

PROJECT No.: TCS/00394/12

CONTRACT NO. DC/2007/06 – RIVER IMPROVEMENT WORKS IN UPPER LAM TSUEN RIVER, SHE SHAN RIVER AND UPPER TAI PO RIVER

52ND MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT FOR UPPER TAI PO RIVER – DECEMBER 2012

PREPARED FOR
CHIU HING CONSTRUCTION AND TRANSPORTATION
COMPANY LIMITED

Quality Index

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Ver.	Date	Description
1	10 January 2013	First submission
2	4 February 2013	Amended against IEC's comments on 21 January 2013

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EXECUTIVE SUMMARY

- ES.01. This is the **fifty-second** (52nd) monthly Environmental Monitoring and Audit (EM&A) Report for the river improvement works at Upper Tai Po River under Drainage Services Department (DSD) Contract No. DC/2007/06 entitled "River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River" (hereinafter "the Project"). This report concludes the impact monitoring results and findings for the activities undertaken during the period from 1st to 31st December 2012 (hereinafter "the Reporting Period").
- ES.02. 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 inspection records and photos taken were kept.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

- ES.03. Environmental Team had carried out construction noise monitoring on weekly basis and no exceedance was found in the Reporting Period. The noise monitoring results collected in the Reporting Period are presented in *Section 4*.
- ES.04. In the Reporting Period, weekly ecological inspections were carried out on 3rd, 10th, 17th, and 24th and 31st December 2012.
- ES.05. In the Reporting Period, 4 events of site inspection were carried out by the ET on 5th, 12th, 19th and 27th December 2012 in which on 5th, 12th and 27th December 2012 were joint weekly environmental site inspections with the Contractor, Independent Environmental Checker (IEC) and Engineer's Representative (ER). Also, DSD's representatives attended the site inspection with the IEC and ER on 18th December 2012. In the Reporting Period, 5 observations were recorded but no non-compliance was identified.
- ES.06. As no piling work conducted, no vibration monitoring was performed in this Reporting Period.
- ES.07. Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Issues	Issues Environmental Monitoring Parameters / Inspection	
Construction Noise	L _{eq30min} Daytime	44
Inspection Audit	Weekly Environmental inspection by the ET	4
Ecological	Ecological Impact Monitoring	0
Ecological	Weekly inspection by the Ecologist	4

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.08. No noise complaint (which is an Action Level exceedance) was received in the Reporting Period. Also, no Limit Level exceedance of noise monitoring was recorded.

ENVIRONMENTAL COMPLAINT

ES.09. No written or verbal complaint in relation to environmental matters was recorded in the Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

ES.10. No environmental summons or successful prosecution was recorded in the Reporting Period.

REPORTING CHANGE





ES.11. No reporting change was made in the Reporting Period.

FUTURE KEY ISSUES

- ES.12. During dry season, dust control measures to avoid fugitive dust in the construction site should be properly provided and maintained, as appropriate. In addition, water quality mitigation measures such as prevention of muddy water and other water quality pollutants via site surface water runoff into the local stream of Tai Po River should be fully implemented.
- ES.13. On the other hand, construction noise will be another key environmental issue. Noise mitigation measures should be implemented in accordance with the EM&A Manual.
- ES.14. The Contractor is reminded to provide environmental pollution control measures wherever necessary and keep a good environmental management for site practice.

DSD Contract DC/2007/06 – River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River 52nd Monthly EM&A Report for Upper Tai Po River – December 2012





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1.0 INTRODUCTION

PROJECT BACKGROUND

- 1.01 This is the **fifty-second** (52nd) 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".
- 1.02 Site layout plan of Upper Tai Po River is shown in *Appendix A*. Approximately 0.6km of Upper Tai Po River will be improved to enhance the hydraulic performance of the river. The location of the project site at Upper Tai Po River starts from Ta Tit Yan of Tai 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. To the east of the river, there are active and abandoned cultivated lands. 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 construction of the proposed improvement works for Upper Tai Po River has commenced on 15th September 2008 and substantially completed on 31 December 2012. The improvement works comprise of the following:
 - Re-profiling and realignment of the channel;
 - Inclusion of gabions and retaining wall for bank protection whilst providing a natural channel bed; and
 - Re-provisioning of footbridges and footpaths along the channel.
- 1.03 Since 12th July 2012, Action United Environmental Services & Consulting (AUES) has been appointed by Chiu Hing Construction and Transportation Company Limited (hereinafter "the Contractor") as the Environmental Team replacing Environmental Pioneers & Solutions Limited to implement the EM&A programme and prepare report.
- 1.04 This report presents the results of the environmental monitoring conducted at Upper Tai Po River in **December 2012**. It includes weekly site inspections to verify the implementation of the mitigation measures as recommended in Environmental Permit EP-223/2005/A, EM&A Manual, the Particular Specifications of the Contract and the Contractor's Environmental Management Plan (EMP).

REPORT STRUCTURE

1.05 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1	Introduction
Section 2	Construction Progress and Submission
Section 3	EM&A Program Requirement for Upper Tai Po River
Section 4	Noise Monitoring Results
Section 5	Vibration Monitoring Results
Section 6	Ecology Monitoring Results
Section 7	Site Inspections
Section 8	Waste Management
Section 9	Environmental Complaint and Non-Compliance
Section 10	Implementation Status of Mitigation Measures
Section 11	Impact Forecast
Section 12	Conclusions and Recommendations



2.0 CONSTRUCTION PROGRESS AND SUBMISSION

CONSTRUCTION PROGRESS

- 2.01 The proposed construction sequences are shown in the following:
 - Site clearance and preparation works
 - Construction of maintenance access which involves construction of retaining walls
 - River channel construction and excavation, involving excavation works, construction of retaining walls and gabion walls
 - Construction of additional boulder trap and additional stilling basins with baffle blocks
 - Provision of riverbed treatment
 - Re-provisioning of footbridges
 - Construction of footpaths
 - Landscaping works
- 2.02 The major construction activities undertaken at Upper Tai Po River in the Reporting Period are listed below:-
 - Formation of riverbed;
 - Construction of dwarf walls;
 - Construction of retaining walls;
 - Construction of surface drains;
 - Construction of footpath;
 - Construction of inclined gabion walls;
 - Installation of steel decking;
 - Construction of gabion mattress; and
 - Laying of underground utilities.
- 2.03 The master and three month rolling construction programs are enclosed in *Appendix B*.

