	**Drainage & Footpath (Ch 0-150 RHS)**	**45 days**	**2011/12/2**	**2012/1/30**
1441	Construction of drainage & footpath	45 days	2011/12/2	2012/1/30
1442				
1443	**Gabion Wall (Ch 150-178 RHS) TG4A**	**22 days**	**2011/11/17**	**2011/12/12**
1444	Remove Existing footpath and shotcrete	2 days	2011/11/17	2011/11/18
1445	Excavation and 1st stage No fine concrete	6 days	2011/11/19	2011/11/25
1446	Mass concrete wall	6 days	2011/11/22	2011/11/28
1447	2nd stage no-fine concrete and inclined gabion	8 days	2011/11/29	2011/12/7
1448	Concrete blocks at slope toe and Backfilling	4 days	2011/12/8	2011/12/12
1449	**Footbridge TB03 (Ch 200)**	**121 days**	**2011/11/21**	**2012/4/19**
1450	**Construction of Abutment B (RHS)**	**34 days**	**2011/11/21**	**2011/12/31**
1451	Excavation and Blinding, temp work	14 days	2011/11/21	2011/12/6
1452	Formwork and rebar fixing of base slab	7 days	2011/12/7	2011/12/14
1453	Concreting of base slab	1 day	2011/12/15	2011/12/15
1454	Stripping off formwork	2 days	2011/12/16	2011/12/17
1455	Rebar fixing and shuttering formwork for column	7 days	2011/12/19	2011/12/28
1456	Concreting	1 day	2011/12/29	2011/12/29
1457	Stripping off formwork	2 days	2011/12/30	2011/12/31
1458	**Construction of Decking (TB03)**	**71 days**	**2011/12/7**	**2012/3/5**
1459	Modification of LHS table top	18 days	2011/12/7	2011/12/29
1460	Erection of steel deck+ conc deck	4 days	2012/2/18	2012/2/22
1461	Deck finishing	10 days	2012/2/23	2012/3/5
1462	Railing installation	2 days	2012/2/23	2012/2/24
1463	**Lighting at Footbridge TB03**	**27 days**	**2012/2/25**	**2012/3/27**
1464	Construction of Drawpits / Ductings	12 days	2012/2/25	2012/3/9
1465	Public lighting Installation (CE2321)	6 days	2012/3/10	2012/3/16
1466	Public lighting Installation (CE2322)	6 days	2012/3/17	2012/3/23
1467	T&C	1 day	2012/3/24	2012/3/24
1468	Removal of existing lighting (VA1309-Z1)	2 days	2012/3/26	2012/3/27
1469				
1470	**TR6 at Ch220**	**34 days**	**2011/11/21**	**2011/12/31**
1471	Excavation and Blinding, temp work	14 days	2011/11/21	2011/12/6
1472	Formwork and rebar fixing of base slab	7 days	2011/12/7	2011/12/14
1473	Concreting of base slab	1 day	2011/12/15	2011/12/15
1474	Stripping off formwork	2 days	2011/12/16	2011/12/17
1475	Rebar fixing and shuttering formwork for column	7 days	2011/12/19	2011/12/28



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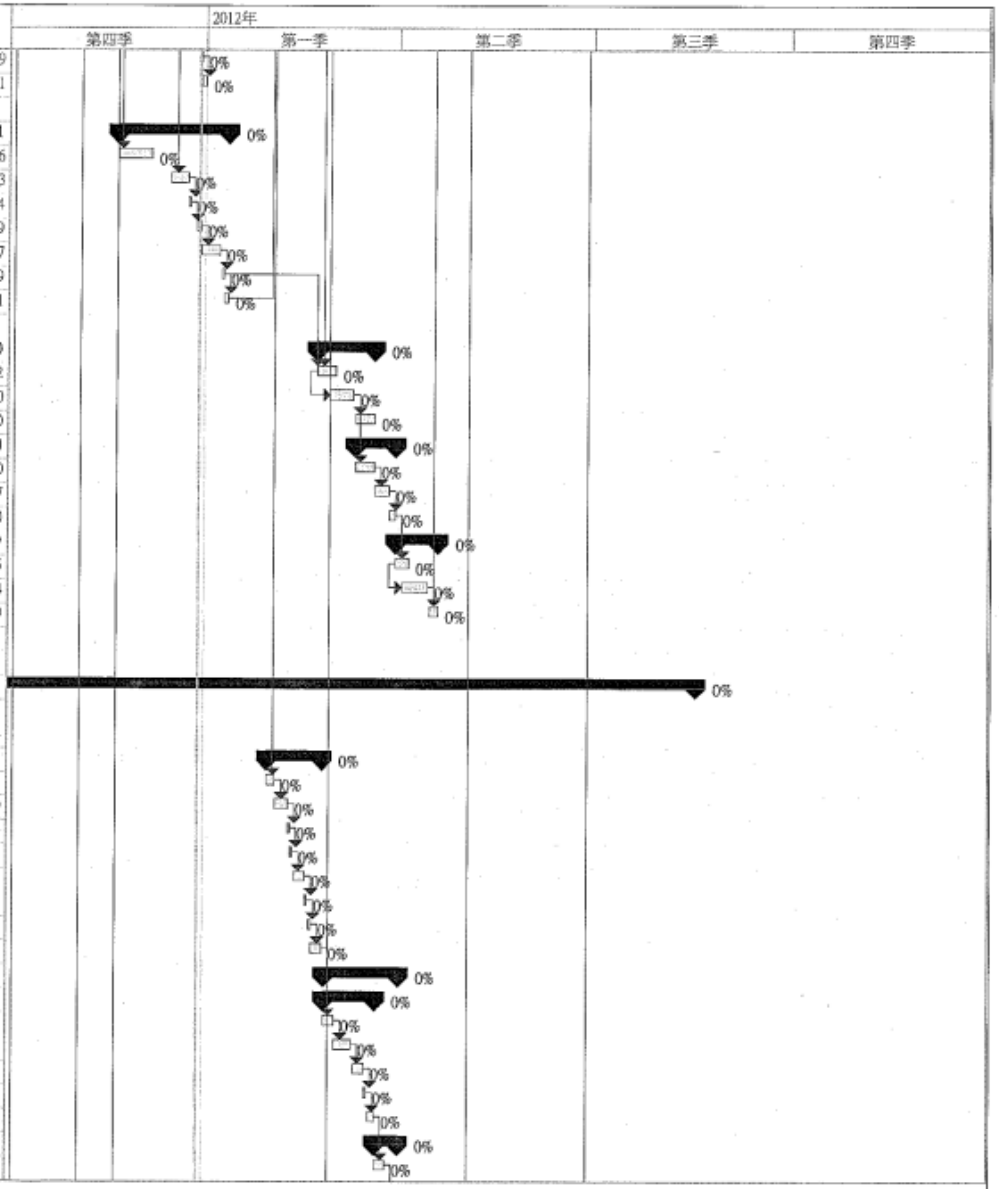
1476	Concreting	1 day	2011/12/29	2011/12/29
1477	Stripping off formwork	2 days	2011/12/30	2011/12/31
1478				
1479	**Cascade at Ch230**	**42 days**	**2011/11/21**	**2012/1/11**
1480	Excavation and Blinding, temp work	14 days	2011/11/21	2011/12/6
1481	Formwork and rebar fixing of base slab	7 days	2011/12/16	2011/12/23
1482	Concreting of base slab	1 day	2011/12/24	2011/12/24
1483	Stripping off formwork	2 days	2011/12/28	2011/12/29
1484	Rebar fixing and shuttering formwork for column	7 days	2011/12/30	2012/1/7
1485	Concreting	1 day	2012/1/9	2012/1/9
1486	Stripping off formwork	2 days	2012/1/10	2012/1/11
1487				
1488	**River Bed formation (Ch178-230)**	**23 days**	**2012/2/23**	**2012/3/20**
1489	River Bed formation (Ch178-230)	8 days	2012/2/23	2012/3/2
1490	Placement of Concrete Block at Embankment Toe	10 days	2012/2/29	2012/3/10
1491	Fixing steel meshes	8 days	2012/3/12	2012/3/20
1492	**Step 1 (Ch 178)**	**17 days**	**2012/3/12**	**2012/3/30**
1493	Construction of Step 3 (Assume Mass Concrete)	8 days	2012/3/12	2012/3/20
1494	Construction of Stilling Basin (base slab)	6 days	2012/3/21	2012/3/27
1495	Construction of Baffle Blocks	3 days	2012/3/28	2012/3/30
1496	**River Bed formation (Ch 150-178)**	**14 days**	**2012/3/31**	**2012/4/19**
1497	Excavation	5 days	2012/3/31	2012/4/5
1498	Placement of Concrete Block at Embankment Toe	7 days	2012/4/3	2012/4/14
1499	Fixing steel meshes	4 days	2012/4/16	2012/4/19
1500				
1501				
1502	**Ch -23-45**	**617 days**	**2010/8/30**	**2012/8/17**
1503	**Retaining Wall at Access D (Boulder Trap)**	**41 days**	**2010/9/1**	**2010/10/11**
1523	**Filling Work at Boulder Trap (RHS of downstream)**	**6 days**	**2010/8/30**	**2010/9/4**
1525	**Dwarf Wall (Ch 60-75) RHS**	**23 days**	**2012/1/31**	**2012/2/25**
1526	Excavation and Blinding	4 days	2012/1/31	2012/2/3
1527	Formwork and rebar fixing of base slab	5 days	2012/2/4	2012/2/9
1528	Concreting of base slab	1 day	2012/2/10	2012/2/10
1529	Stripping off formwork	1 day	2012/2/11	2012/2/11
1530	Rebar fixing and shuttering formwork for column	5 days	2012/2/13	2012/2/17
1531	Concreting	1 day	2012/2/18	2012/2/18
1532	Stripping off formwork	1 day	2012/2/20	2012/2/20
1533	Backfill	5 days	2012/2/21	2012/2/25
1534	**Box Culvert 03 (Ch 45)**	**31 days**	**2012/2/27**	**2012/4/1**
1535	**Construction of Base Slab**	**21 days**	**2012/2/27**	**2012/3/21**
1536	Remove boulder and wire fence	5 days	2012/2/27	2012/3/2
1537	Excavation and Blinding	7 days	2012/3/3	2012/3/10
1538	Formwork and rebar fixing	5 days	2012/3/12	2012/3/16
1539	Concreting	1 day	2012/3/17	2012/3/17
1540	Stripping off formwork	3 days	2012/3/19	2012/3/21
1541	**Construction of Wall Stem and Top Slab**	**10 days**	**2012/3/22**	**2012/4/1**
1542	Formwork and rebar fixing	4 days	2012/3/22	2012/3/26



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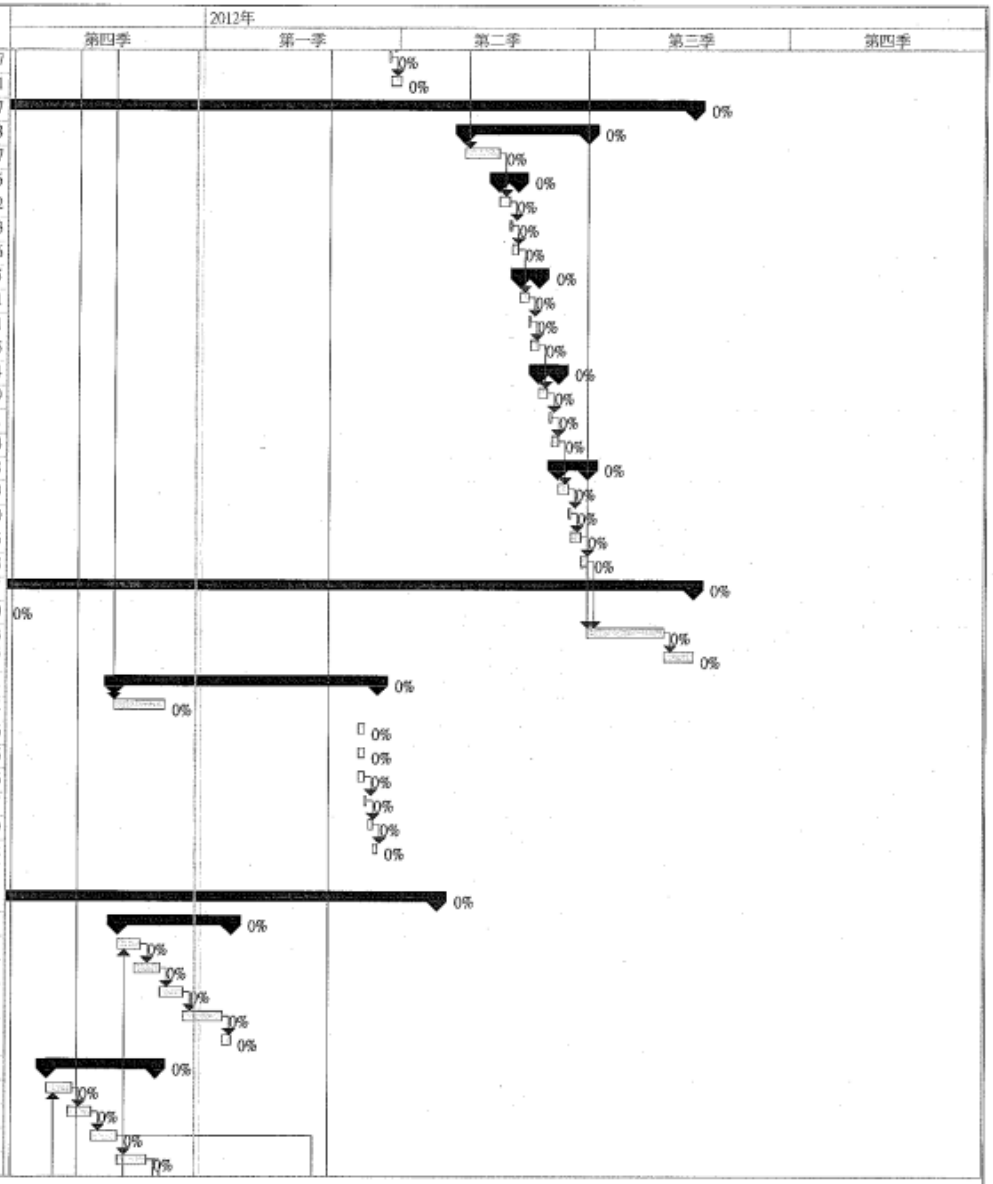
識別碼	任務名稱	工期	開始時間	完成時間
1543	Concreting	1 day	2012/3/27	2012/3/27
1544	Stripping off formwork	5 days	2012/3/28	2012/4/1
1545	**Retaining Wall at Access D (Boulder Trap)**	**326 days**	**2011/7/18**	**2012/8/17**
1546	**Retaining Wall (LHS)**	**49 days**	**2012/5/2**	**2012/6/28**
1547	Excavation and blinding	14 days	2012/5/2	2012/5/17
1548	**Construction of Base Slab, Bay 2**	**8 days**	**2012/5/18**	**2012/5/26**
1549	Formwork and rebar fixing	4 days	2012/5/18	2012/5/22
1550	Concreting	1 day	2012/5/23	2012/5/23
1551	Stripping off formwork	3 days	2012/5/24	2012/5/26
1552	**Construction of Base Slab, Bay 1**	**8 days**	**2012/5/28**	**2012/6/5**
1553	Formwork and rebar fixing	4 days	2012/5/28	2012/5/31
1554	Concreting	1 day	2012/6/1	2012/6/1
1555	Stripping off formwork	3 days	2012/6/2	2012/6/5
1556	**Construction of Wall Stem, Bay 2**	**8 days**	**2012/6/6**	**2012/6/14**
1557	Formwork and rebar fixing	4 days	2012/6/6	2012/6/9
1558	Concreting	1 day	2012/6/11	2012/6/11
1559	Stripping off formwork	3 days	2012/6/12	2012/6/14
1560	**Construction of Wall Stem, Bay 1**	**11 days**	**2012/6/15**	**2012/6/28**
1561	Formwork and rebar fixing	4 days	2012/6/15	2012/6/19
1562	Concreting	1 day	2012/6/20	2012/6/20
1563	Stripping off formwork	3 days	2012/6/21	2012/6/25
1564	Backfill the Retaining Wall	3 days	2012/6/26	2012/6/28
1565	**Vehicular Access D**	**326 days**	**2011/7/18**	**2012/8/17**
1566	Road Kerb and formation	64 days	2011/7/18	2011/9/30
1567	Pavement	30 days	2012/6/29	2012/8/3
1568	Railing and street furniture	12 days	2012/8/4	2012/8/17
1569	**Lighting at Access D**	**100 days**	**2011/11/21**	**2012/3/22**
1570	Construction of Drawpits / Ductings	21 days	2011/11/21	2011/12/14
1571	Public lighting Installation (CE2300)	3 days	2012/3/14	2012/3/16
1572	Public lighting Installation (CE2301)	3 days	2012/3/14	2012/3/16
1573	Public lighting Installation (CE2302)	3 days	2012/3/14	2012/3/16
1574	T&C	1 day	2012/3/17	2012/3/17
1575	Removal of existing lighting (VA1278-A1)	2 days	2012/3/19	2012/3/20
1576	Removal of existing lighting (VA1279-A1)	2 days	2012/3/21	2012/3/22
1577				
1578	**Ch 350-450**	**393 days**	**2011/1/3**	**2012/4/19**
1579	**Gabion Wall (Ch 350-400 LHS) TR1 (AD)**	**43 days**	**2011/11/23**	**2012/1/14**
1580	Remove Concrete Blocks and shotcrete + 1st No fine	10 days	2011/11/23	2011/12/3
1581	Excavation toe	10 days	2011/12/1	2011/12/12
1582	Mass concrete toe	10 days	2011/12/13	2011/12/23
1583	2nd stage no-fine concrete and inclined gabion	12 days	2011/12/24	2012/1/10
1584	Concrete blocks at slope toe and Backfilling	4 days	2012/1/11	2012/1/14
1585	**Gabion Wall (Ch 400-450 LHS) TR1 (AD)**	**44 days**	**2011/10/21**	**2011/12/10**
1586	Remove Concrete Blocks and shotcrete + 1st No fine	10 days	2011/10/21	2011/11/1
1587	Excavation toe	10 days	2011/10/31	2011/11/10
1588	Mass concrete toe	10 days	2011/11/11	2011/11/22
1589	2nd stage no-fine concrete and inclined gabion	12 days	2011/11/23	2011/12/6