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.04 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Contract in the Reporting Period is presented in *Table 2-1*.

Table 2-1 Status of Environmental Licenses and Permits

Description	License / Permit No.	Date of Issue	Date of Expiry	Remarks
Environmental Permit	EP-223/2005	31 Aug 2005	N/A	Superseded by EP-223/2005/A
Amended Environmental Permit	EP-223/2005/A	18 Nov 2008	N/A	Issued
Construction Noise Permit	NA	N/A	N/A	N/A
Effluent Discharge License	3678	14 Mar 2008	31 Mar 2013	Issued
Registration as a Chemical Waste Producer	5213-724-C3251-03	19 Dec 2007	N/A	Issued
Billing Account for Disposal of Construction Waste	7006101	N/A	N/A	N/A



3.0 EM&A PROGRAM REQUIREMENT FOR UPPER TAI PO RIVER

3.01 The EM&A requirements set out in the Environmental Permit EP-223/2005/A (hereinafter 'the EP'), and the associated EM&A Manual, are presented in the following sub-sections.

MONITORING PARAMETERS

3.02 According to the EM&A Manual, the monitoring requirements under this Contract are listed in *Table 3-1*.

Table 3-1 Summary of Monitoring Parameters

Environmental Aspect	Parameters	
Construction	• A-weighted equivalent continuous sound pressure level (30min) (hereinafter	
Noise	'L _{eq(30min)} ' during the normal working hours; and	
	• A-weighted equivalent continuous sound pressure level (15min) (hereinafter	
	$L_{eq(15min)}$ for construction work during the restricted hours.	
*Ecology	Inspection and auditing the proper implementation of mitigation measures	
	stipulated in EIA report and EM&A Manual	

Remarks: *Monitoring as carried out by the Ecologist appointed by the Contractor

MONITORING LOCATIONS

3.03 Monitoring locations have been proposed in EM&A Manual. Graphic plot is shown in *Appendix C* and summarized in *Table 3-2*.

Table 3-2 Designated Monitoring Locations of the EM&A Programme

Aspect	Location ID	Address	
	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	
Construction	UTP5	Village House near Upper Tai Po River	
Noise	UTP6	Village House near Upper Tai Po River	
Noise	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	
Ecology	As within and	nd adjacent to Upper Tai Po River of construction works areas	

MONITORING FREQUENCY

3.04 The monitoring frequency and duration as specified in EM&A Manual are summarized below.

Construction Noise

<u>Frequency</u>: Once a week during 0700-1900 on normal weekdays for $L_{eq(30min)}$

If construction work is undertaken at restricted hour, the frequency of construction noise monitoring will comply with the requirements stipulated in the related

Construction Noise Permit issued by EPD.

<u>Duration</u>: Throughout the construction period when major construction activities are

undertaken

Ecology

<u>Frequency</u>: Weekly site inspection and bi-annual monitoring

Duration: Throughout the construction period when the major construction activities are

undertaken



MONITORING EQUIPMENT

Noise Monitoring

3.05 Sound level meter in compliance with *International Electrotechnical Commission Publications* 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for noise monitoring. The sound level meter shall be checked with an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter, which is capable to measure wind speed in m/s.

Table 3-3 Monitoring Equipment Used in EM&A Program

Equipment	Model
Construction Noise	
Integrating Sound Level Meter	Bruel & Kjaer Type 2238 or Rion NL-31
Calibrator	Bruel & Kjaer Type 4231
Portable Wind Speed Indicator	Testo Anemometer

MONITORING METHODOLOGY

Noise Monitoring

- 3.06 Noise measurements are taken in terms of the A-weighted equivalent sound pressure level (L_{eq}) measured in decibels (dB). Supplementary statistical results (L_{10} and L_{90}) are also obtained for reference.
- 3.07 Sound level meters as listed in *Table 3-3* comply with *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications, as recommended in Technical Memorandum (TM) issued under the *Noise Control Ordinance (NCO)*.
- 3.08 During the monitoring, all noise measurements are performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30min)}$ in six consecutive $L_{eq(5min)}$ measurements is used as the monitoring parameter for the time period between 0700-1900 hours on weekdays. $L_{eq(15min)}$ in three consecutive $L_{eq(5min)}$ measurements is used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.
- 3.09 During the course of measurement, the sound level meter is mounted on a tripod with a height of 1.2m above ground and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. The assessment point is normally set as free-field situation for the measurement.
- 3.10 Prior to noise measurement, the accuracy of the sound level meter is checked by an acoustic calibrator which generates a known sound pressure level at a known frequency. The checking is performed before and after noise measurement.

DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.11 The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.
- 3.12 The monitoring data recorded in the noise meter are downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET.

OTHERS MONITORING IMPLEMENTATION FOR THE CONTRACT

Vibration

3.13 Vibration monitoring will be carried out when piling works take place in Upper Tai Po River. The targeted monitoring buildings are Fan Sin Temple (VM2) and Wun Yiu Kiln Site of Sheung Wun Yiu (VM1), they are located within 300m of the proposed work areas. The vibration



monitoring measures would record the vibration levels in the vicinity at entrance ground level and external wall of Temple buildings.

- 3.14 Vibration samples will be taken using a SVAN 949 analyzer. This analyser is equipped with a connecting cable MIL-C-17/28 RG 058 and a DYTRAN 3185D accelerometer. The frequency range will be set to 200 Hz and the number of sampling points will be set to 1024, resulting in a frequency resolution of around 0.2 Hz. Hanning window functions will be selected and maximum hold functions shall be applied over the event to pick up the peak-to-peak amplitude.
- 3.15 Measurements will be recorded by attaching the accelerometer to the structural foundation, such as structural steel beam(s) of the building. The accelerometer will be orientated, either x-, y- or z-directional in order to pick to the maximum amplitude. If measurements have to be taken on a floor or a hard surface next to a structure, the accelerometer shall be attached firmly on the surface (or to a triangular metal bracket glued to a spiked plate).
- 3.16 The monitoring would be taken at the closest accessible point to the historic building to enable assessment of the potential risk arising from the vibration associated with the prospective work activities.
- 3.17 Vibration monitoring works will be conducted upon commencement of piling/ drilling process. Monitoring will be carried out weekly in the first month and bi-weekly in the subsequent months of piling/ drilling process during the construction period if no exceedance of limit were recorded. No disturbance will be made to the fabrics of Fan Sin Temple during the vibration monitoring process.

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.18 The established performance criteria for construction noise, namely Action and Limit levels are used for the Project is listed in *Table 3-4*.

Table 3-4 Action and Limit Levels for Construction Noise

Location	Time Period	Action Level	Limit Level
UTP1, UTP2,	Daytime		75* dB(A)
UTP3, UTP4,	0700 – 1900 hrs on normal weekdays	When one	73° dB(A)
UTP5, UTP6,	1900 – 2300 on all days and 0700 – 2300	documented	60/65/70 dB(A)**
UTP7, UTP8,	on general holidays (including Sundays)	complaint is	00/03/70 dB(A)
UTP9, UTP10,	2200 0700 am all dans	received	45/50/55 4D(A)**
UTP11	2300 – 0700 on all days		45/50/55 dB(A)**

Note: * Reduces to 70dB(A) for schools and 65dB(A) during the school examination periods.

3.19 Guidance regarding vibration limits is provided by the following British Standards "BS 7385 - Measurement and evaluation of vibration in buildings. Part 2: Guide to damage levels from ground borne vibration" (or their equivalent ISO standards). Table 3-5 is shown the transient vibration guide values for cosmetic building damage

Table 3-5 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	15 at 4 Hz,	
	structures	increasing to 20 at 15 Hz,	
		increasing to 50 at 40 Hz and above.	

BS 7385 suggests vibration levels, above 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

^{**} To be selected based on the Area Sensitivity Rating of A/B/C, and the conditions of the applicable CNP(s) must be followed

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Hz and above. Minor structural damage is possible at vibration levels twice those given above, major damage at four times the levels given.

EQUIPMENT CALIBRATION

3.20 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme in yearly basis. Valid calibration certificates of the noise monitoring equipment used for the impact monitoring program in the Reporting Period are attached in *Appendix D*.

METEOROLOGICAL INFORMATION

3.21 The meteorological information during the construction phase is obtained from Tai Po and Shatin Stations of the Hong Kong Observatory (HKO). The meteorological data during the impact monitoring days are summarized in *Appendix G*.



4.0 NOISE MONITORING RESULTS

4.01 The monitoring schedule had been issued to relevant parties before each Reporting Period and presented in *Appendix F*. The works undertaken during the Reporting Period are illustrated in *Appendix B*. The monitoring results are presented in the following sub-sections.

RESULT SUMMARY

4.02 In the Reporting Period, the noise monitoring results at the designated locations are presented in *Tables 4-1 to 4-11* and the graphical plot is shown in *Appendix H*. The observed noise sources during the course of noise monitoring are summarized in in *Appendix J*

Table 4-1 Construction Noise Monitoring Results at UTP1

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$\frac{2^{\mathrm{nd}}}{\mathrm{L_{eq5min}}}$	$\frac{3^{\rm rd}}{\rm L_{\rm eg5min}}$	$4^{ m th} \ m L_{ m eg5min}$	$5^{ m th} \ m L_{ m eg5min}$	$\frac{6^{\text{th}}}{\text{L}_{\text{eq5min}}}$	$L_{\rm eq30min}$	Sound Level Meter ID
5-Dec-12	15:15	62.9	63.8	66.0	64.6	63.6	67.0	65	EQ065
11-Dec-12	14:18	64.0	63.6	67.7	61.9	65.6	71.1	67	EQ009
17-Dec-12	10:59	67.7	62.9	62.0	70.6	65.7	68.1	67	EQ009
29-Dec-12	10:30	61.4	69.2	65.6	62.3	62.3	66.5	65	EQ065
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-2 Construction Noise Monitoring Results at UTP2

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$2^{ m nd} \ m L_{ m eq5min}$	$\begin{matrix} 3^{\rm rd} \\ L_{\rm eq5min} \end{matrix}$	$4^{ m th} \ m L_{ m eq5min}$	$5^{ ext{th}}$ $L_{ ext{eq5min}}$	$\begin{array}{c} 6^{\text{th}} \\ L_{\text{eq5min}} \end{array}$	$L_{eq30min}$	Sound Level Meter ID
5-Dec-12	15:47	56.4	57.7	62.0	61.1	59.7	60.2	60	EQ065
11-Dec-12	13:16	66.6	66.4	65.8	65.8	66.9	66.7	66	EQ009
17-Dec-12	11:33	57.1	60.7	56.0	54.2	63.5	66.3	62	EQ009
29-Dec-12	10:35	63.8	65.9	65.6	62.3	65.5	63.3	65	EQ006
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-3 Construction Noise Monitoring Results at UTP3