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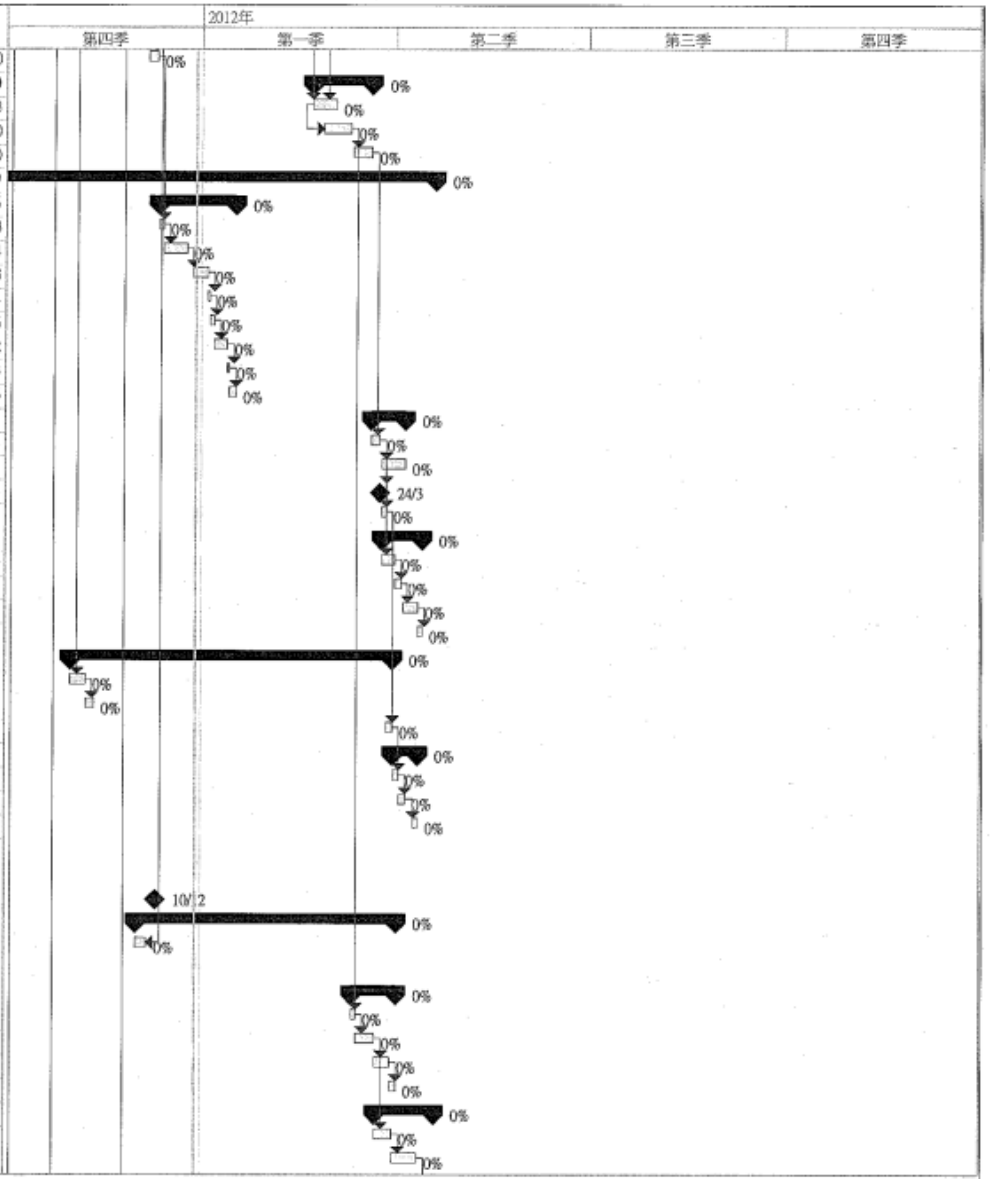
1590	Concrete blocks at slope toe and Backfilling	4 days	2011/12/7	2011/12/10
1591	**River Bed formation (Ch 350-400)**	**24 days**	**2012/2/22**	**2012/3/20**
1592	Excavation	10 days	2012/2/22	2012/3/3
1593	Placement of Concrete Block at Embankment Toe	12 days	2012/2/27	2012/3/10
1594	Fixing steel meshes	8 days	2012/3/12	2012/3/20
1595	**Footbridge TB06 (Ch 400)**	**393 days**	**2011/1/3**	**2012/4/19**
1596	**Construction of Abutment A (LHS)**	**28 days**	**2011/12/12**	**2012/1/16**
1597	Remove Concrete block and shotcrete	2 days	2011/12/12	2011/12/13
1598	Excavation and Blinding	10 days	2011/12/14	2011/12/24
1599	Formwork and rebar fixing of base slab	5 days	2011/12/28	2012/1/3
1600	Concreting of base slab	1 day	2012/1/4	2012/1/4
1601	Stripping off formwork	2 days	2012/1/5	2012/1/6
1602	Rebar fixing and shuttering formwork for column	5 days	2012/1/7	2012/1/12
1603	Concreting	1 day	2012/1/13	2012/1/13
1604	Stripping off formwork	2 days	2012/1/14	2012/1/16
1605	**Construction of decking**	**14 days**	**2012/3/21**	**2012/4/5**
1606	Erection of steel deck+ conc deck	4 days	2012/3/21	2012/3/24
1607	Deck finishing	10 days	2012/3/26	2012/4/5
1608	NA	0 days	2012/3/24	2012/3/24
1609	Railing installation	2 days	2012/3/26	2012/3/27
1610	**Lighting at Footbridge TB06**	**14 days**	**2012/3/26**	**2012/4/13**
1611	Construction of Drawpits / Ductings	6 days	2012/3/26	2012/3/31
1612	Public lighting Installation (CE2311)	3 days	2012/4/1	2012/4/3
1613	Public lighting Installation (CE2310)	3 days	2012/4/5	2012/4/11
1614	T&C	2 days	2012/4/12	2012/4/13
1615	**Demolition of Bridge TB-C**	**124 days**	**2011/11/1**	**2012/3/30**
1616	Water Pipe Diversion	6 days	2011/11/1	2011/11/7
1617	Remove concrete pipes and reprovide footpath	4 days	2011/11/8	2011/11/11
1618	Remove concrete pipes and demolition works	3 days	2012/3/28	2012/3/30
1619	**Consturction of Gabion Wall at TB-C**	**7 days**	**2012/3/31**	**2012/4/11**
1620	Excavation and Formation	3 days	2012/3/31	2012/4/2
1621	Gabion Wall Construction (TBC LHS)	2 days	2012/4/3	2012/4/5
1622	Backfilling	2 days	2012/4/10	2012/4/11
1623				
1624	**Gabion Wall (Ch 400-450 RHS) TR1 (replaced by AD1)**	**30 days**	**2011/1/3**	**2011/2/1**
1628	**Gabion Wall (Ch 400-450 LHS) TR1 (replaced by AD1)**	**0 days**	**2011/12/10**	**2011/12/10**
1633	**Maintainence Staircase (Ch 420 LHS)**	**99 days**	**2011/12/2**	**2012/4/1**
1634	Formwork and concreting	4 days	2011/12/2	2011/12/6
1635				
1636	**Step 5 (Ch 410)**	**19 days**	**2012/3/12**	**2012/4/1**
1637	River Bed Formation (Ch400-410)	2 days	2012/3/12	2012/3/13
1638	Construction of Step 3 (Assume Mass Concrete)	8 days	2012/3/14	2012/3/22
1639	Construction of Stilling Basin (base slab)	6 days	2012/3/23	2012/3/29
1640	Construction of Baffle Blocks	3 days	2012/3/30	2012/4/1
1641	**River Bed formation (Ch 410-450)**	**21 days**	**2012/3/23**	**2012/4/19**
1642	Excavation	7 days	2012/3/23	2012/3/30
1643	Placement of Concrete Block at Embankment Toe	7 days	2012/3/31	2012/4/11



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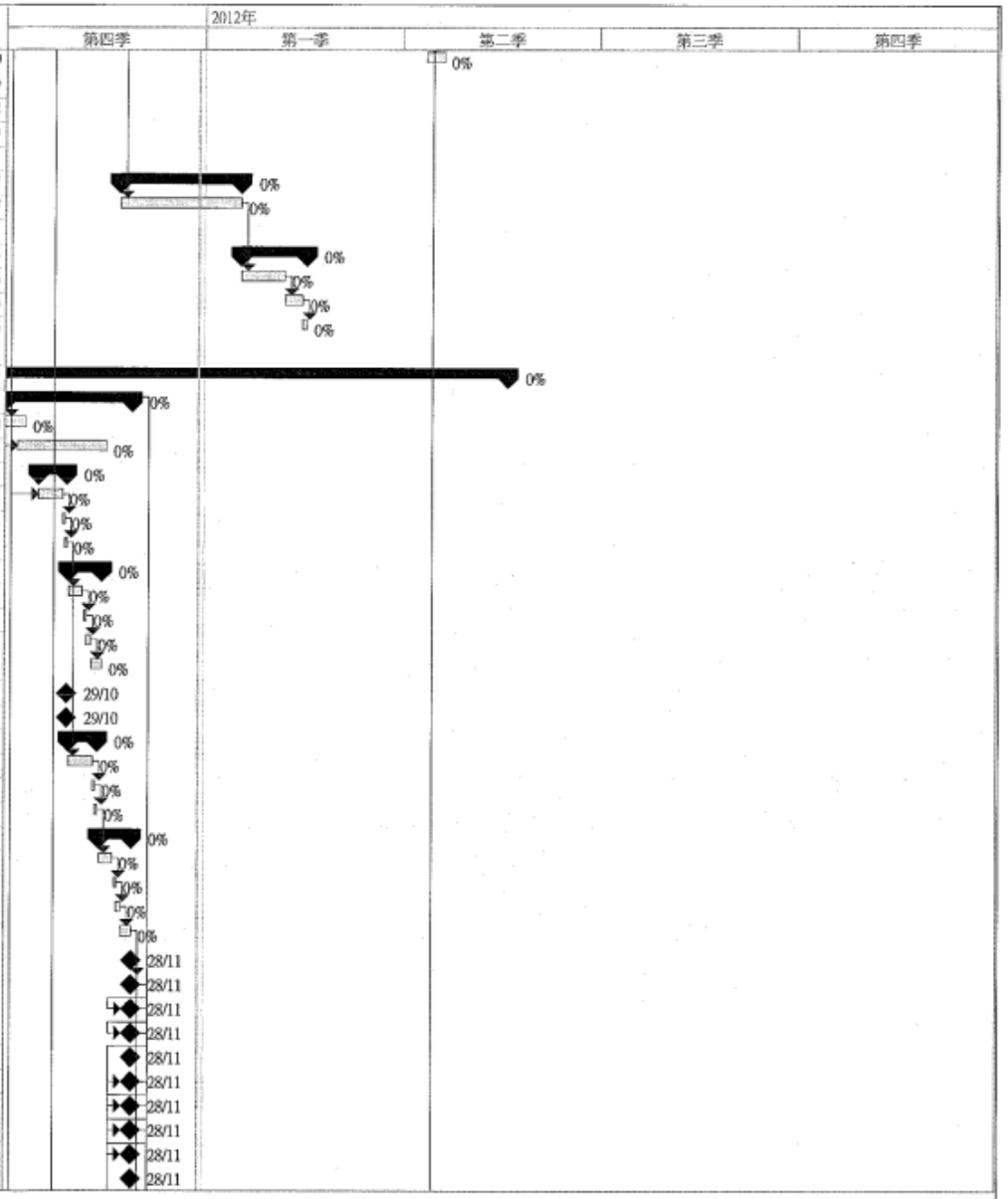
1644	Fixing steel meshes	7 days	2012/4/12	2012/4/19
1645	Box Culvert TB01 (Ch 450)	40 days	2011/3/10	2011/4/29
1646	Construction of Base Slab	21 days	2011/3/10	2011/4/2
1651	Construction of Wall Stem and Top Slab	19 days	2011/4/4	2011/4/29
1655				
1656	Drainage & Footpath (Ch350-450) LHS & RHS	45 days	2011/11/23	2012/1/17
1657	Drainage & Footpath (Ch350-450) LHS & RHS	45 days	2011/11/23	2012/1/17
1658				
1659	Lighting at CH 350-380	23 days	2012/1/18	2012/2/16
1660	Construction of Drawpits / Ductings	14 days	2012/1/18	2012/2/6
1661	Public lighting Installation (CE2312)	7 days	2012/2/7	2012/2/14
1662	T&C	2 days	2012/2/15	2012/2/16
1663				
1664	Ch 450-525	350 days	2011/3/16	2012/5/19
1665	Retaining Wall (ch 450-500) TR2 (RHS)	49 days	2011/10/1	2011/11/28
1666	Remove Concrete block and shotcrete	7 days	2011/10/1	2011/10/10
1667	Excavation and Formation	35 days	2011/10/7	2011/11/16
1668	Base Slab Construction Bay 1+3 (RHS)	12 days	2011/10/17	2011/10/29
1669	Formwork and rebar fixing	10 days	2011/10/17	2011/10/27
1670	Concreting	1 day	2011/10/28	2011/10/28
1671	Stripping off formwork	1 day	2011/10/29	2011/10/29
1672	Wall Stem Construction Bay 1+3 (RHS)	13 days	2011/10/31	2011/11/14
1673	Formwork and rebar fixing	6 days	2011/10/31	2011/11/5
1674	Concreting	1 day	2011/11/7	2011/11/7
1675	Stripping off formwork	2 days	2011/11/8	2011/11/9
1676	Backfill	4 days	2011/11/10	2011/11/14
1677	Base Slab Construction Bay 2 (RHS) del	0 days	2011/10/29	2011/10/29
1681	Wall Stem Construction Bay 2 (RHS) del	0 days	2011/10/29	2011/10/29
1686	Base Slab Construction Bay 2 + 4 + step 6(RHS)	12 days	2011/10/31	2011/11/12
1687	Formwork and rebar fixing	10 days	2011/10/31	2011/11/10
1688	Concreting	1 day	2011/11/11	2011/11/11
1689	Stripping off formwork	1 day	2011/11/12	2011/11/12
1690	Wall Stem Construction Bay 2 + 4(RHS)	13 days	2011/11/14	2011/11/28
1691	Formwork and rebar fixing	6 days	2011/11/14	2011/11/19
1692	Concreting	1 day	2011/11/21	2011/11/21
1693	Stripping off formwork	2 days	2011/11/22	2011/11/23
1694	Backfill	4 days	2011/11/24	2011/11/28
1695	NA	0 days	2011/11/28	2011/11/28
1696	NA	0 days	2011/11/28	2011/11/28
1697	NA	0 days	2011/11/28	2011/11/28
1698	NA	0 days	2011/11/28	2011/11/28
1699	NA	0 days	2011/11/28	2011/11/28
1700	NA	0 days	2011/11/28	2011/11/28
1701	NA	0 days	2011/11/28	2011/11/28
1702	NA	0 days	2011/11/28	2011/11/28
1703	NA	0 days	2011/11/28	2011/11/28
1704	NA	0 days	2011/11/28	2011/11/28