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$2^{ m nd} \ m L_{ m eg5min}$	$3^{ m rd} \ m L_{ m eg5min}$	$egin{array}{c} oldsymbol{4^{ ext{th}}} \ oldsymbol{ ext{L}_{ ext{eq5min}}} \end{array}$	$5^{ ext{th}}$ $L_{ ext{eq5min}}$	$\frac{6^{\text{th}}}{\text{L}_{\text{eg5min}}}$	$L_{\rm eq30min}$	Sound Level Meter ID
5-Dec-12	15:53	69.2	69.5	70.5	70.1	69.8	70.8	70	EQ006
11-Dec-12	13:47	69.0	71.7	67.5	65.1	69.1	65.9	69	EQ009
17-Dec-12	11:13	65.5	65.8	65.4	69.1	65.3	65.3	66	EQ067
29-Dec-12	9:41	61.7	60.8	62.7	63.2	64.4	63.6	63	EQ067
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-4 Construction Noise Monitoring Results at UTP4

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$2^{ m nd} \ m L_{ m eq5min}$	$\begin{matrix} 3^{\rm rd} \\ L_{\rm eq5min} \end{matrix}$	$egin{array}{c} egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}$	$5^{ ext{th}}$ $L_{ ext{eq5min}}$	$6^{\rm th} \atop L_{\rm eq5min}$	$L_{eq30min} \\$	Sound Level Meter ID
5-Dec-12	14:07	56.1	60.1	61.3	61.0	61.4	58.9	60	EQ009
11-Dec-12	13:34	75.4	60.5	73.6	66.6	59.1	64.1	70	EQ010
17-Dec-12	10:36	73.8	70.2	73.0	74.1	74.3	74.3	73	EQ010
29-Dec-12	10:15	56.2	57.1	57.8	57.3	58.8	60.1	58	EQ067
Limit Level in dB(A)								75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.



Table 4-5 Construction Noise Monitoring Results at UTP5

Date	Start Time	$\begin{array}{c} \mathbf{1^{st}} \\ \mathbf{L_{eq5min}} \end{array}$	$\frac{2^{\text{nd}}}{L_{\text{eq5min}}}$	$\begin{matrix} 3^{\rm rd} \\ L_{\rm eq5min} \end{matrix}$	$4^{ m th} \ m L_{ m eq5min}$	$5^{ m th}$ $L_{ m eq5min}$	$\begin{matrix} 6^{\text{th}} \\ L_{\text{eq5min}} \end{matrix}$	$L_{eq30min}$	Sound Level Meter ID
5-Dec-12	14:40	62.5	59.9	60.7	72.2	59.9	63.2	66	EQ009
11-Dec-12	13:03	64.0	59.0	70.9	70.0	66.9	62.5	67	EQ010
17-Dec-12	10:05	70.6	69.3	70.2	66.1	69.0	70.9	70	EQ010
29-Dec-12	10:53	57.7	58.0	56.2	57.0	57.6	56.3	57	EQ067
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-6 Construction Noise Monitoring Results at UTP6

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$2^{ m nd} \ m L_{ m eg5min}$	$3^{ m rd} \ m L_{ m eq5min}$	$4^{ m th} \ m L_{ m eg5min}$	$5^{ m th}$ $L_{ m eg5min}$	$\begin{array}{c} 6^{\text{th}} \\ L_{\text{eq5min}} \end{array}$	$L_{ m eq30min}$	Sound Level Meter ID
5-Dec-12	15:16	53.9	52.5	52.4	53.9	53.9	53.7	53	EQ006
11-Dec-12	14:12	66.9	60.3	60.4	59.8	54.4	56.3	62	EQ006
17-Dec-12	11:30	58.2	56.7	53.1	51.0	50.2	53.8	55	EQ006
29-Dec-12	10:32	59.9	68.7	67.6	58.4	53.9	57.5	64	EQ010
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-7 Construction Noise Monitoring Results at UTP7

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$\frac{2^{\mathrm{nd}}}{\mathrm{L_{eq5min}}}$	$\frac{3^{\rm rd}}{\rm L_{\rm eg5min}}$	$4^{ m th} \ m L_{ m eg5min}$	$5^{ m th} \ m L_{ m eg5min}$	$6^{ m th} \ m L_{ m eg5min}$	$L_{eq30min}$	Sound Level Meter ID
5-Dec-12	15:13	62.6	56.1	58.4	55.1	55.9	57.2	58	EQ009
11-Dec-12	14:07	57.3	60.8	56.2	55.1	55.0	52.3	57	EQ010
17-Dec-12	11:00	60.8	59.0	59.4	66.6	71.4	73.3	69	EQ006
29-Dec-12	10:00	59.3	60.3	59.1	63.2	56.7	54.9	60	EQ010
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-8 Construction Noise Monitoring Results at UTP8

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$\frac{2^{\mathrm{nd}}}{\mathrm{L_{eq5min}}}$	$\frac{3^{\rm rd}}{\rm L_{\rm eq5min}}$	$4^{ m th} \ m L_{ m eg5min}$	$5^{ m th}$ ${ m L_{eg5min}}$	$6^{ m th} \ m L_{ m eg5min}$	$L_{\rm eq30min}$	Sound Level Meter ID
5-Dec-12	14:41	56.2	65.3	66.5	54.4	54.4	60.9	62	EQ006
11-Dec-12	13:39	64.2	66.0	62.8	63.7	63.1	62.2	64	EQ006
17-Dec-12	10:25	61.3	63.4	58.2	62.0	59.9	58.1	61	EQ006
29-Dec-12	9:26	54.8	55.2	60.4	60.5	57.3	62.8	59	EQ010
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-9 Construction Noise Monitoring Results at UTP9

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$\frac{2^{\text{nd}}}{L_{\text{eq5min}}}$	$\begin{matrix} 3^{\rm rd} \\ L_{\rm eq5min} \end{matrix}$	$4^{ m th} \ m L_{ m eq5min}$	$5^{ m th}$ $L_{ m eq5min}$	$6^{\rm th} \atop L_{\rm eq5min}$	$L_{\rm eq30min}$	Sound Level Meter ID
5-Dec-12	14:10	62.6	64.2	63.1	54.3	53.1	64.1	62	EQ006
11-Dec-12	13:08	68.6	58.9	61.8	62.1	59.0	57.8	63	EQ006
17-Dec-12	9:55	65.0	62.5	63.6	65.0	64.0	60.2	64	EQ006
29-Dec-12	9:25	64.9	58.8	60.4	63.7	57.3	64.4	62	EQ006
Limit Level in dB(A)								75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.



Table 4-10 Construction Noise Monitoring Results at UTP10

Date	Start Time	$1^{\rm st} \atop L_{\rm eq5min}$	$2^{ m nd} \ m L_{ m eg5min}$	$3^{ m rd} \ m L_{ m eg5min}$	$egin{array}{c} egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}$	$5^{ m th}$ ${ m L_{eg5min}}$	$6^{ m th} \ m L_{ m eg5min}$	$L_{eq30min}$	Sound Level Meter ID
5-Dec-12	14:42	46.0	46.9	53.7	43.8	49.3	51.8	50	EQ065
11-Dec-12	13:00	53.1	61.2	57.3	42.8	40.6	41.8	55	EQ065
17-Dec-12	9:50	49.8	46.0	57.3	48.6	69.5	47.1	62	EQ009
29-Dec-12	9:25	56.8	52.6	53.5	46.7	48.8	55.4	54	EQ065
Limit Level	in dB(A)							75	

Remarks: The monitoring is undertaken under façade situation. No façade correction is made according to acoustical principles and EPD guidelines.

Table 4-11 Construction Noise Monitoring Results at UTP11

Date	Start Time	$\begin{matrix} \mathbf{1^{st}} \\ \mathbf{L_{eq5mi}} \\ \mathbf{n} \end{matrix}$	$\begin{matrix} 2^{nd} \\ L_{eq5min} \end{matrix}$	$\begin{matrix} 3^{rd} \\ L_{eq5min} \end{matrix}$	4th L _{eq5min}	5th L _{eq5min}	6th L _{eq5min}	$L_{ m eq30min}$	Correc ted L _{eq30min}	Sound Level Meter ID
5-Dec-12	14:10	58.9	47.1	46.7	48.7	47.3	49.0	52.6	56	EQ065
11-Dec-12	13:32	44.8	43.7	40.7	44.2	41.3	48.5	44.7	48	EQ065
17-Dec-12	10:25	47.2	45.7	45.1	46.6	44.7	47.4	46.2	49	EQ009
29-Dec-12	9:56	49.1	51.5	46.6	54.2	55.9	55.2	53.2	56	EQ065
Limit Level i	n dB(A)							75		

Remarks: The monitoring is undertaken under free field situation. A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines

- 4.03 A free field noise monitoring is performed only at UTP11, therefore, a façade correction +3 dB(A) is added in accordance with the acoustical principles and EPD guidelines.
- 4.04 No noise complaint (which is an Action Level exceedance) was received in the Reporting Period. Furthermore, no noise monitoring exceedance was recorded. No Notice of Exceedance (NOE) was issued to notify EPD, IEC, the Contractor and the ER.
- 4.05 Although all noise measurement results are below 75dB(A), the Contractor is reminded to strictly implement noise mitigation measures as recommended in the EM&A Manual to avoid noise Limit Level exceedance.

DSD Contract DC/2007/06 – River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River

52nd Monthly EM&A Report for Upper Tai Po River – December 2012



5.0 VIBRATION MONITORING RESULTS

5.01 There was no vibration monitoring carried out in the Reporting Period. Vibration monitoring will be carried out when piling works take place in Upper Tai Po River.



6.0 ECOLOGY MONITORING RESULTS

6.01 Weekly ecological inspections by the Ecologist Dr. Mark Shea were carried out on 3rd, 10th, 17th, and 24th December 2012. Details of findings are summarized in *Table 6-1*.

Table 6-1 Summary Results of Ecological Site Inspection Findings

Date	Observations	Advice from Ecologist	Action Taken	Closing Date
3 rd December	No Major findings	No Advice is	No Action is	N/A
2012	for this inspection	required	required to be taken	IN/A
10 th December	No Major findings	No Advice is	No Action is	N/A
2012	for this inspection	required	required to be taken	IN/A
17 th December	No Major findings	No Advice is	No Action is	N/A
2012	for this inspection	required	required to be taken	N/A
24 th December	No Major findings	No Advice is	No Action is	N/A
2012	for this inspection	required	required to be taken	N/A
31 st December	No Major findings	No Advice is	No Action is	N/A
2012	for this inspection	required	required to be taken	1 N /A

6.02 Furthermore, the last bi-annual ecological impact monitoring was conducted in July 2012 and the ecological impact monitoring report has been presented in Monthly EM&A Report August 2012, therefore no ecological impact monitoring report would be submitted in this Reporting Period. The next bi-annual ecological impact monitoring has been arranged to be carried out in January 2013.