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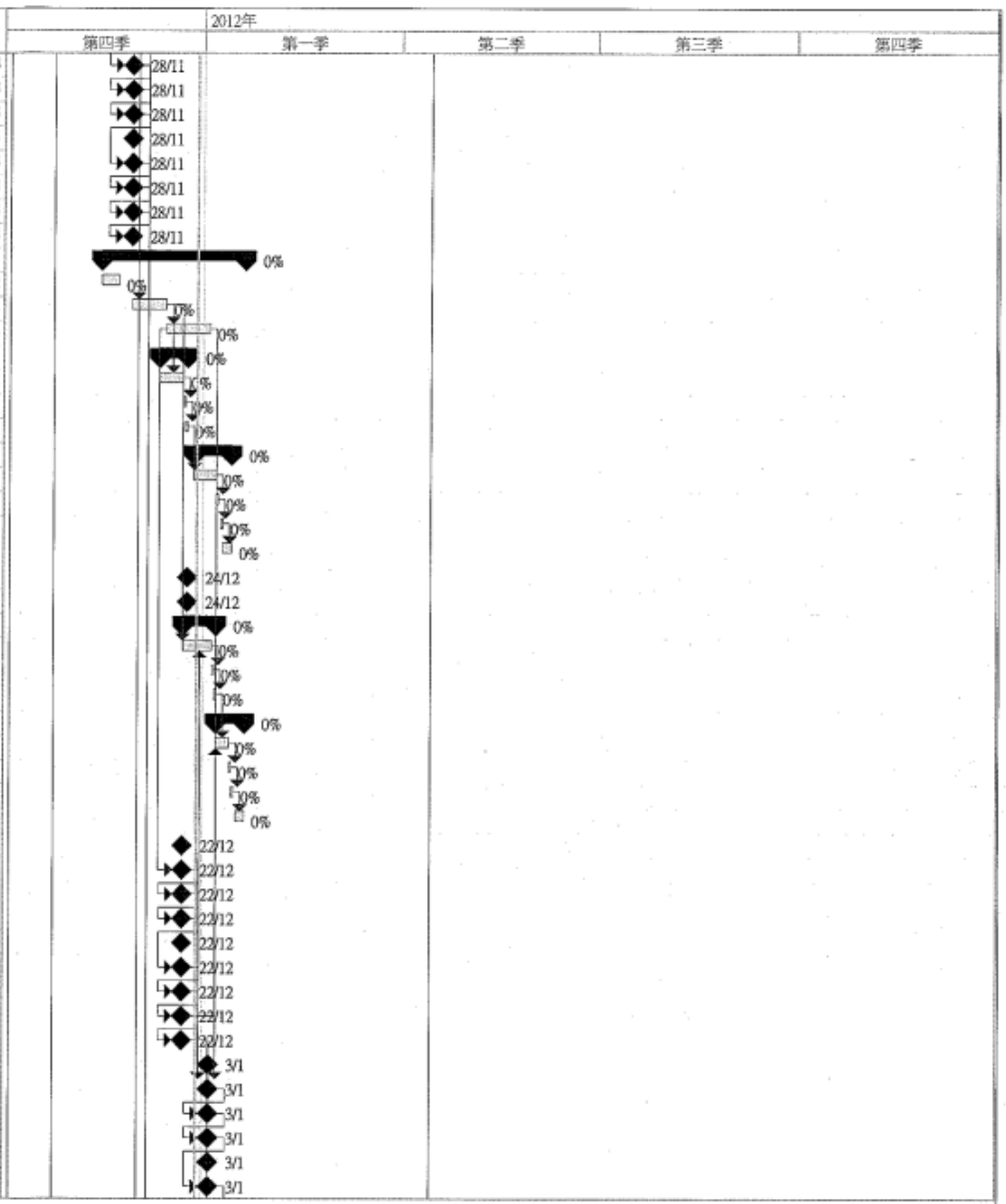
識別碼	任務名稱	工期	開始時間	完成時間
1705	NA	0 days	2011/11/28	2011/11/28
1706	NA	0 days	2011/11/28	2011/11/28
1707	NA	0 days	2011/11/28	2011/11/28
1708	NA	0 days	2011/11/28	2011/11/28
1709	NA	0 days	2011/11/28	2011/11/28
1710	NA	0 days	2011/11/28	2011/11/28
1711	NA	0 days	2011/11/28	2011/11/28
1712	NA	0 days	2011/11/28	2011/11/28
1713	Retaining Wall (ch 450-500) TR2 (LHS)	54 days	2011/11/15	2012/1/19
1714	Demolition of House 2 Sha Po Tsai	7 days	2011/11/15	2011/11/22
1715	Excavation and Formation for TR2 Bay 1 to Bay 3	14 days	2011/11/29	2011/12/14
1716	Excavation and Formation for TR2 Bay 4 to Bay 5	14 days	2011/12/15	2012/1/3
1717	Base Slab Construction Bay 1+3 (LHS)	12 days	2011/12/12	2011/12/24
1718	Formwork and rebar fixing (with DWF)	10 days	2011/12/12	2011/12/22
1719	Concreting	1 day	2011/12/23	2011/12/23
1720	Stripping off formwork	1 day	2011/12/24	2011/12/24
1721	Wall Stem Construction Bay 1+3 (LHS)	14 days	2011/12/28	2012/1/13
1722	Formwork and rebar fixing	8 days	2011/12/28	2012/1/6
1723	Concreting	1 day	2012/1/7	2012/1/7
1724	Stripping off formwork	1 day	2012/1/9	2012/1/9
1725	Backfill	4 days	2012/1/10	2012/1/13
1726	Base Slab Construction Bay 2 (LHS) del	0 days	2011/12/24	2011/12/24
1730	Wall Stem Construction Bay 2 (LHS) del	0 days	2011/12/24	2011/12/24
1735	Base Slab Construction Bay 2 +4 + step 6 (LHS)	10 days	2011/12/23	2012/1/6
1736	Formwork and rebar fixing (with DWF)	8 days	2011/12/23	2012/1/4
1737	Concreting	1 day	2012/1/5	2012/1/5
1738	Stripping off formwork	1 day	2012/1/6	2012/1/6
1739	Wall Stem Construction Bay 2 + 4 (LHS)	11 days	2012/1/7	2012/1/19
1740	Formwork and rebar fixing	5 days	2012/1/7	2012/1/12
1741	Concreting	1 day	2012/1/13	2012/1/13
1742	Stripping off formwork	1 day	2012/1/14	2012/1/14
1743	Backfill	4 days	2012/1/16	2012/1/19
1744	NA	0 days	2011/12/22	2011/12/22
1745	NA	0 days	2011/12/22	2011/12/22
1746	NA	0 days	2011/12/22	2011/12/22
1747	NA	0 days	2011/12/22	2011/12/22
1748	NA	0 days	2011/12/22	2011/12/22
1749	NA	0 days	2011/12/22	2011/12/22
1750	NA	0 days	2011/12/22	2011/12/22
1751	NA	0 days	2011/12/22	2011/12/22
1752	NA	0 days	2011/12/22	2011/12/22
1753	NA	0 days	2012/1/3	2012/1/3
1754	NA	0 days	2012/1/3	2012/1/3
1755	NA	0 days	2012/1/3	2012/1/3
1756	NA	0 days	2012/1/3	2012/1/3
1757	NA	0 days	2012/1/3	2012/1/3
1758	NA	0 days	2012/1/3	2012/1/3



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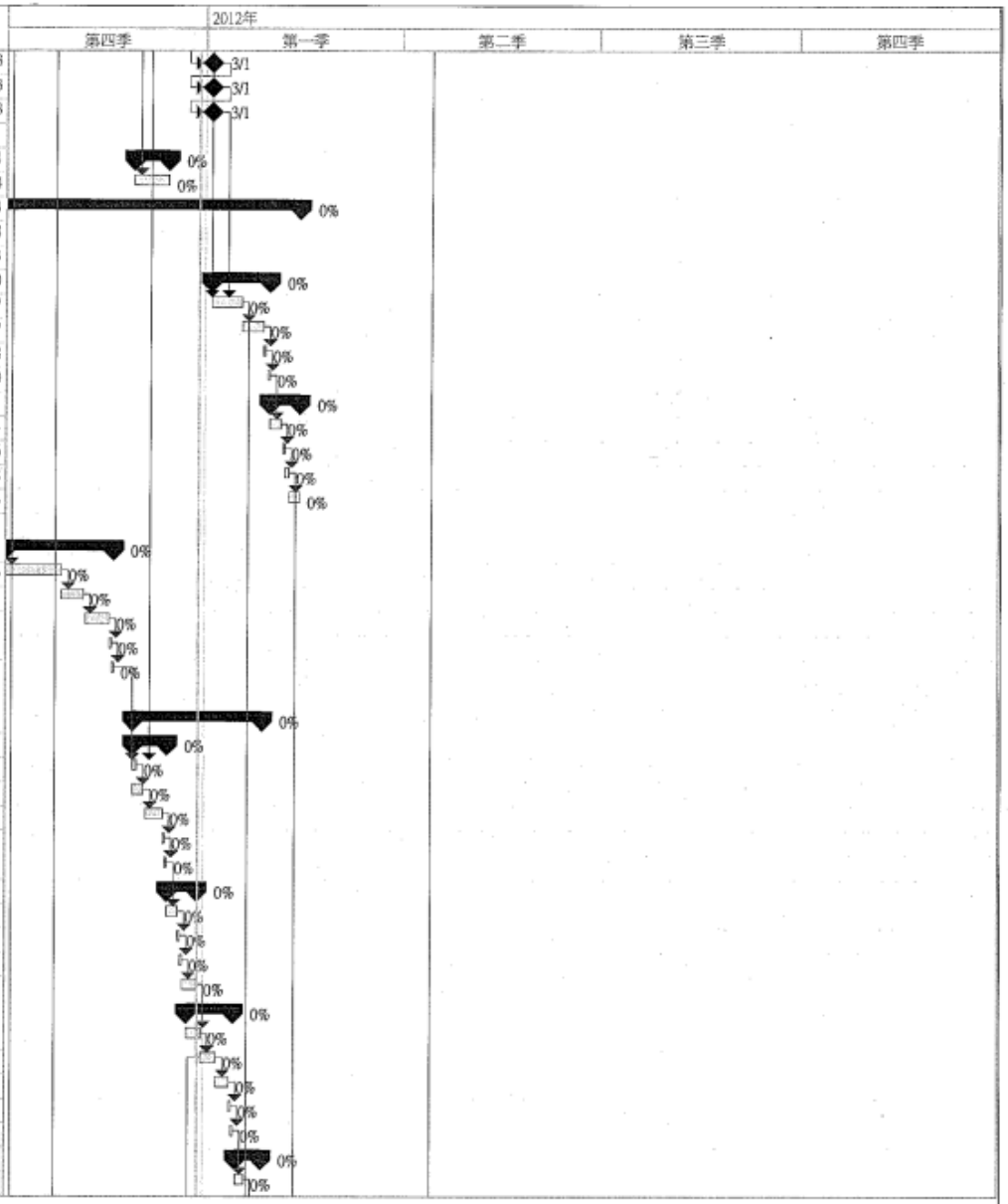
1759	NA	0 days	2012/1/3	2012/1/3
1760	NA	0 days	2012/1/3	2012/1/3
1761	NA	0 days	2012/1/3	2012/1/3
1762				
1763	Drainage & Footpath (Ch 450-490 RHS)	14 days	2011/11/29	2011/12/14
1764	Construction of drainage & footpath	14 days	2011/11/29	2011/12/14
1765	Retaining Wall (Ch 500-530) TR3 (RHS)	272 days	2011/3/16	2012/2/13
1766	Base Slab Construction Bay 1 (incl. Step 7) (RHS)	28 days	2011/3/16	2011/4/18
1771	Wall Stem Construction Bay 1 (RHS)	10 days	2011/4/19	2011/5/3
1776	Base Slab Construction Bay 2 (incl. Step 7)(RHS)	20 days	2012/1/4	2012/1/30
1777	Excavation and Formation	12 days	2012/1/4	2012/1/17
1778	Formwork and rebar fixing	6 days	2012/1/18	2012/1/27
1779	Concreting	1 day	2012/1/28	2012/1/28
1780	Stripping off formwork	1 day	2012/1/30	2012/1/30
1781	Wall Stem Construction Bay 2 (RHS)	12 days	2012/1/31	2012/2/13
1782	Formwork and rebar fixing	5 days	2012/1/31	2012/2/4
1783	Concreting	1 day	2012/2/6	2012/2/6
1784	Stripping off formwork	2 days	2012/2/7	2012/2/8
1785	Backfill	4 days	2012/2/9	2012/2/13
1786				
1787	Cascades (Ch 500 LHS)	42 days	2011/10/1	2011/11/19
1788	Water Diversion	21 days	2011/10/1	2011/10/26
1789	Excavation	9 days	2011/10/27	2011/11/5
1790	Formwork and rebar fixing	10 days	2011/11/7	2011/11/17
1791	Concreting	1 day	2011/11/18	2011/11/18
1792	Stripping off formwork	1 day	2011/11/19	2011/11/19
1793				
1794	Retaining Wall (Ch 500-530) TR3 (LHS) ????	46 days	2011/11/29	2012/1/27
1795	Base Slab Construction Bay 1 (incl. Step 7)(LHS)	14 days	2011/11/29	2011/12/14
1796	Remove Concrete Block and shotcrete	2 days	2011/11/29	2011/11/30
1797	Excavation & blinding	5 days	2011/11/29	2011/12/3
1798	Formwork and rebar fixing (with DWF)	7 days	2011/12/5	2011/12/12
1799	Concreting	1 day	2011/12/13	2011/12/13
1800	Stripping off formwork	1 day	2011/12/14	2011/12/14
1801	Wall Stem Construction Bay 1 (LHS)	10 days	2011/12/15	2011/12/28
1802	Formwork and rebar fixing	4 days	2011/12/15	2011/12/19
1803	Concreting	1 day	2011/12/20	2011/12/20
1804	Stripping off formwork	1 day	2011/12/21	2011/12/21
1805	Backfill	4 days	2011/12/22	2011/12/28
1806	Base Slab Construction Bay 2 (incl. Step 7)(LHS)	16 days	2011/12/24	2012/1/14
1807	Remove Concrete Block and shotcrete	4 days	2011/12/24	2011/12/30
1808	Excavation & blinding	5 days	2011/12/31	2012/1/6
1809	Formwork and rebar fixing (with DWF)	5 days	2012/1/7	2012/1/12
1810	Concreting	1 day	2012/1/13	2012/1/13
1811	Stripping off formwork	1 day	2012/1/14	2012/1/14
1812	Wall Stem Construction Bay 2 (LHS)	8 days	2012/1/16	2012/1/27
1813	Formwork and rebar fixing	4 days	2012/1/16	2012/1/19



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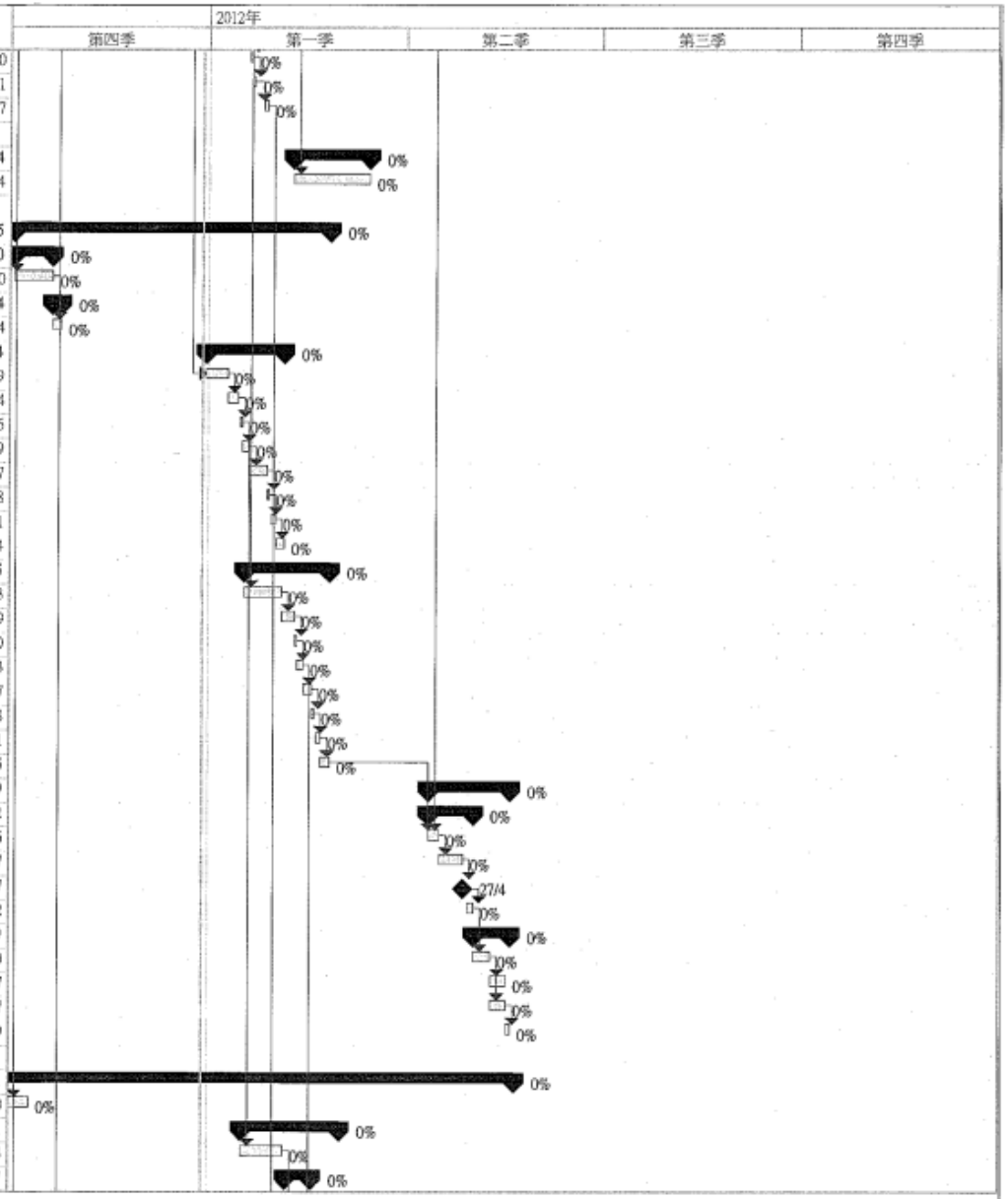
識別碼	任務名稱	工期	開始時間	完成時間
1814	Concreting	1 day	2012/1/20	2012/1/20
1815	Stripping off formwork	1 day	2012/1/21	2012/1/21
1816	Backfill	2 days	2012/1/26	2012/1/27
1817				
1818	Drainage & Footpath (Ch 490-525 RHS)	30 days	2012/2/9	2012/3/14
1819	Construction of drainage & footpath	30 days	2012/2/9	2012/3/14
1820				
1821	Footbridge TB07 (Ch 525)	119 days	2011/10/3	2012/2/25
1822	Temporary Pedestrian Division	15 days	2011/10/3	2011/10/20
1823	Temporary Pedestrain Division (at grade)	14 days	2011/10/3	2011/10/20
1824	Demolition of existing Footbridge TB-D (Ch 525)	3 days	2011/10/21	2011/10/24
1825	Remove concrete pipes and demolition works	3 days	2011/10/21	2011/10/24
1826	Construction of Abutment A (LHS)	27 days	2011/12/31	2012/2/4
1827	Excavation and Blinding	7 days	2011/12/31	2012/1/9
1828	Formwork and rebar fixing for base slab	5 days	2012/1/10	2012/1/14
1829	Concreting of base slab	1 day	2012/1/16	2012/1/16
1830	Stripping off formwork	3 days	2012/1/17	2012/1/19
1831	Rebar fixing and shuttering formwork for column	4 days	2012/1/20	2012/1/27
1832	Concreting	1 day	2012/1/28	2012/1/28
1833	Stripping off formwork	2 days	2012/1/30	2012/1/31
1834	Backfill	4 days	2012/2/1	2012/2/4
1835	Construction of Abutment B (RHS)	31 days	2012/1/18	2012/2/25
1836	Excavation and Blinding	12 days	2012/1/18	2012/2/3
1837	Formwork and rebar fixing for base slab	5 days	2012/2/4	2012/2/9
1838	Concreting of base slab	1 day	2012/2/10	2012/2/10
1839	Stripping off formwork	2 days	2012/2/11	2012/2/13
1840	Rebar fixing and shuttering formwork for column	4 days	2012/2/14	2012/2/17
1841	Concreting	1 day	2012/2/18	2012/2/18
1842	Stripping off formwork	2 days	2012/2/20	2012/2/21
1843	Backfill	4 days	2012/2/22	2012/2/25
1844	Footbridge TB07 (Ch 525)	31 days	2012/4/12	2012/5/19
1845	Construction of decking	16 days	2012/4/12	2012/5/2
1846	Erection of steel deck+ conc deck	4 days	2012/4/12	2012/4/16
1847	Deck finishing	10 days	2012/4/17	2012/4/27
1848	NA	0 days	2012/4/27	2012/4/27
1849	Railing installation	2 days	2012/4/30	2012/5/2
1850	Footbridge TB07 Lighting	15 days	2012/5/3	2012/5/19
1851	Construction of Drawpits / Ducting	7 days	2012/5/3	2012/5/10
1852	Public lighting Installation (CE2328)	6 days	2012/5/11	2012/5/17
1853	Public lighting Installation (CE2329)	6 days	2012/5/11	2012/5/17
1854	T&C	2 days	2012/5/18	2012/5/19
1855				
1856	Ch 525-615	497 days	2010/10/15	2012/5/21
1857		7 days	2011/10/1	2011/10/10
1858	Retaining Wall (Ch 535-546) TR4 (LHS)	36 days	2012/1/17	2012/3/1
1859	Excavation and Formation	14 days	2012/1/17	2012/2/4
1860	Base Slab Construction Bay 1&2 (LHS)	11 days	2012/2/6	2012/2/17



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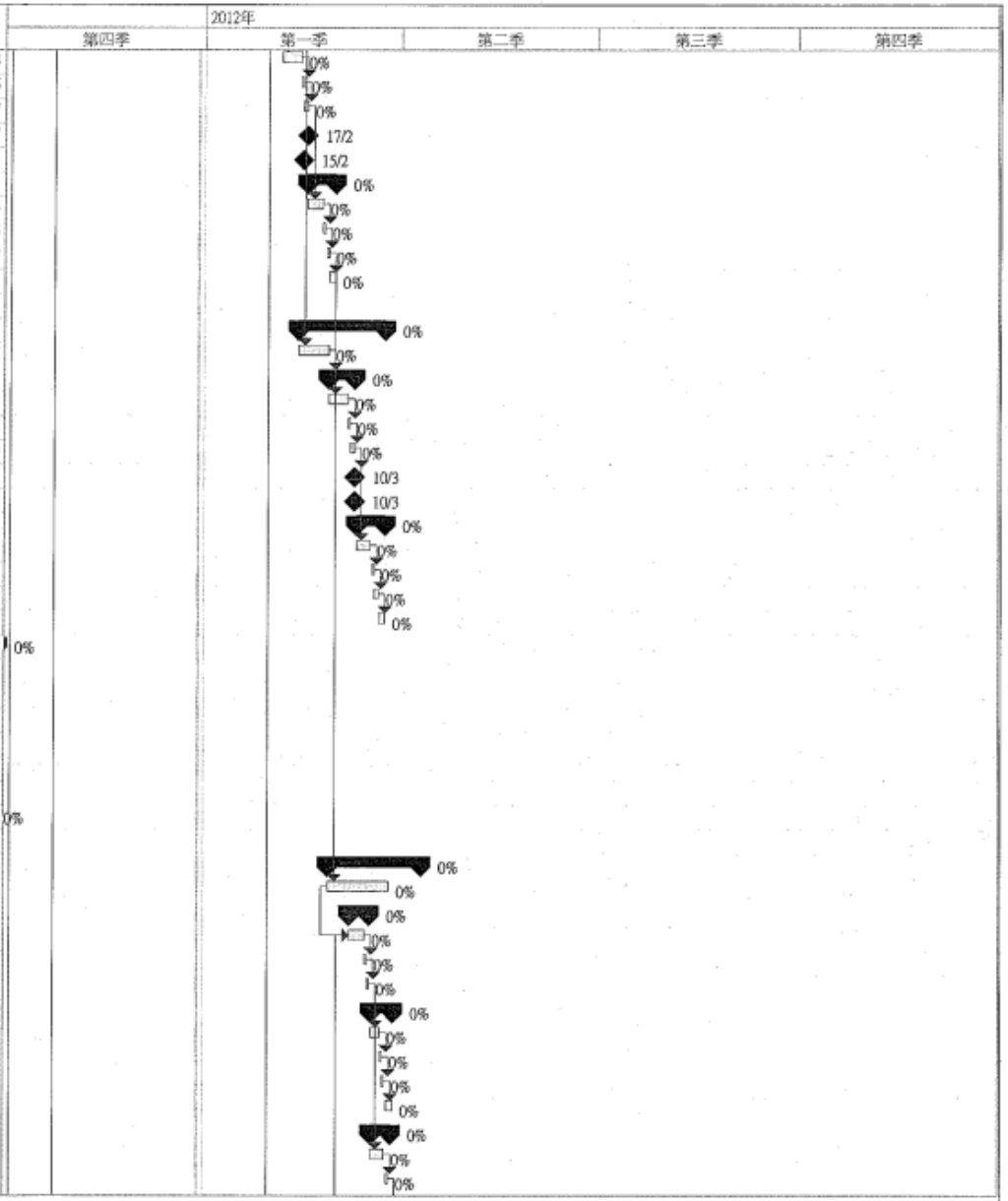
識別碼	任務名稱	工期	開始時間	完成時間
1861	Formwork and rebar fixing	8 days	2012/2/6	2012/2/14
1862	Concreting	1 day	2012/2/15	2012/2/15
1863	Stripping off formwork	2 days	2012/2/16	2012/2/17
1864	**Wall Stem Construction Bay 1 (LHS) delete**	**0 days**	**2012/2/17**	**2012/2/17**
1869	**Base Slab Construction Bay 2 (LHS) del**	**0 days**	**2012/2/15**	**2012/2/15**
1873	**Wall Stem Construction Bay 1&2 (LHS)**	**11 days**	**2012/2/18**	**2012/3/1**
1874	Formwork and rebar fixing	6 days	2012/2/18	2012/2/24
1875	Concreting	1 day	2012/2/25	2012/2/25
1876	Stripping off formwork	1 day	2012/2/27	2012/2/27
1877	Backfill	3 days	2012/2/28	2012/3/1
1878				
1879	**Retaining Wall (Ch 535-546) TR4 (RHS)**	**35 days**	**2012/2/14**	**2012/3/24**
1880	Excavation and Formation	12 days	2012/2/14	2012/2/27
1881	**Base Slab Construction Bay 1+2 (RHS)**	**11 days**	**2012/2/28**	**2012/3/10**
1882	Formwork and rebar fixing (with DWF)	8 days	2012/2/28	2012/3/7
1883	Concreting	1 day	2012/3/8	2012/3/8
1884	Stripping off formwork	2 days	2012/3/9	2012/3/10
1885	**Wall Stem Construction Bay 1 (RHS) del**	**0 days**	**2012/3/10**	**2012/3/10**
1890	**Base Slab Construction Bay 2 (RHS) del**	**0 days**	**2012/3/10**	**2012/3/10**
1894	**Wall Stem Construction Bay 1+2 (RHS)**	**12 days**	**2012/3/12**	**2012/3/24**
1895	Formwork and rebar fixing	6 days	2012/3/12	2012/3/17
1896	Concreting	1 day	2012/3/19	2012/3/19
1897	Stripping off formwork	2 days	2012/3/20	2012/3/21
1898	Backfill	3 days	2012/3/22	2012/3/24
1899	**Retaining Wall TR5 Ch (546-596 RHS) TR5 (AD)**	**306 days**	**2010/10/15**	**2011/9/27**
1900	Construction of temp haul road	25 days	2010/10/15	2010/11/8
1901	Demolition of Existing structure at slope crest	8 days	2010/11/9	2010/11/16
1902	Suspension of Work due to villagers rally	17 days	2010/12/2	2010/12/18
1903	Construction of temporary ground beam	5 days	2010/12/19	2010/12/23
1904	Trimming of rock slope (from downstream to upstream)	73 days	2010/12/24	2011/3/11
1905	Install rock dowel	45 days	2011/2/22	2011/4/14
1906	Construction of skin wall (from D/S to U/S, from toe to crest)	165 days	2011/3/10	2011/9/27
1907				
1908	**Retaining Wall TR5A CH546-585 LHS**	**34 days**	**2012/2/28**	**2012/4/10**
1909	River diversion, Excavation and Formation	24 days	2012/2/28	2012/3/26
1910	**Base Slab Construction TR5A Bay 1 LHS**	**8 days**	**2012/3/9**	**2012/3/17**
1911	Formwork and rebar fixing	6 days	2012/3/9	2012/3/15
1912	Concreting	1 day	2012/3/16	2012/3/16
1913	Stripping off formwork	1 day	2012/3/17	2012/3/17
1914	**Wall Stem Construction TR5A Bay 1 LHS**	**9 days**	**2012/3/19**	**2012/3/28**
1915	Formwork and rebar fixing	4 days	2012/3/19	2012/3/22
1916	Concreting	1 day	2012/3/23	2012/3/23
1917	Stripping off formwork	1 day	2012/3/24	2012/3/24
1918	Backfill	3 days	2012/3/26	2012/3/28
1919	**Base Slab Construction TR5A Bay 2 LHS**	**8 days**	**2012/3/19**	**2012/3/27**
1920	Formwork and rebar fixing	6 days	2012/3/19	2012/3/24
1921	Concreting	1 day	2012/3/26	2012/3/26



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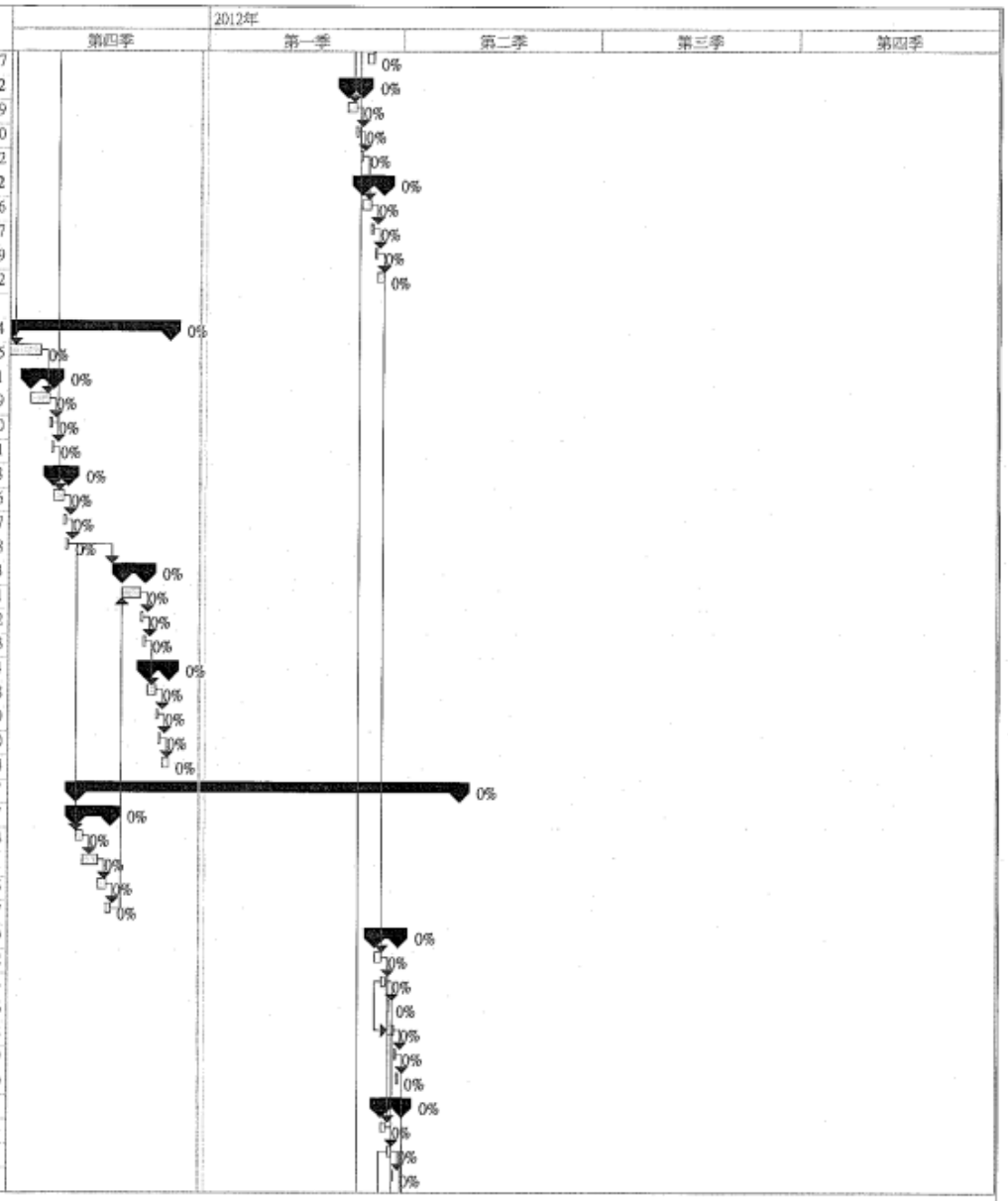
識別碼	任務名稱	工期	開始時間	完成時間
1969	Backfill	3 days	2012/3/15	2012/3/17
1970	**Base Slab Construction TR5A Bay 5 LHS**	**6 days**	**2012/3/6**	**2012/3/12**
1971	Formwork and rebar fixing	4 days	2012/3/6	2012/3/9
1972	Concreting	1 day	2012/3/10	2012/3/10
1973	Stripping off formwork	1 day	2012/3/12	2012/3/12
1974	**Wall Stem Construction TR5A Bay 5 LHS**	**9 days**	**2012/3/13**	**2012/3/22**
1975	Formwork and rebar fixing	4 days	2012/3/13	2012/3/16
1976	Concreting	1 day	2012/3/17	2012/3/17
1977	Stripping off formwork	1 day	2012/3/19	2012/3/19
1978	Backfill	3 days	2012/3/20	2012/3/22
1979				
1980	**Retaining Wall (ch 595-615) TR3 (Bay 3)**	**63 days**	**2011/10/1**	**2011/12/14**
1981	River diversion, Excavation and Formation	12 days	2011/10/1	2011/10/15
1982	**Base Slab Construction Bay 3 RHS**	**10 days**	**2011/10/11**	**2011/10/21**
1983	Formwork and rebar fixing	8 days	2011/10/11	2011/10/19
1984	Concreting	1 day	2011/10/20	2011/10/20
1985	Stripping off formwork	1 day	2011/10/21	2011/10/21
1986	**Wall Stem Construction TR3 Bay 3 RHS**	**6 days**	**2011/10/22**	**2011/10/28**
1987	Formwork and rebar fixing	4 days	2011/10/22	2011/10/26
1988	Concreting	1 day	2011/10/27	2011/10/27
1989	Stripping off formwork	1 day	2011/10/28	2011/10/28
1990	**Base Slab Construction Bay 3 LHS**	**10 days**	**2011/11/23**	**2011/12/3**
1991	Formwork and rebar fixing	8 days	2011/11/23	2011/12/1
1992	Concreting	1 day	2011/12/2	2011/12/2
1993	Stripping off formwork	1 day	2011/12/3	2011/12/3
1994	**Wall Stem Construction TR3 Bay 3 LHS**	**9 days**	**2011/12/5**	**2011/12/14**
1995	Formwork and rebar fixing	4 days	2011/12/5	2011/12/8
1996	Concreting	1 day	2011/12/9	2011/12/9
1997	Stripping off formwork	1 day	2011/12/10	2011/12/10
1998	back fill & diversion	3 days	2011/12/12	2011/12/14
1999	**Concrete Slab (Ch546 - Ch596) LHS**	**144 days**	**2011/11/2**	**2012/4/27**
2000	**Bay 1,2,3 RHS**	**14 days**	**2011/11/2**	**2011/11/17**
2001	Excavation/Blinding	3 days	2011/11/2	2011/11/4
2002	Formwork and rebar fixing for slab	6 days	2011/11/5	2011/11/11
2003	Concreting of slab	3 days	2011/11/12	2011/11/15
2004	Stripping off formwork	2 days	2011/11/16	2011/11/17
2005	**Bay 1 LHS**	**10 days**	**2012/3/20**	**2012/3/30**
2006	Excavation/Blinding	3 days	2012/3/20	2012/3/22
2007	Formwork and rebar fixing for DWF	2 days	2012/3/23	2012/3/24
2008	Concreting of DWF	1 day	2012/3/26	2012/3/26
2009	Formwork and rebar fixing for slab	3 days	2012/3/26	2012/3/28
2010	Concreting of slab	1 day	2012/3/29	2012/3/29
2011	Stripping off formwork	1 day	2012/3/30	2012/3/30
2012	**Bay 2 LHS**	**9 days**	**2012/3/23**	**2012/4/1**
2013	Excavation/Blinding	2 days	2012/3/23	2012/3/24
2014	Formwork and rebar fixing for DWF	2 days	2012/3/26	2012/3/27
2015	Concreting of DWF	1 day	2012/3/28	2012/3/28