7.0 SITE INSPECTION

REGULAR SITE INSPECTION AND AUDITING

- 7.01 In the Reporting Period, 4 events of site inspection were carried out by the ET on 5th, 12th, 19th and 27th December 2012 in which on 5th, 12th and 27th December 2012 were joint weekly environmental site inspections with the Contractor, IEC and ER. Also, DSD's representatives attended the site inspection with the IEC and ER on 18th December 2012. In the Reporting Period, 5 observations were recorded but no non-compliance was identified.
- 7.02 Observations for the site inspection and monthly audit within the Reporting Period are summarized in *Table 7-1*.

Table 7-1 Site Inspection of Observations – Findings and Deficiencies

Date	Findings / Deficiencies	Follow-Up Status
27 th November 2012 (last Reporting Period)	• Muddy river water was observed at Upper Tai Po River during rainstorm. The Contractor was reminded to provide proper mitigation measures to prevent muddy water directly discharging into the river stream.	• Tarpaulin sheets were provided at the discharge point for Upper Tai Po River to prevent discharge of muddy water on 12 th December 2012.
5 th December 2012	• C&D wastes were observed in the tree protection area at Upper Tai Po River. The Contractor was reminded to fence off the tree protection zone to prevent damage to the preserved tree.	• Tree protection zone was set up to prevent damage to the preserved trees on 19 th December 2012.
12 th December 2012	• No adverse environmental issue was observed.	N.A.
19 th December 2012	• No adverse environmental issue was observed.	N.A.
27 th December 2012	 No drip tray was provided for the chemical containers at Upper Tai Po River. Drip tray should be provided for all the chemical containers to prevent chemical leakage. Label tags of the existing trees are missing. The Contractor was required to provide label tag for all existing trees in the project. Muddy water was observed at Upper Tai Po River during rainstorm. The Contractor was required to provide de-silting facility to avoid muddy water discharge to the river stream. 	• These findings would be rectified in January 2013.

7.03 One deficiency observed during previous site inspections is still outstanding. The status of rectification is presented in *Table 7-2*.

Table 7-2 Rectification Status of Previous Site Inspection Deficiencies

Inspection Date	Findings / Deficiencies	Status
6 th Oct 2011	Noise barriers have not yet been erected by the Contractor along Upper Tai Po River. The Contractor was urged to install noise barriers to minimize the noise impact arisen from construction activities.	

7.04 Implementation status of environmental protection and mitigation measures are shown in *Table 10-1* of this report.



8.0 WASTE MANAGEMENT

8.01 Waste management is carried out by an on-site Environmental Officer (EO) or an Environmental Supervisor (ES) from time to time.

RECORDS OF WASTE QUANTITIES

- 8.02 All types of waste arising from the construction works are classified into the following:
 - Construction & Demolition (C&D) Material;
 - Chemical Waste; and
 - General Refuse.
- 8.03 The quantities of waste for disposal in the Reporting Period are summarized in *Table 8-1* and *8-2* and the Monthly Summary Waste Flow Table is shown in *Appendix I*. Whenever possible, materials are reused on-site as far as practicable.

Table 8-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity
C&D Materials (Inert) (in '000m ³)	0
Reused in the Contract (Inert) (in '000m ³)	0
Reused in other Projects (Inert) (in '000m ³)	0
Disposal as Public Fill (Inert) (in '000m ³)	0

Table 8-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Method
Metal (in '000kg)	0	
Paper / Cardboard Packing (in '000kg)	0	
Plastic (in '000kg)	0	
Chemical Wastes (in '000kg)	0	
General Refuses (in '000m ³)	0.0050	Refuse Collector

- 8.04 In the Reporting Period, the C&D wastes would be stockpiled on site until certain quantities are accumulated before disposal to public fill or recycle companies. Therefore, zero cubic meter was reported in Wastes Flow Table December 2012.
- 8.05 To control over the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are in full compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the EM&A Manual based on actual site conditions.



9.0 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

9.01 No environmental complaint, summons and prosecution was received in the Reporting Period. The statistical summary of environmental complaint, summons and prosecution, is presented in *Tables 9-1, 9-2* and *9-3*.

Table 9-1 Statistical Summary of Environmental Complaint

	Enviro	nmental Complaint Sta	atistics
Complaint Nature	Cumulative (Sep 2008 –Nov 2012)	Frequency (Dec 2012)	Total
Air/Dust	7	0	7
Noise	5	0	5
Water	11	0	11
Housekeeping Hygiene	1	0	1
Chemical Waste	0	0	0
Overall	24	0	24

 Table 9-2
 Statistical Summary of Environmental Summons

	Enviro	onmental Summons Sta	atistics
Complaint Nature	Cumulative (Sep 2008 –Nov 2012)	Frequency (Dec 2012)	Total
Air/Dust	0	0	0
Noise	0	0	0
Water	0	0	0
Housekeeping Hygiene	0	0	0
Chemical Waste	0	0	0
Overall	0	0	0

Table 9-3 Statistical Summary of Environmental Prosecution

	Enviro	nmental Prosecution St	tatistics
Complaint Nature	Cumulative (Sep 2008 –Nov 2012)	Frequency (Dec 2012)	Total
Air/Dust	0	0	0
Noise	0	0	0
Water	0	0	0
Housekeeping Hygiene	0	0	0
Chemical Waste	0	0	0
Overall	0	0	0



10.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

10.01 The environmental mitigation measures recommended in EM&A Manual covering the issues of dust, noise and waste and they are summarized as follows:

Noise Mitigation Measures

- (a) No percussive piling shall be carried out;
- (b) Only well-maintained plant should be operated on-site; and plant shall be serviced regularly during the construction program;
- (c) Silencers or mufflers on construction equipment should be utilized and shall be properly maintained during the construction program;
- (d) Mobile plant, if any, should be sited as far from Noise Sensitive Receivers (NSRs) as possible;
- (e) Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- (f) Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;
- (g) Materials stockpiled on site and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities;
- (h) Use of quieter plants to carry out the construction tasks proposed for the Project;
- (i) Use 2.0m high temporary noise barriers as screened the noisy Powered Mechanical Equipments (PMEs) to carry out the river implementation work;
- (j) Low Impact Method, such as using PMEs smaller in size.