專案: DC0706 River Prog
日期: 2011/12/29

要徑 任務 比較基準 里程碑 專案摘要報告 期限
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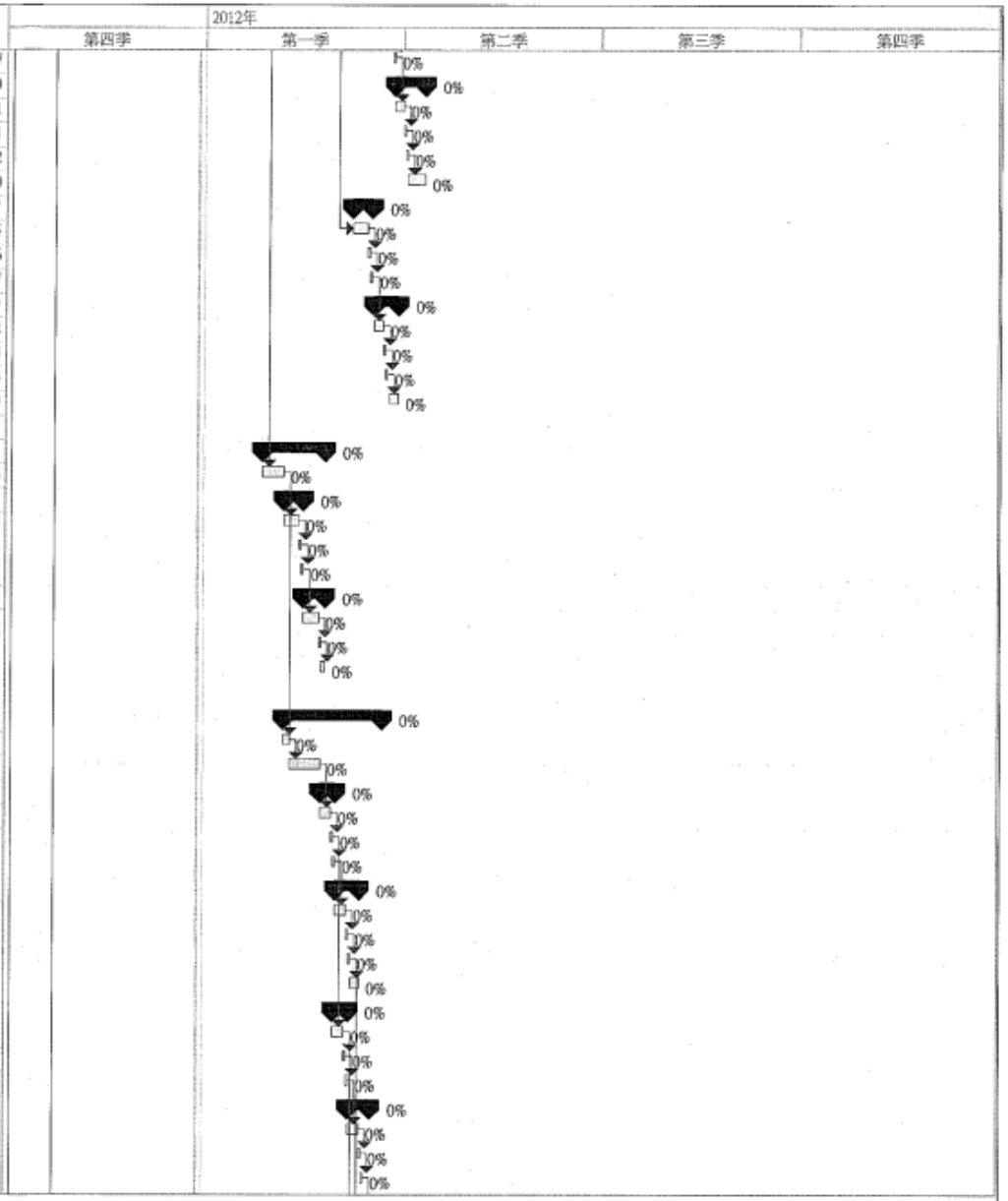
要徑進度 任務進度 比較基準里程碑 摘要 外部里程碑

識別碼	任務名稱	工期	開始時間	完成時間
1922	Stripping off formwork	1 day	2012/3/27	2012/3/27
1923	**Wall Stem Construction TR5A Bay 2 LHS**	**9 days**	**2012/3/28**	**2012/4/10**
1924	Formwork and rebar fixing	4 days	2012/3/28	2012/3/31
1925	Concreting	1 day	2012/4/1	2012/4/1
1926	Stripping off formwork	1 day	2012/4/2	2012/4/2
1927	Backfill	3 days	2012/4/3	2012/4/10
1928	**Base Slab Construction TR5A Bay 3 LHS**	**8 days**	**2012/3/9**	**2012/3/17**
1929	Formwork and rebar fixing	6 days	2012/3/9	2012/3/15
1930	Concreting	1 day	2012/3/16	2012/3/16
1931	Stripping off formwork	1 day	2012/3/17	2012/3/17
1932	**Wall Stem Construction TR5A Bay 3 LHS**	**10 days**	**2012/3/19**	**2012/3/29**
1933	Formwork and rebar fixing	4 days	2012/3/19	2012/3/22
1934	Concreting	1 day	2012/3/23	2012/3/23
1935	Stripping off formwork	1 day	2012/3/24	2012/3/24
1936	Backfill	4 days	2012/3/26	2012/3/29
1937				
1938	**Box Culvert TB02 (ch 580)**	**25 days**	**2012/1/28**	**2012/2/25**
1939	Haul Road Diversion to TR3 Bay 3, River diverison, Excavation	8 days	2012/1/28	2012/2/6
1940	**Construction of Base Slab**	**8 days**	**2012/2/7**	**2012/2/15**
1941	Formwork and rebar fixing	6 days	2012/2/7	2012/2/13
1942	Concreting	1 day	2012/2/14	2012/2/14
1943	Stripping off formwork	1 day	2012/2/15	2012/2/15
1944	**Construction of Wall Stem and Top Slab**	**9 days**	**2012/2/16**	**2012/2/25**
1945	Formwork and rebar fixing	6 days	2012/2/16	2012/2/22
1946	Concreting	1 day	2012/2/23	2012/2/23
1947	Stripping off formwork	2 days	2012/2/24	2012/2/25
1948				
1949	**Retaining Wall TR5A & TR6 CH585-595 LHS**	**39 days**	**2012/2/7**	**2012/3/22**
1950	River/Haul Road Diverison (to TR3 and TR5 RHS)	3 days	2012/2/7	2012/2/9
1951	Excavation and Blinding	12 days	2012/2/10	2012/2/23
1952	**Base Slab Construction TR6 Bay 1 LHS**	**6 days**	**2012/2/24**	**2012/3/1**
1953	Formwork and rebar fixing	4 days	2012/2/24	2012/2/28
1954	Concreting	1 day	2012/2/29	2012/2/29
1955	Stripping off formwork	1 day	2012/3/1	2012/3/1
1956	**Wall Stem Construction TR6 Bay 1 LHS**	**9 days**	**2012/3/2**	**2012/3/12**
1957	Formwork and rebar fixing	4 days	2012/3/2	2012/3/6
1958	Concreting	1 day	2012/3/7	2012/3/7
1959	Stripping off formwork	1 day	2012/3/8	2012/3/8
1960	Backfill	3 days	2012/3/9	2012/3/12
1961	**Base Slab Construction TR5A Bay 4 LHS**	**6 days**	**2012/3/1**	**2012/3/7**
1962	Formwork and rebar fixing	4 days	2012/3/1	2012/3/5
1963	Concreting	1 day	2012/3/6	2012/3/6
1964	Stripping off formwork	1 day	2012/3/7	2012/3/7
1965	**Wall Stem Construction TR5A Bay 4 LHS**	**9 days**	**2012/3/8**	**2012/3/17**
1966	Formwork and rebar fixing	4 days	2012/3/8	2012/3/12
1967	Concreting	1 day	2012/3/13	2012/3/13
1968	Stripping off formwork	1 day	2012/3/14	2012/3/14



專案: DC0706 River Prog
日期: 2011/12/29

要徑 任務 比較基準 里程碑 專案摘要報告 期限
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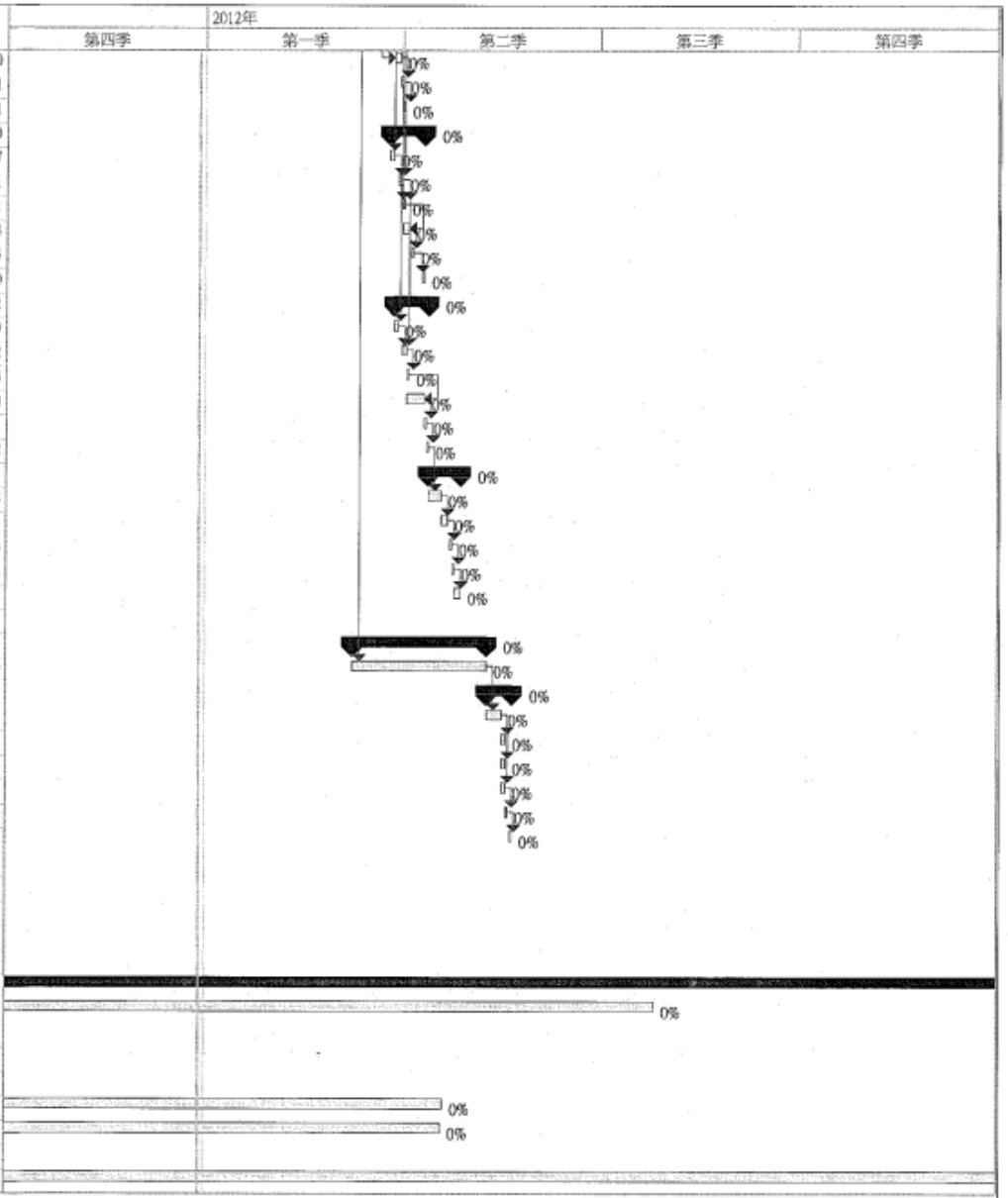
要徑進度 任務進度 比較基準里程碑 摘要 外部里程碑

識別碼	任務名稱	工期	開始時間	完成時間
2016	Formwork and rebar fixing for slab	3 days	2012/3/28	2012/3/30
2017	Concreting of slab	1 day	2012/3/31	2012/3/31
2018	Stripping off formwork	1 day	2012/4/1	2012/4/1
2019	**Bay 3 LHS**	**11 days**	**2012/3/26**	**2012/4/10**
2020	Excavation/Blinding	2 days	2012/3/26	2012/3/27
2021	Formwork and rebar fixing for DWF	2 days	2012/3/30	2012/3/31
2022	Concreting of DWF	1 day	2012/4/1	2012/4/1
2023	Formwork and rebar fixing for slab	3 days	2012/4/1	2012/4/3
2024	Concreting of slab	1 day	2012/4/5	2012/4/5
2025	Stripping off formwork	1 day	2012/4/10	2012/4/10
2026	**Bay 4 LHS**	**11 days**	**2012/3/28**	**2012/4/12**
2027	Excavation/Blinding	2 days	2012/3/28	2012/3/29
2028	Formwork and rebar fixing for DWF	2 days	2012/4/1	2012/4/2
2029	Concreting of DWF	1 day	2012/4/3	2012/4/3
2030	Formwork and rebar fixing for slab	3 days	2012/4/3	2012/4/10
2031	Concreting of slab	1 day	2012/4/11	2012/4/11
2032	Stripping off formwork	1 day	2012/4/12	2012/4/12
2033	**Bay 4 RHS**	**13 days**	**2012/4/13**	**2012/4/27**
2034	Excavation/Blinding	5 days	2012/4/13	2012/4/18
2035	Formwork and rebar fixing for slab	3 days	2012/4/19	2012/4/21
2036	Concreting of slab	1 day	2012/4/23	2012/4/23
2037	Stripping off formwork	1 day	2012/4/24	2012/4/24
2038	remove haul road	3 days	2012/4/25	2012/4/27
2039				
2040	**Drainage and Footpath (Ch525-615 LHS & RHS)**	**48 days**	**2012/3/9**	**2012/5/9**
2041	Construction of footpath & drainage works	48 days	2012/3/9	2012/5/9
2042	**Lighting at CH 550-610**	**10 days**	**2012/5/10**	**2012/5/21**
2043	Construction of Drawpits / Ducting	6 days	2012/5/10	2012/5/16
2044	Public lighting Installation (CE2325)	2 days	2012/5/17	2012/5/18
2045	Public lighting Installation (CE2326)	2 days	2012/5/17	2012/5/18
2046	Public lighting Installation (CE2327)	2 days	2012/5/17	2012/5/18
2047	T&C	1 day	2012/5/19	2012/5/19
2048	Removal of existing lighting (CE1600-B2)	1 day	2012/5/21	2012/5/21
2049				
2050	**Section 4 - Box Culvert at Ping Long**	**0 days**	**2009/12/9**	**2009/12/9**
2051	**Section 4 - Box Culvert (Area A)**	**0 days**	**2009/12/9**	**2009/12/9**
2052	Completion of Work at Section 4	0 days	2009/12/9	2009/12/9
2053				
2054	**Section 5 - Landscape Establishemnt Works (Portion B, C, D, E, F, G, H & I)**	**1951 days**	**2007/9/28**	**2013/7/1**
2055	Section 5 Landscape Works	1665 days	2007/9/28	2012/7/26
2056	Commencement of Works	1 day	2007/9/28	2007/9/28
2057	Material Submission	120 days	2007/9/29	2008/1/26
2058	Submission Approval	0 days	2008/2/9	2008/2/9
2059	Landscaping Hardworks	1541 days	2007/11/11	2012/4/19
2060	Landscaping Softworks	365 days	2011/1/30	2012/4/18
2061	Submission of Tree Survey	400 days	2007/9/29	2008/11/1
2062	Preservation and Protection of Preserved Trees	1550 days	2008/11/2	2013/7/1