Dust Mitigation Measures

- 10.02 Implementation of mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices include but not limited to the following:
 - (a) Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved road, with complete coverage, particularly during dry weather;
 - (b) Use of frequent watering for particularly dusty static construction areas and areas close to Air Sensitive Receivers (ASRs);
 - (c) Tarpaulin covering of all dusty vehicle loads transported to, from and between site location;
 - (d) Establishment and use of vehicle wheel and body washing facilities at the exit points of the site:
 - (e) Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs;
 - (f) Stockpiled excavated materials should be covered with tarpaulin.

Local Stream Water Quality Mitigation Measures

- (a) Excavation works within the site area of Tai Po River 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;
- (b) 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;
- (c) Large boulders removed from 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;
- (d) 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;
- (e) Provide silt trap and oil interceptor to remove oil, lubricants, grease, silt, grit and debris from the wastewater before discharging to the public storm water drainage system;
- (f) Provide site toilet facilities:



(g) During rainstorms, exposed slope/soil surfaces shall be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms as summarized in Professional Persons Environmental Consultative Committee (ProPECC) [PN 1/94] shall be followed.

Waste Mitigation Measures

- (a) The Contractor shall observe and comply with the Waste Disposal Ordinance (WDO) and its subsidiary regulations;
- (b) The Contractor shall submit to the Engineer for approval a Waste Management Plan with appropriate mitigation measures including allocation of an area for waste segregation and shall ensure that the day-to-day site operations comply with the approved waste management plan;
- (c) The Contractor shall minimize the generation of waste from his work. Avoidance and minimization of waste generation can be achieved through changing or improving design and practices, careful planning and good site management;
- (d) The reuse and recycling of waste shall be practised as far as possible. The recycling materials shall include paper/cardboard, timber and metal etc;
- (e) The Contractor shall ensure that Construction and Demolition (C&D) materials are sorted into public fill (inert portion) and C&D waste (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works. The C&D waste which comprises metal, timber, paper, glass, junk and general garbage shall be reused or recycled where possible and, as the last resort, disposal of at landfills;
- (f) The Contractor shall record the amount of wastes generated, recycled and disposed of (including the disposal sites). The Contractor shall use a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill;
- (g) In order to avoid dust or odour impacts, any vehicles leaving a works area carrying construction waste or public fill shall have their load covered;
- (h) To avoid the excessive use of wood, reusable steel shutters shall be used as a preferred alternative to formwork and falsework where possible;
- (i) The Contractor shall observe and comply with the Waste Disposal (Chemical Waste) (General) Regulation. The Contractor shall apply for registration as chemical waste producer under the Waste Disposal (Chemical Waste) (General) Regulation when chemical waste is produced. All chemical waste shall be properly stored, labeled, packaged and collected in accordance with the Regulation.

Vibration

- (a) Percussive piling is to be replaced by bore-hole piling to minimize vibration impacts to the two identified declared monuments:
- (b) Carrying out of vibration monitoring to ensure that vibration associated with the construction works do not exceed the threshold limit otherwise contractor have to review the work method and construction activities have to be slowed down or rescheduled to reduce the impacts;
- (c) 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 equipment immediately.

Ecology

- (a) Large boulders will be returned to the riverbed following the excavation works;
- (b) Construction works from Ch. 0.0m Ch. 150m would be along one side of the river only;
- (c) Approximately 150m of the existing natural riverbank on the western side of the river would be retained;
- (d) 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;
- (e) Flows to the area downstream shall be maintained at all times during the construction phase;
- (f) Capture survey shall be conducted within the works area at 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;
- (g) Temporary noise barriers should be constructed to control noise impacts to habitats and associated wildlife within and adjacent to the proposed works area;
- (h) Excavation works shall be carried out by land based plant within enclosed dry section of river channel;
- (i) 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;
- (j) Operation phase activities in the improved drainage channel would be limited to periodic channel maintenance such as de-silting.
- 10.03 Based on the site environmental situation, the Contractor has implemented the required environmental mitigation measures according to the Updated Environmental Monitoring and Audit Manual. In the Reporting Period, environmental mitigation measures implemented by the Contractor are summarized in *Table 10-1*.

Table 10-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	Drainage systems were regularly and adequately maintained.
Air Quality	 Increase watering frequency to reduce dust emissions from all exposed site surface, particularly during dry weather; Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; Cover all excavated or stockpiled dusty materials by impervious sheeting or sprayed with water to maintain the entire surface wet; Public roads around the site entrance/exit regularly kept clean and free from dust; and Tarpaulin covering of any dusty materials on a vehicle leaving the site.
Noise	 Reduce construction machines as used within the site; Use of quite plant and working methods; Scheduling of construction works nearly the NSR; and Alternative use of plant items within one worksite, where practicable.
Waste and Chemical Management	 Excavated materials such as soils and cobbles were reused as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; Waste arising kept to a minimum and be handled, transported and disposed of in a suitable manner; A trip ticket system was used for the disposal of C&D materials to any designated public fill facility and/or landfill; and Chemical waste handling was in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	Tidy and clean general kept the site.



11.0 IMPACT FORECAST

CONSTRUCTION ACTIVITIES FOR THE FORTH-COMING MONTH

- 11.01 Construction activities planned to be carried out next month at Upper Tai Po River is listed as below:-
 - Construction of dwarf walls:
 - Construction of surface drains:
 - Construction of footpaths;
 - Construction of inclined gabion wall;
 - Installation of Type II railings;
 - Removal of stockpiled materials;
 - Laying of cable ducts for public lighting; and
 - Laying of watermains.