專案: DC0706 River Prog
日期: 2011/12/29

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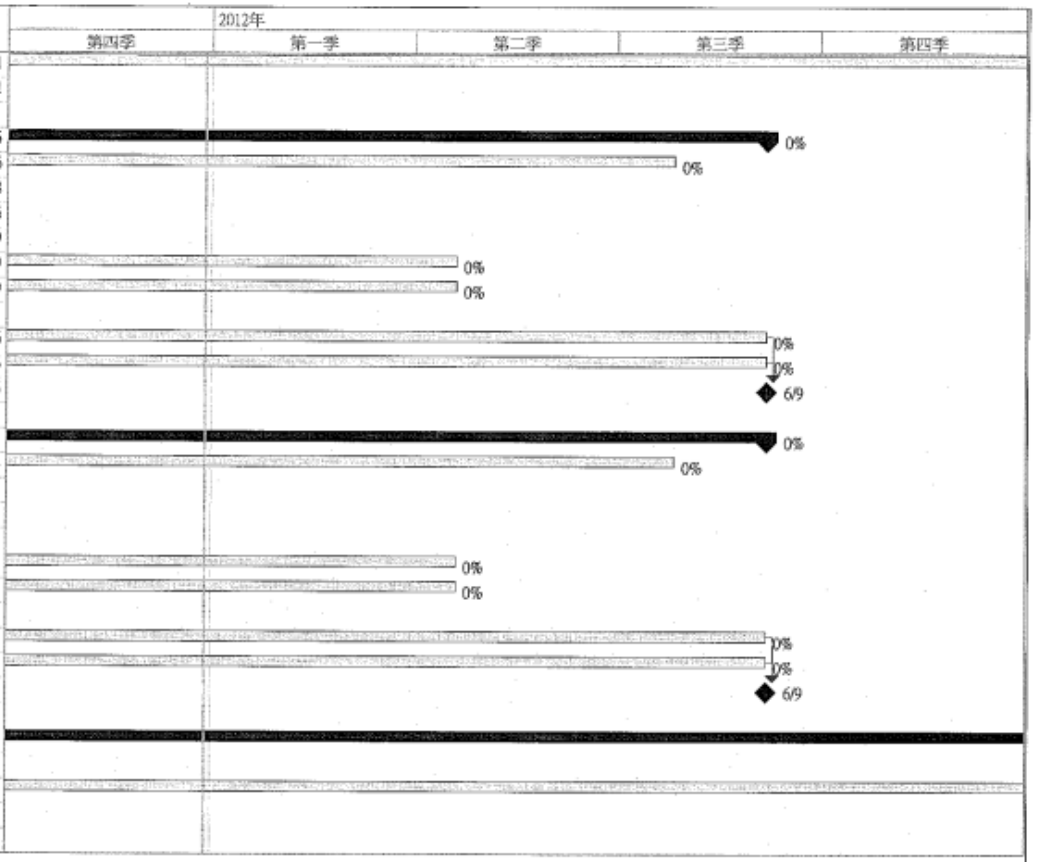
要徑進度 任務進度 比較基準里程碑 摘要 外部里程碑

識別碼	任務名稱	工期	開始時間	完成時間
2063	Landscape Establishment Works	1550 days	2008/11/2	2013/7/1
2064	Completion of Works	0 days	2013/7/1	2013/7/1
2065				
2066	Section 6 - Landscape Establishemnt Works (Portion J, K & M)	1701 days	2007/9/28	2012/9/6
2067	Section 6 Landscape Works	1665 days	2007/9/28	2012/7/26
2068	Commencement of Works	1 day	2007/9/28	2007/9/28
2069	Material Submission	120 days	2007/9/29	2008/1/26
2070	Submission Approval	0 days	2008/2/9	2008/2/9
2071	Landscaping Hardworks	1161 days	2008/11/25	2012/4/19
2072	Landscaping Softworks	365 days	2011/1/31	2012/4/19
2073	Submission of Tree Survey	400 days	2007/9/29	2008/11/1
2074	Preservation and Protection of Preserved Trees	1300 days	2008/11/2	2012/9/6
2075	Landscape Establishment Works	1300 days	2008/11/2	2012/9/6
2076	Completion of Works	0 days	2012/9/6	2012/9/6
2077				
2078	Section 7 - Landscape Establishemnt Works (Portion L, N & P)	1701 days	2007/9/28	2012/9/6
2079	Section 7 Landscape Works	1665 days	2007/9/28	2012/7/26
2080	Commencement of Works	1 day	2007/9/28	2007/9/28
2081	Material Submission	120 days	2007/9/29	2008/1/26
2082	Submission Approval	0 days	2008/2/9	2008/2/9
2083	Landscaping Hardworks	1176 days	2008/11/10	2012/4/19
2084	Landscaping Softworks	365 days	2011/1/31	2012/4/19
2085	Submission of Tree Survey	400 days	2007/9/29	2008/11/1
2086	Preservation and Protection of Preserved Trees	1300 days	2008/11/2	2012/9/6
2087	Landscape Establishment Works	1300 days	2008/11/2	2012/9/6
2088	Completion of Works	0 days	2012/9/6	2012/9/6
2089				
2090	Section 8 - All Remaining Work at All Portions	1950 days?	2007/9/28	2013/6/29
2091	Commencement of Works	1 day	2007/9/28	2007/9/28
2092	All remaining works at all Area	1950 days	2007/9/28	2013/6/29
2093	Completion of Works	0 days	2013/2/13	2013/2/13
2094		1 day?	2007/9/28	2007/9/28



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要徑進度 任務進度 比較基準里程碑 摘要 外部里程碑

Appendix J: Complaint Investigation Report

Environmental Pioneers & Solutions Ltd
大成環境科技拓展有限公司
豐盛創建機電集團附屬公司 *Subsidiary of FSE Engg Group*
豐盛創建企業成員 *Member of Fung Seng Enterprises*

Our ref. no.: DC0706-CL-120330-1(ECRS)

5th April 2012

To: Distribution List

Dear Sirs or Madams,

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

Complaint Investigation Report and Log

Based on the complaint incident received from ECRS with details of:

ECRS ref. no.:	10587
Date received:	30th March 2012
Incident location:	Tat Wan Road beside Tai Po River (TPR)
Description:	Complaint was referred by DSD that a resident complained against deposited mud and dust at Tat Wan Road beside Tai Po River (TPR).

Enclosed please find the complaint investigation report and log sheets of the incident as for your record.

Yours faithfully,

Goldie Fung
ET leader

Environmental Pioneers and Solutions Limited

c.c. SRE/AECOM (Mr. Colin Cheng)
RE/AECOM (Mr. Adrian Ng)
IEC/ERM (Ms. Winnie Ko)
Chiu Hing Project Manager (Mr. Alvin Ma)
Chiu Hing Site Agent (Mr. Gary Chan)
Chiu Hing Environmental Officer (Ms. Macy Fung)

Flat A, 19/F, Chaiwan Industrial Centre, 20 Lee Chung Street, Chai Wan, Hong Kong
香港柴灣利眾街 20 號柴灣中心工業大廈 19 字樓 A 座
Tel: (852) 2556 9172 Fax: (852) 2856 2010 http://www.epsl.com.hk

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

Report for Complaint/ Concern
Our Ref.: DC0706-CL-120330-1 (ECRS)
EPD complaint ref.: 10587

RECIPIENT

Name: Chiu Hing Construction & Transportation Co., Ltd,
Details: Complaint was referred by DSD that a resident complained against deposited mud and dust at Tat Wan Road beside Tai Po River (TPR).

Received Date: 30th March 2012 Received Time: N/A

COMPLAINANT / Concern

Name: N/A Tel: N/A
Address: N/A

COMPLAINT

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

Event Date and Time: 30th March 2012

Location: Tat Wan Road beside Tai Po River

INVESTIGATION RESULTS, RECOMMENDATIONS & MITIGATION MEASURES

1. A complaint on 30th March 2012 was recorded regarding deposited mud and dust at Tat Wan road by the construction vehicles. Environmental Team (ET) was informed by email on 2nd April 2012 by the Environmental Officer (EO).

2. ET has conducted a site investigation on 3rd April 2012 with representatives from RE, IEC and Contractor to resolve the concern.

3. As reported by Contractor, the following remedial works have been carried out.
   - Wheel washing facilities were provided at site entrance (Fig. 1).
   - Workers were assigned to clean up the mud and dust immediately after the complaint received (Fig. 2).

4. During the investigation, the following observations were made:
   - Water sprayer was provided at site entrance for vehicle washing (Fig. 3).
   - The road was cleaned up without mud or muddy water (Fig 4).

5. To minimize the environmental nuisance to the public at the concerned area, Contractor was recommended to further enhance mitigation measures immediately, which should at least include:
   - Worker should be assigned for the vehicle washing throughout the operation hours of site.
   - The deposited mud and dust on the public road should be washed away to minimize the environmental nuisance to the public.

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

Report for Complaint/ Concern

Our Ref.: DC0706-CL-120330-1 (ECRS)

ECRS ref. no.: 10587

Sheet: 2 of 2

6. Contractor was seriously reminded to maintain proper practices and dust mitigation measures, such as:
   - Every construction vehicle should be cleaned up before leaving the site.
   - The deposited mud and dust should be cleaned up immediately.
   - Briefing to frontline staffs about prevention of dust generation, e.g. regular water spraying on dry earth surface, covering of earthy stockpiles with tarpaulin, etc.

7. ET has reminded the contractor to pay serious attention on not arising possible environmental impacts in the future.

Signature:

Goldie Fung, ET Leader

Date: 5-4-2012

Fig.1 – Wheel washing facilities were provided

Fig. 2 – Workers were assigned to clean up the Tat Wan Road

Fig.3 – Water sprayer was provided at site entrance for vehicle washing.

Fig.4 – The public road was cleaned up

COMPLAINT / CONCERN LOG

Ref: DC0706-CL-120330-1(ECRS)

Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
Our REF: DC0706-CL-120330-1(ECRS) ECRS ref. no.: 10587	30th March 2012, Tat Wan road beside Tai Po River	A Complaint was referred by DSD on 30th March 2012.	Complaint was referred by DSD that a resident complained against deposited mud and dust at Tat Wan Road beside Tai Po River (TPR).	1. A complaint on 30th March 2012 was recorded regarding deposited mud and dust at Tat Wan road by the construction vehicles. Environmental Team (ET) was informed by email on 2nd April 2012 by the Environmental Officer (EO). 2. ET has conducted a site investigation on 3rd April 2012 with representatives from RE, IEC and Contractor to resolve the concern. 3. As reported by Contractor, the following remedial works have been carried out. - Wheel washing facilities were provided at site entrance (Fig. 1). - Workers were assigned to clean up the mud and dust immediately after the complaint received (Fig. 2). 4. During the investigation, the following observations were made: - Water sprayer was provided at site entrance for vehicle washing (Fig. 3). - The road was cleaned up without mud or muddy water (Fig 4). 5. To minimize the environmental nuisance to the public at the concerned area, Contractor was recommended to further enhance mitigation measures immediately, which should at least include: - Worker should be assigned for the vehicle washing throughout the operation hours of site.	Yes

				- The deposited mud and dust on the public road should be washed away to minimize the environmental nuisance to the public. 6. Contractor was seriously reminded to maintain proper practices and dust mitigation measures, such as: - Every construction vehicle should be cleaned up before leaving the site. - The deposited mud and dust should be cleaned up immediately. - Briefing to frontline staffs about prevention of dust generation, e.g. regular water spraying on dry earth surface, covering of earthy stockpiles with tarpaulin, etc. 7. ET has reminded the contractor to pay serious attention on not arising possible environmental impacts in the future.	

Filed by Environmental Team Leader: _____ Date: 5th April 2012

Appendix K: Ecological Impact Monitoring Report

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. 7)
Upper Tai Po River

January 2012

Prepared & Verified by: Vincent Liu	Vincent	February 14, 2012
Validated by: Mark Shea	Mark Shea	February 14, 2012
	Ecology Team: China-Hong Kong Ecology Consultants	

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. 7)
Upper Tai Po River

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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. Monitoring frequency were twice a year.

1.4 This is the number 7 ecological impact monitoring report for the project conducted in January 2012. It contents the following subsections:

- Summary of major points
- Summary of the construction activities for July 2011 (last reporting time) to January 2012
- 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 16th January 2012;
- Stream habitat at most sections of Upper Tai Po River (Photo 1,2) was changed due to drainage works;
- 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); and
- The number of target stream fauna (i.e., fish, *Parazacco spilurus*) recorded in January 2012 was lower than those recorded during baseline monitoring (before fish capture/relocation took place). *Parazacco spilurus* was only recorded from the reference site adjacent to the project site at upper stream. The reason for low fish population of *Parazacco spilurus* was due to river bed modification. 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 2011 (last reporting time) to January 2012.

- Construction of retaining wall
- Construction of Gabion walls

- Cascade formation
- Demolish of existing bridge
- Inclined Gabion Wall Formation
- No-Fine concrete and Inclined Gabion
- Backfilling
- Maintenance of staircase
- Footpath Construction
- Footbridge Construction
- Construction of additional boulder trap

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. The transect route was shown in Figure 1-1 to 1-3. 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 and the other located at the upper section of the river. The location of point counts were shown in Figure 1-1 to 1-3.

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, 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). Sampling sites were shown in Figure 1-1 to 1-3

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 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.hkbiddiversity.net) and other literatures such as Dudgeon (1999). Sampling sites were shown in Figure 1-1 to 1-3.

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.hkbiddiversity.net) and Keith (2003). Adult Odonate survey was conducted along line transects in parallel with river channel within works area where access was permitted. Transect route were shown in Figure 1-1 to 1-3.

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.hkbiddiversity.net) and Hong Kong Herbarium (2004). Sampling sites were shown in Figure 1-1 to 1-3.

4.6 Abiotic Data Collection

Water Quality Monitoring

Dissolved oxygen level, pH value, conductivity, salinity, Biochemical Oxygen Demand (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 12 flora species was recorded within the survey transects along the affected stream courses. All recorded floras were common species. Compared with the baseline result, the number of flora species was reduced from 38 to 12 flora species. Most vegetation along the stream section was cleared in order to construct temporal assess road and new embankment. Moreover, previous heavy rainfall has also washed out most vegetation along channel.

Despite that, the vegetation was predicted to be re-colonized along the river channel after finished the construction work. Generally, belt transect for vegetation was only conducted in reference site only. The height of the dominated riparian grass and herb species were in a range from 0.4m to 1.5m. 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, 16 species of birds were recorded during bird surveys within project area which was comparatively less than the baseline result of 24 avifauna species on October 2007. The project site was utilised by avifauna as foraging/ roosting area only. No breeding site was found within project site during impact monitoring. Thus, it was predicted that adverse impact on avifauna species will be temporal during construction period. 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. Recorded *Pantala flavescens* was the 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 small fish (Photo 3). 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. Despite that, the aquatic macro-invertebrates was predicted to be re-colonized along the river channel after finished the construction work. Stream benthos fauna recorded in reference site was similar to previous monitoring period. 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, 10 species freshwater fish (Photo 4) were recorded within project area. Fish density was low along river channel. Compared with the baseline result, the number of fish species was similar to the result of current impact monitoring. 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 not affected by construction works. Small number of *Parazacco spilurus (Photo 5)* was recorded from the reference site adjacent to the project

site at upper stream section. No record of *Parazacco spilurus* and reduced population of the fish was observed within project site. That would likely be due to the habitat change caused by river bed modification, which was in line with the prediction of impact in the Project Profile (Agreement No. CE50/2001).

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 with most recently performed on the 1st September 2011 and 3rd October 2011. The locally rare fish species of Three-lined Chinese Stream Catfish was not recorded at affected stream section during day and night time surveys (Photo 4) during both baseline and impact monitoring periods. Details of records 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 Ammonia (0.30 mg/L) in lower stream section was comparatively higher than that measured at upper stream section. Fish with less tolerance to toxic ammonia would be eliminated from stream water. Currently, the level of ammonia concentration is considered low and it was likely due to dilution of the running water in the stream. Salinity was low, and it was indicated that the stream was not affected by tidal effect. Generally, water quality (including DO, BOD, pH and nutrients) measured within project area was kept in constant level when compared with previous monitoring result of abiotic data. The detailed abiotic information was shown in Table 5.7.

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 0.5m/second at riffle).

6 Audit/review Of Monitoring Results

Total population was decreased for the concerned Fish (*Parazacco spilurus*) population at river channel within project site in the current monitoring period than those recorded in baseline ecology survey. Reduced fish population including *Parazacco spilurus* was likely due to habitat change caused by river bed modification within project site. Habitat change due to river bed modification was stated in Project profile. The project profile also predicted some indirect localized disturbance would occur on aquatic community and direct impact to approx. 0.6km of lowland river habitat within project area during construction period. The decrease of concerned fish (*Parazacco spilurus*) population was caused by river bed change which was a unavoidable as predicted. Project profile stated that the new channel bed would be lined with natural materials such as small cobbles and boulders which are similar to the substratum before the construction work. Thus, it is predicted that the concerned fish (*Parazacco spilurus*) population would be restored after the completion of the construction work.

7 Remedial Measures Adopted To Restore The Adverse Condition

There was no unacceptable adverse condition, which would affect adjacent habitats outside project area, was identified within the project area.

8 Record Of Complaints And Remedial Measures

There were 23 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.

- Gabion Wall Formation
- Retaining Wall Formation
- Cascade Formation
- River Bed Formation
- No-Fine concrete and Inclined Gabion

10 Comments And Conclusions

Ecological impact monitoring was carried out during January 2012 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., fish *Parazacco spilurus,* was recorded at upper stream section adjacent to project boundary. The reduced population of the fish would likely due to the habitat change caused by river bed modification, which was predicted and considered as acceptable in Project profile and such disturbance would be reversible during the operation period. 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. Plantation works 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

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PHOTOS

	
Photo 1: General view of the works area	Photo 2: General view of the works area
	
Photo 3: Stream benthos sampling	Photo 4: Captured fish sample
	
Photo 5: Captured target fish (*Parazacco spilurus*)	

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	Jul-10	Jan-11	Jul-11	Jan-12
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	+	+	+	+	+			
Thelypteridacea	*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		Refere
			Height (m)	%	Height(m)	%	Height (m)	%	Height(m)	%	Height (m)	%	Height(m)
Family	Species	Chinese name											
Asteraceae	*Mikania micrantha*	薇甘菊	0.4	15	1	40	0.5	5	0.5	5			0.5
Moraceae	*Ficus hispida*	對葉榕	1	2			5	5			2	10	5
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	5
Araceae	*Alocasia odora*	海芋	1.5	23							1.5	25	
Araceae	*Colocasia esculenta*	芋	0.3	<1	0.4	<1	0.3	2					0.3
Myrtaceae	*Cleistocalyx operculatus*	水翁					0.4	10	7	5			0.4
Athyriaceae	*Callipteris esculenta*	菜蕨			0.6	1	0.8	10			0.4	10	0.8
Gramineae	*Phragmites karka*	卡開蘆					1.5	51					1.5
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					0.3
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											
Gramineae	*Panicum repens*	枯骨草											
Gramineae	*Coix lacryma-jobi*	薏苡											
Convolvulaceae	*Ipomoea cairica*	五爪金龍											
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						Im	
		Stream	Jul-09					Jan-10							
		Transect	ence	T1		T2		Reference		T1		T2		Reference	
			%	Height (m)	%	Height(m)	%	Height (m)	%	Height(m)	%	Height (m)	%	Height(m)	%
Family	Species	Chinese name													
Asteraceae	*Mikania micrantha*	薇甘菊	5					0.5	3	0.2	5	0.2	2	0.5	20
Moraceae	*Ficus hispida*	對葉榕	5			2	10	5	5					5	5
Ulmaceae	*Celtis sinensis*	朴樹				6	15								
Gramineae	*Microstegium ciliatum*	剛秀竹				0.7	30							1	35
Euphorbiaceae	*Macaranga tanarius*	血桐	5	3	5	1.5	5	5	5					5	5
Araceae	*Alocasia odora*	海芋				2	30								
Araceae	*Colocasia esculenta*	芋	2	0.8	5			0.3	1						
Myrtaceae	*Cleistocalyx operculatus*	水翁	10	7	5			0.4	10	7	5			0.4	10
Athyriaceae	*Callipteris esculenta*	菜蕨	10			0.4	2	0.8	6					0.8	6
Gramineae	*Phragmites karka*	卡開蘆	51					1.5	53					1.5	10
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨				0.4	2								
Equisetaceae	*Equisetum debile*	筆管草	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													
Gramineae	*Panicum repens*	枯骨草													
Gramineae	*Coix lacryma-jobi*	薏苡													
Convolvulaceae	*Ipomoea cairica*	五爪金龍													
Cucurbitaceae	*Benincasa hispida*	冬瓜													
Bare Gound			10		78		6		10		73		88		9

- 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)

			ıpact monitoring				Impact monitoring						Ir	
		Stream	Jul-10				Jan-11							
		Transect	T1		T2		Reference		T1		T2		Reference	
			Height (m)	%	Height(m)	%	Height (m)	%	Height(m)	%	Height (m)	%	Height(m)	%
Family	Species	Chinese name			0.5	10								
Asteraceae	*Mikania micrantha*	薇甘菊	0.5	60			0.5	10					0.5	10
Moraceae	*Ficus hispida*	對葉榕												
Ulmaceae	*Celtis sinensis*	朴樹			4m	5								
Gramineae	*Microstegium ciliatum*	剛秀竹	1	5	0.5	10	1	15	1	5	0.5	2	1	2
Euphorbiaceae	*Macaranga tanarius*	血桐							4m	5				
Araceae	*Alocasia odora*	海芋			2	10					0.4	3		
Araceae	*Colocasia esculenta*	芋												
Myrtaceae	*Cleistocalyx operculatus*	水翁					0.4	5	5m	5				
Athyriaceae	*Callipteris esculenta*	菜蕨												
Gramineae	*Phragmites karka*	卡開蘆					1.5	2					1.5	2
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨												
Equisetaceae	*Equisetum debile*	筆管草												
Asteraceae	*Ageratum conyzoides*	勝紅薊									0.3	2	1.2	10
Commelinaceae	*Commelina communis*	鴨跖草	0.5	20							0.2	4		
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							0.5	5		3		
Gramineae	*Panicum repens*	枯骨草											1.5	5
Gramineae	*Coix lacryma-jobi*	薏苡												
Convolvulaceae	*Ipomoea cairica*	五爪金龍												
Cucurbitaceae	*Benincasa hispida*	冬瓜									0.2	5		
Bare Gound				15		65		68		80		89		71

- 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)

			npact monitoring				Impact monitoring					
		Stream	Jul-11				Jan-12					
		Transect	T1		T2		Reference		T1		T2	
			Height (m)	%	Height(m)	%	Height (m)	%	Height (m)	%	Height (m)	%
Family	Species	Chinese name										
Asteraceae	*Mikania micrantha*	薇甘菊					0.4	20				
Moraceae	*Ficus hispida*	對葉榕										
Ulmaceae	*Celtis sinensis*	朴樹										
Gramineae	*Microstegium ciliatum*	剛秀竹										
Euphorbiaceae	*Macaranga tanarius*	血桐										
Araceae	*Alocasia odora*	海芋										
Araceae	*Colocasia esculenta*	芋										
Myrtaceae	*Cleistocalyx operculatus*	水翁										
Athyriaceae	*Callipteris esculenta*	菜蕨										
Gramineae	*Phragmites karka*	卡開蘆										
Thelypteridaceae	*Cyclosorus parasiticus*	華南毛蕨										
Equisetaceae	*Equisetum debile*	筆管草							Construction Work		Construction Work	
Asteraceae	*Ageratum conyzoides*	勝紅薊					0.4	20				
Commelinaceae	*Commelina communis*	鴨跖草					0.4	10				
Solanaceae	*Solanum nigrum*	龍葵			0.5	4						
Euphorbiaceae	*Mallotus paniculatus*	白楸										
Gramineae	*Eleusine indica*	牛筋草			0.3	5						
Gramineae	*Pennisetum purpureum*	象草										
Asteraceae	*Wedelia chinensis*	蟛蜞菊										
Asteraceae	*Bidens alba*	白花鬼針草			0.2	2						
Gramineae	*Panicum repens*	枯骨草					1.5	5				
Gramineae	*Coix lacryma-jobi*	薏苡					1.5	5				
Convolvulaceae	*Ipomoea cairica*	五爪金龍					0.2	5				
Cucurbitaceae	*Benincasa hispida*	冬瓜										
Bare Gound				100		89		35		100		100

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

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

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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		
Common Name	**Species name**	**Chinese name**	**Status***	**Rarity***	Oct-07			Jan-09		
					Abundance			Abundance		
					T	PC1	PC2	T	PC1	PC2
Black Kite	*Milvus lineatus*	麻鷹	R,WV	C	+					
Black -crown Night Heron	*Nycticorax nycticorax*	夜鷺	R,WV	C						
Black-collared Starling	*Sturnus nigricollis*	黑領椋鳥	R	C	+	1	1			
Chinese Bulbul	*Pycnonotus sinensis*	白頭鵯	R	C	+	3	2	++	5	6
Chinese Pond Heron	*Ardeola bacchus*	池鷺	R	C	+			++	6	3
Common Kingfisher	*Alcedo atthis*	普通翠鳥	PM, WV	C	+					
Common Koel	*Eudynamys scolopacea*	噪鵑	R	C	+					
Common Sandpiper	*Actitis hypoleucos*	磯鷸	WV&PM	C	+					
Common Tailorbird	*Orthotomus sutorius*	長尾縫葉鶯	R	C	+		1	+	1	1
Crested Myna	*Acridotheres cristatellus*	八哥	R	C		1				
Domestic pigeon	*Columba sp.*	鴿	--	C		3				
Great Coucal	*Centropus sinensis*	褐翅鴉鵑	R	C	+	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
Little Egret	*Egretta garzetta*	小白鷺	R	C	+			+	1	
Rufous-backed Shrike	*Lanius schach*	棕背伯勞	R	C						
Magpie	*Pica pica*	喜鵲	R	C		1				
Magpie Robin	*Copsychus saularis*	鵲鴝	R	C	+	1	1			
Olive Backed pipit	*Anthus hodgsoni*	樹鷚	WV	C	+			+	1	3
Crested bulbul	*Pycnonotus jocosus*	紅耳鵯	R	C	+	2		+++	6	7
Spotted Dove	*Streptopelia chinensis*	珠頸斑鳩	R	C	+		2	+	1	
Scaly-breasted Munia	*Lonchura punctulata*	斑文鳥	R	C						
Eurasian Tree Sparrow	*Passer montanus*	麻雀	R	C	+	3	2			
Violet Whistling Thrush	*Myiophoneus caeruleus*	紫嘯鶇	R	C	+					
White Wagtail	*Motacilla alba*	白鶺鴒	WV, R	C	+		1			
White-breasted Waterhen	*Amaurornis phoenicurus*	白胸苦惡鳥	R	C	+					
Yellow Bellid Prinia	*Prinia flaviventris*	灰頭鳳鶯	R	C	+					
Yellow Wagtail	*Motacilla flava*	黃鶺鴒	WV&PM	C		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	SV, SpM	C						
Great Tit	*Parus major (commixtus)*	大山雀	R	C						
Blue Magpie	*Urocissa erythrorhyncha*	紅嘴藍鵲	R	C						
Scarlet Minivet	*Pericrocotus flammeus*	赤紅山椒鳥	R	C						
Scarlet-backed Flowerpecke	*Dicaeum cruentatum*	朱背啄花鳥	R	C						
Common Blackbird	*Turdus merula*	烏鶇	WV, PM	C						
Silver-eared Mesia	*Leiothrix argentauris*	銀耳相思鳥	R	C						
Sooty-headed Bulbul	*Pycnonotus aurigaster*	白喉紅臀鵯	R	C						
Number of birds									23	23
No. of species								8	8	6

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

*Sourced from 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.

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

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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)

					Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring			Impact monitorin			Impact monitorin		
Common Name	**Species name**	**Chinese name**	**Status***	**Rarity***	Jul-09			Jan-10			Jul-10			Jan-11			Jul-11			Jan-12		
					Abundance			Abundance			Abundance			Abundance			Abundance			Abundance		
					T	PC1	PC2	T	PC1	PC2	T	PC1	PC2	T	PC1	PC2	T	PC1	PC2	T	PC1	PC2
Black Kite	*Milvus lineatus*	黑鳶	R,WV	C				+						+						+		
Black -crown Night Heron	*Nycticorax nycticorax*	夜鷺	R,WV	C							+			+								
Black-collared Starling	*Sturnus nigricollis*	黑領椋鳥	R	C				+			+		1	+			+		1	+		1
Chinese Bulbul	*Pycnonotus sinensis*	白頭鵯	R	C	++	4	7	+++	7	6	+++	6	3	+	4	2	+	1		+	1	
Chinese Pond Heron	*Ardeola bacchus*	池鷺	R	C	+	2	3	++	3	3	++	2	2	+	1	1	+	1				
Common Kingfisher	*Alcedo atthis*	普通翠鳥	PM, WV	C							+			+								
Common Koel	*Eudynamys scolopacea*	噪鵑	R	C						2				+			+					
Common Sandpiper	*Actitis hypoleucos*	磯鷸	WV&PM	C										+			+					
Common Tailorbird	*Orthotomus sutorius*	長尾縫葉鶯	R	C	+		1	++		10	+	1		+		1	+			+		
Crested Myna	*Acridotheres cristatellus*	八哥	R	C							+			+	2		+		2	+		
Domestic pigeon	*Columba sp.*	鴿	--	C							+						+					
Great Coucal	*Centropus sinensis*	褐翅鴉鵑	R	C							+	1		+			+					
Grey Wagtail	*Motacilla cinerea*	灰鶺鴒	WV	C										+	2	1				+	1	2
Japanese White Eye	*Zosterops japonica*	暗綠繡眼鳥	R	C	+	1	4	+++	4	6	++	3	2	+	5	2	+			+		
Little Egret	*Egretta garzetta*	小白鷺	R	C	+		1	+		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																+		
Magpie Robin	*Copsychus saularis*	鵲鴝	R	C	+	1	3	+	2	1	+	2	2	+	1	1	+	1		+		2
Olive Backed pipit	*Anthus hodgsoni*	樹鷚	WV	C										+								
Crested bulbul	*Pycnonotus jocosus*	紅耳鵯	R	C	++	2	6	+++	4	5	++	3	2	+	2	1	+	1	2	+	2	
Spotted Dove	*Streptopelia chinensis*	珠頸斑鳩	R	C	+	1	3	+	1	2	+	1	1	+	1	1	+	1		++	4	3
Scaly-breasted Munia	*Lonchura punctulata*	斑文鳥	R	C																		
Eurasian Tree Sparrow	*Passer montanus*	麻雀	R	C				+			+	4	3	+			+		1	+		
Violet Whistling Thrush	*Myiophoneus caeruleus*	紫嘯鶇	R	C																		
White Wagtail	*Motacilla alba*	白鶺鴒	WV, R	C				++	2	3	+	1	1	+	2	2	+			++	2	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	C																		
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	SV, SpM	C													+					
Great Tit	*Parus major (commixtus)*	大山雀	R	C				+	2	1	+	1								+		
Blue Magpie	*Urocissa erythrorhyncha*	紅嘴藍鵲	R	C				+		2												
Scarlet Minivet	*Pericrocotus flammeus*	赤紅山椒鳥	R	C				+														
Scarlet-backed Flowerpecke	*Dicaeum cruentatum*	朱背啄花鳥	R	C				+														
Common Blackbird	*Turdus merula*	烏鶇	WV, PM	C										+								
Silver-eared Mesia	*Leiothrix argentauris*	銀耳相思鳥	R	C										+								
Sooty-headed Bulbul	*Pycnonotus aurigaster*	白喉紅臀鵯	R	C													+		1			
Number of birds						11	28		26	43		27	19		21	13		5	7		10	9
No. of species					8	6	8	18	9	13	19	13	11	23	10	10	20	5	5	16	5	5

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

*Sourced from 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.

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

					Baseline survey	Impact monitoring			
Species	Common name	Chinese name	Status	Commonness	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	紅蜻	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	+				+
Urothemis signata signata	Scarlet Basket	赤斑曲鈎脈蜻	NP	C					
Pseudagrion rubriceps rubriceps	Orange-faced Sprite	丹頂斑蟌	NP	C					
Euphaea decorata	Black-banded Gossamerwing	方帶幽蟌	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

			Impact monitoring		
Species	Common name	Chinese name	Jan-11	Jul-11	Jan-12
Orthetrum chrysis	Red-faced Skimmer	華麗灰蜻			
Crocothemis servilia servilia	Crimson Darter	紅蜻			
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			
Urothemis signata signata	Scarlet Basket	赤斑曲鈎脈蜻		+	
Pseudagrion rubriceps rubriceps	Orange-faced Sprite	丹頂斑蟌		+	
Euphaea decorata	Black-banded Gossamerwing	方帶幽蟌		+	

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"+" – Species exists in the survey site

"++" – Species common in the survey site

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

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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	
Species	Chinese name			Oct-07	
Invertebrates		Sampling point		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.

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

				Impact monitoring			Impact monitoring			Impact monitoring		
Species	Chinese name			Jan-09			Jul-09			Jan-10		
Invertebrates		Sampling point		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	+		+	+		+	+	++	

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"+++" – Species abundance in the survey site
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Table 5-5 Aquatic Macro invertebrates recorded at Upper Tai Po River (T1- Upper stream sampling site and T2- Lower stream sampling site)

				Impact monitoring			Impact monitoring			Impact monitoring		
Species	Chinese name			Jul-10			Jan-11			Jul-11		
Invertebrates		Sampling point		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	+	++		+			+		

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"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.

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

				Impact monitoring		
Species	Chinese name			Jan-12		
Invertebrates		Sampling point		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 survey		Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring			Impact monitoring		
				Oct-07		Jan-09			Jul-09			Jan-10			Jul-10			Jan-11		
Species		Status	Commonness	T1	T2	Reference	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	10	5	20

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

				Impact monitoring			Impact monitoring		
				Jul-11			Jan-12		
Species		Status	Commonness	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		6	2	4	6	2	5

Note: NP – Not protected in Hong Kong

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

"+" – 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 site)

Stream	Oct-07 (baseline survey)	Jan-09		Jul-09		Jan-10		Jul-10		Jan-11		Jul-11		Jan-12	
Replicate	T1	T1	T2	T1	T2	T1	T2	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	10.5	9.8	9	8.2	8.8	8.4
pH	6.9	7.18	6.86	7.28	6.96	8.2	8.5	7.3	7.2	6.9	7.1	7.1	7.3	6.8	7.6
Nitrate (mg N/L)	0.39	0.1	1.3	0.07	1.32	0.12	0.71	0.1	0.5	0.1	0.5	0.1	0.5	<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	0.01	0.3	0.01	0.2	<0.01	0.3
Salinity (ppt)	<0.1	<0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0
Conductivity (mS/cm)	40	40	190	34	118	42	72	49	43	50	60	50	60	65	74
BOD (mg/L)	<2	<2	12	<2	<2	<2	2	<2	2	2	<2	<2	2	<2	3
Water flow at pool	0.01-0.2	0.01-0.2		0.01-0.2		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		0.2-0.5		0.2-0.5		0.2-0.5	
Sand (%)	15	15		15	25	15	25	15	25	15	25	15	15	15	15
Stone (%)	80	80		80	70	80	70	80	70	80	70	80	70	80	70
Mud (%)	5	5		5	5	5	5	5	5	5	5	5	5	5	5
Concrete(%)	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10

FIGURE

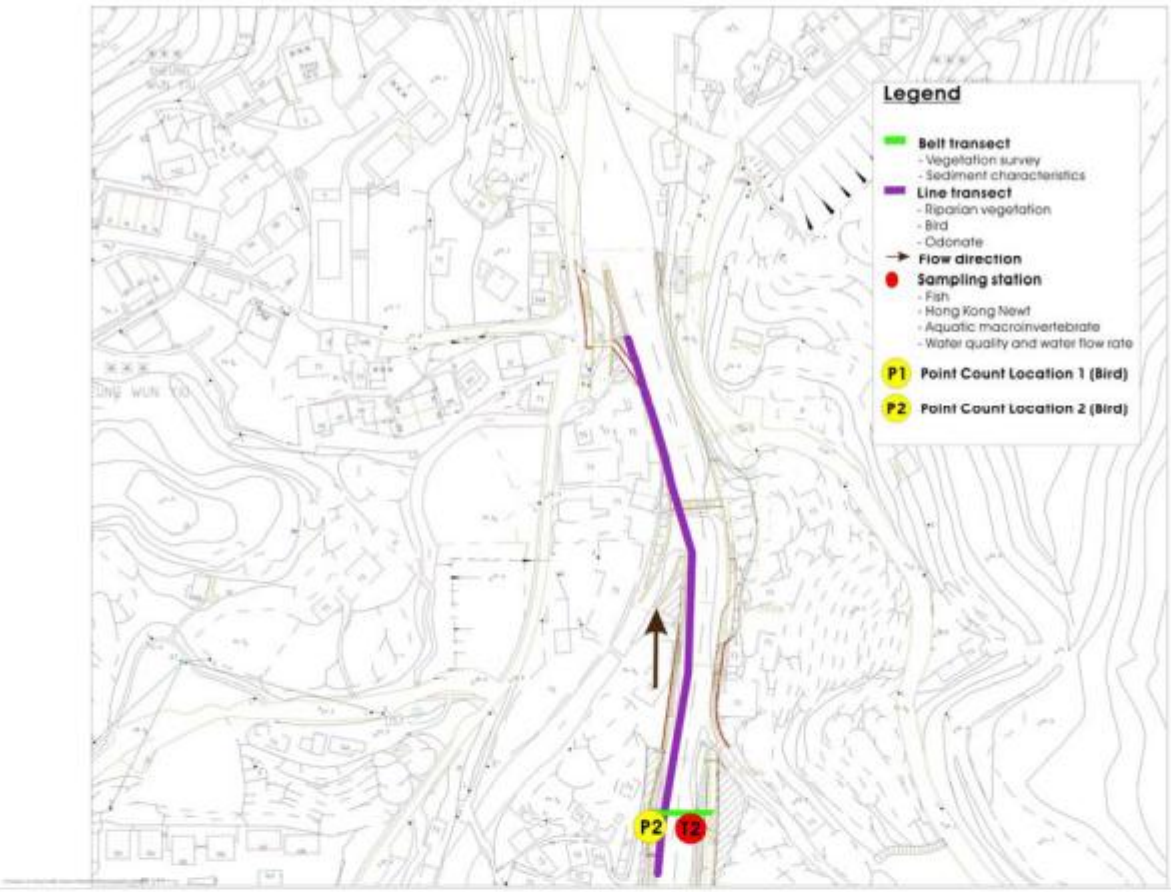


Figure 1-1. Sampling location of impact monitoring at Upper Tai Po River(Lower Section)

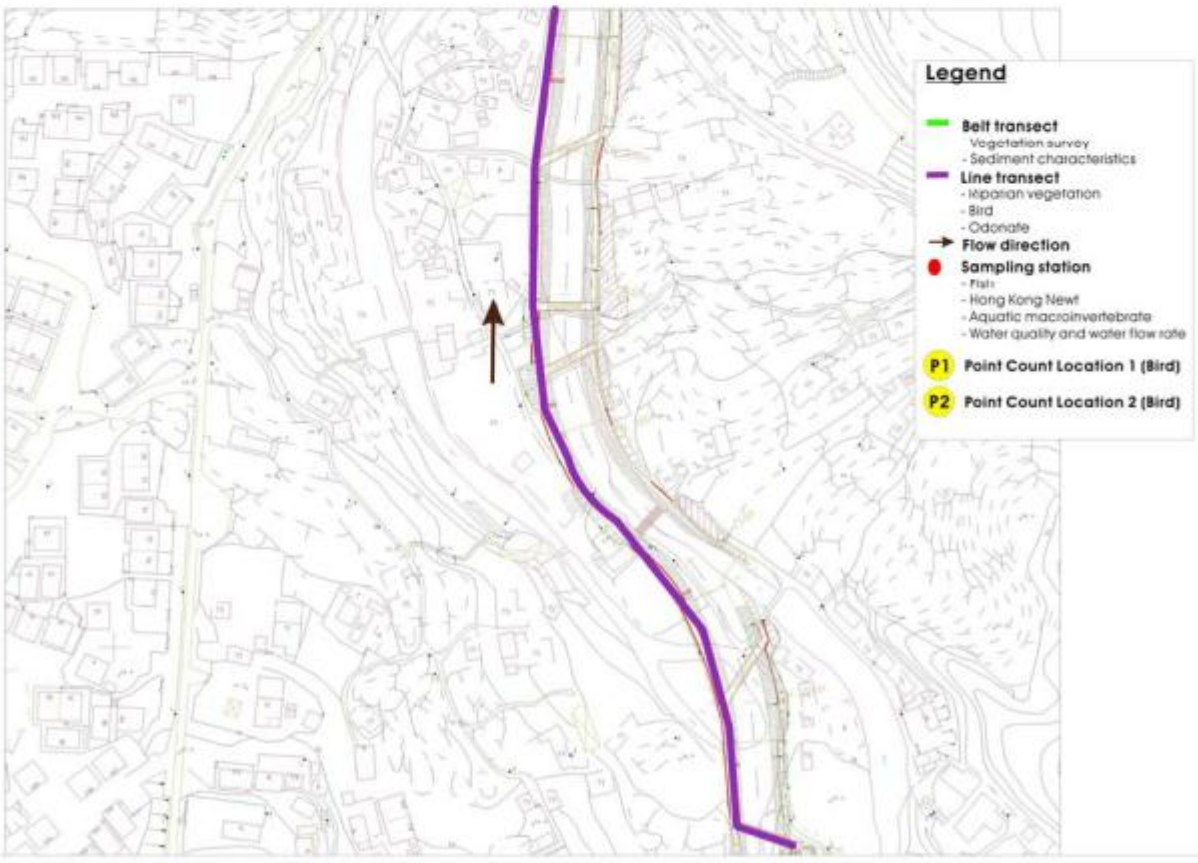


Figure 1-2. Sampling location of impact monitoring at Upper Tai Po River(Middle Section)

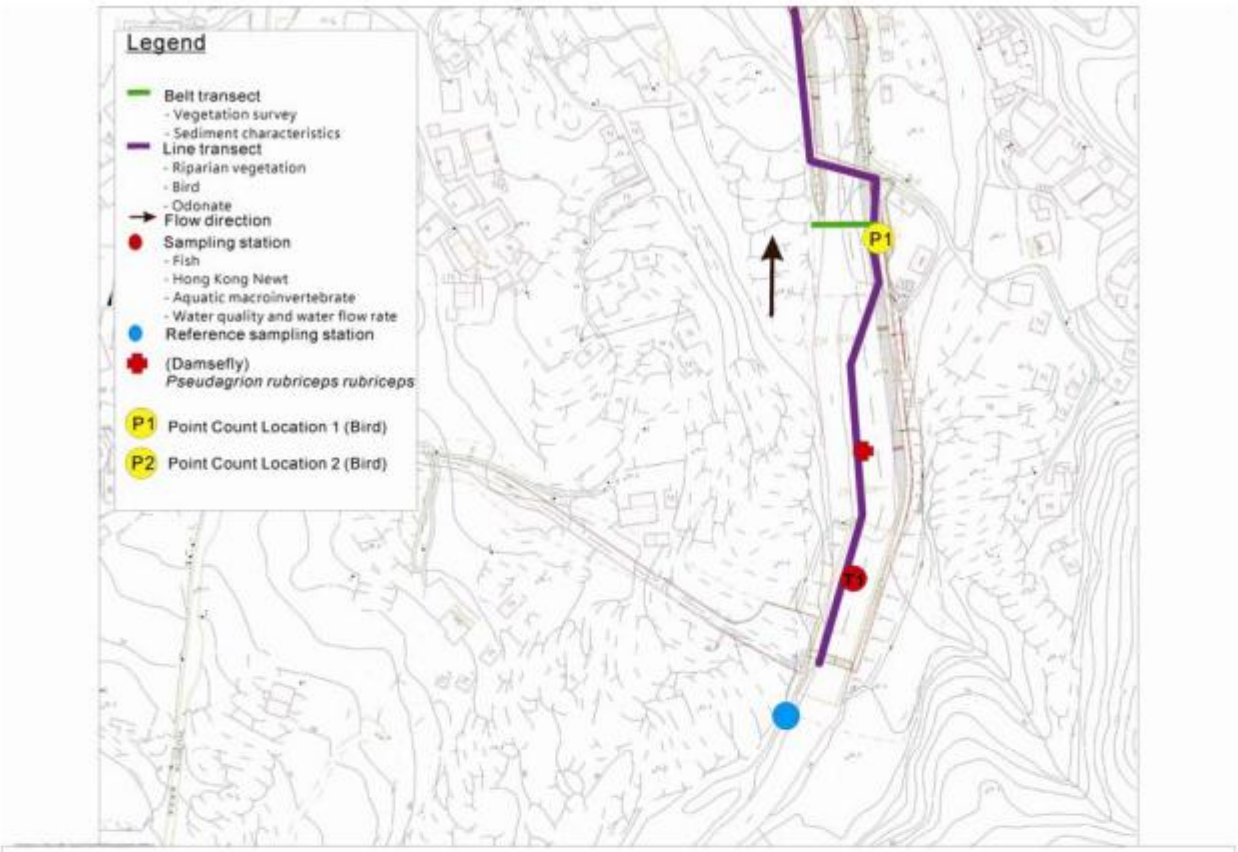


Figure 1-3. Sampling location of Impact monitoring at Upper Tai Po River(Upper Section)

APPENDIX I Summary of Total Accumulative Complaint Received.

Case No.	EPD Complaint Reference	Date Received	Incident Location	Media/ Nature
9(E*)	EP/3/N05/RN/24567-08	05/11/2008	UTPR	Muddy Water
10(E*)	EP/3/N05/RN/24849-08	10/11/2008	UTPR	Muddy Water
12(E*)	EP/3/N05/RN/26619-08	28/11/2008	UTPR, Wilson Trial	Muddy Water
15(P#*)	NA	27/11/2008	UTPR Wilson Drive	Dust Generation
21(E*)	ICC#1-174345035	24/3/2009	UTPR near Sha Po Tsai Village	Noise
25(E*)	ICC#1-219109670	06/02/2010	Tai Po River	Noise generation at night
27(E*)	EP3/N05/RN/00004775-10	12/03/2010	Tai Po River	Muddy Water
28(#)	NA	07/04/2010	Tai Po River	Noise generation
30(E*)	NCF-N05/RN/00007763-10	21/04/2010	Tai Po River	Muddy Water
31(E*)	EP3/N05/RN/00009177-10	10/05/2010	Tai Po River	Muddy Water
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
36(E*)	EP3/N05/RN/00003752-11	02/03/2011	Tai Po River	Noise Generation
37(E#)	NA	07/03/2011	Tai Po River	Dust Generation
38(E*)	EP3/N05/RN/00004753-11	16/03/2011	Tai Po River	Muddy Water
39(E*)	EP3/N05/RN/00008234-11	03/05/2011	Tai Po River	Noise generation on Public holiday
40(E*)	ECRS No. 3270	06/05/2011	Tai Po River	Dust Generation
42(E*)	EP3/N05/RN/00009991-11	24/5/2011	Tai Po River	Noise Generation
45(E*)	ECRS No. 5769	21/06/2011	Tai Po River	Stagnant Water generation
46(E*)	EP3/N05/RN/00018630-11	09/09/2011	Tai Po River	Dust and Noise generation
47(E*)	EP3/N05/RN/00018630-11	14/09/2011	Tai Po River	Dust generation
49(E*)	EP3/N05/RN/00021938-11	27/10/2011	Tai Po River	Muddy water
50(E*)	EP3/N05/RN/00024845-11	01/12/2011	Tai Po River	Dust emission and earth deposition

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

Dust

- Arrange the staff to clean the upper access during the vehicle pass the road.
- The access at downstream would be clean 2 times in one day.
- The wheel washing bay was provided to prevent the dust erosion.
- The wheels of the vehicles are required to be cleaned before leave.

Muddy Water

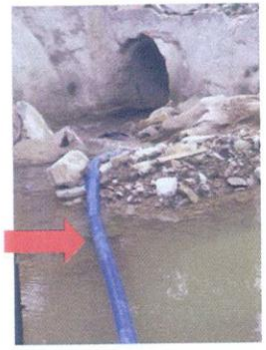
- The rock has been used to create a river bank to reduce the sand and/or mud is washed into river bank.
- Watering along the access road is carried out every day.
- Sand Bags is provided to prevent the muddy water discharge to the river. The muddy water has been treated by effective Wet Seps to minimize the water penetrate through the soil to river.

Noise

- Work 25mins then take a rest 10mins
- noise barrier
- Machines would not be operated at same time and point besides work far away from Noise sensitive receiver
- Regular maintenance

Appendix L: Checklist for Rectification of the Non-compliance

Checklist for Rectification of the Non-compliance (NC)

Action Items	Location	Record Photos	Non-compliance Defects	Rectification Method	Rectify Photos	Inspection Date	Inspection by
1.3 (a)	Upper Tai Po River, Area N		Muddy water was observed being directly discharged into river from sump pit near Ch. 250.	A sedimentation tank has been provided to treat the muddy water prior to the discharge into the west branch of the river. The sedimentation tank will be cleaned and de-sludge regularly.		17 Mar 12	
						24 Mar 12	
						31 Mar 12	
						07 Apr 12	
						14 Apr 12	
						21 Apr 12	
						28 Apr 12	
						05 May 12	

1.3 (b)	Upper Tai Po River, Area N		Muddy water overflowed from the wheel washing bay was observed	A sedimentation tank has been provided to treat the muddy water from ahead washing bay prior to the discharge into the river. The sedimentation tank will be cleaned and de-sludge regularly Also, the boarder of wheel washing bay has been increased to prevent the overflow of wheel washing water.	 	17 Mar 12	JS
						24 Mar 12	JS
						31 Mar 12	JS
						07 Apr 12	
						14 Apr 12	
						21 Apr 12	
						28 Apr 12	
						05 May 12	

1.3 (c)	Upper Tai Po River, Area N		The capacity of sedimentation tank near Ch.600 was insufficient.	A proper sedimentation tank which has sufficient capacity to treat the muddy water before discharge to the river. Also, an additional sedimentation tank has been provided.		17 Mar 12	
						24 Mar 12	
						31 Mar 12	
						07 Apr 12	
						14 Apr 12	
						21 Apr 12	
						28 Apr 12	
						05 May 12	