KEY ISSUES FOR THE COMING MONTH

- 11.02 According to construction activities to be carried out in coming month, key issues to be considered include:
 - Implementation of dust suppression measures should be conducted at all times;
 - Ensure dust suppression measures should be implemented properly;
 - Empty engine oil containers present within the site area should be disposed of appropriately;
 - Sediment catch-pits and silt removal facilities should be regularly maintained;
 - Management of chemical wastes should be followed;
 - Discharge of site effluent to the nearby local stream or storm drainage, stockpiling or disposal of materials, and any dredging or construction area at this area should be prohibited;
 - Follow-up of improvement on general waste management issues should be conducted; and
 - Implementation of construction noise preventative control measures should be undertaken.



12.0 CONCLUSIONS AND RECOMMENTATIONS

CONCLUSIONS

- 12.01 This is the **fifty-second** (52nd) monthly EM&A report for the Project presenting the monitoring results and inspection findings for the reporting month from 1st to 31st December 2012.
- 12.02 No noise complaint (which is an Action Level exceedance) was received in the Reporting Period. In the Reporting Period, a total 44 occurrences of construction noise monitoring was undertaken and all measurement results were below 75dB(A). No Notice of Exceedance (NOE) was therefore issued to notify EPD, IEC, the Contractor and ER.
- 12.03 As no piling work was conducted, no vibration monitoring was performed in the Reporting Period.
- Weekly ecological site inspections were performed on 3rd, 10th, 17th, 24th and 31st December 2012. According to inspection findings, no advice and action was recommended by the ecologist.
- 12.05 No documented environmental complaint, notification of summons or successful prosecution was received in the Reporting Period.
- 12.06 In the Reporting Period, 4 events of site inspection were carried out by the ET on 5th, 12th, 19th and 27th December 2012 in which on 5th, 12th and 27th December 2012 were joint weekly environmental site inspections with the Contractor, IEC and ER. Also, DSD's representatives attended the site inspection with the IEC and ER on 18th December 2012. In the Reporting Period, 5 observations were recorded but no non-compliance was identified.

RECOMMENDATIONS

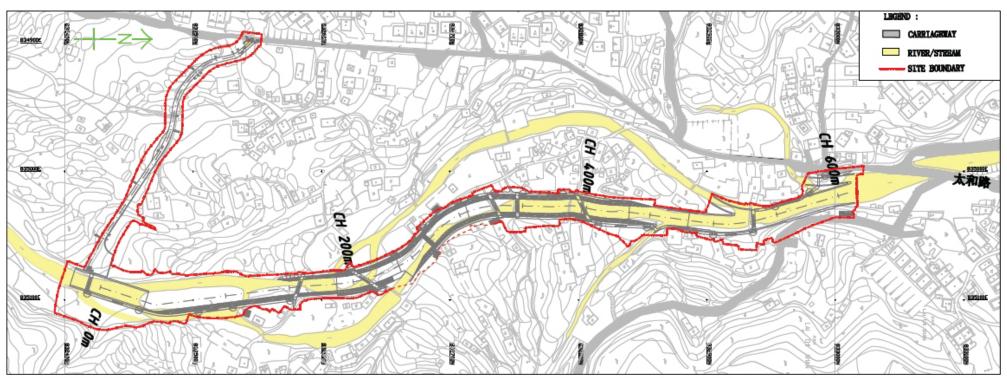
- 12.07 During dry season, dust control measures to avoid fugitive dust in the construction site should be properly provided and maintained, as appropriate. In addition, water quality mitigation measures such as prevention of muddy water and other water quality pollutants via site surface water runoff into the local stream of Tai Po River should be fully implemented.
- 12.08 On the other hand, construction noise is another key environmental issue during construction works. Noise mitigation measures are reminded to be implemented in accordance with EM&A Manual stipulation. Dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road are also reminded to be implemented.
- 12.09 To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant licence/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to EM&A Manual.



Appendix A

Site Layout Plan of the Upper Tai Po River





Upper Tal Po River



Appendix B

Master and Three Months Rolling Construction Programs

談別	59	89	9	19	8 8	70	87	16	Z Z	ક્ષેક્ર	76	86	86	104	105	113	121	129	130	131	133	134	138	140	145	146	147	151	153	154	155	專案: № 日期: 2	

C					DEPHENDING		H2 H1 H2	HI	H2	H H H2	H
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2		of 2010		214工作日	5/1/2010	31/10/2010				* ^ ^	
3		ıf 2011		149 工作日	8/3/2011	30/9/2011					
Γ		Works Suspended Due to Villager's Rally	Rally	42 工作日	21/10/2010	18/12/2010				* * *	
5	Ch 230-350			446工作日	28/1/2011	12/10/2012		L			
9	Gabion	Wall (Ch 230-275 RH	Gabion Wall (Ch 230-275 RHS) TG1/TG1A (Completed)	40 工作日	28/1/2011	24/3/2011		B		• • •	
	Retainin	1g Wall (Ch 275-330 R	Retaining Wall (Ch. 275-330 RHS) TR1 (replaced by AD1) (Completed)	154 工作日	17/3/2011	18/10/2011		L	1	**	
17	Drainage	Drainage & Footpath (CH 275-330 RHS)	5-330 RHS)	21工作目	6/8/2012	3/9/2012					
18		Construction of drainage & footpath		21 工作目	6/8/2012	3/9/2012					
	Inclined	Inclined Gabion Wall (Ch 290-327 LHS)	2-327 LHS)	109 工作日	3/1/2012	1/6/2012			_	ľ	
Π		nove Concrete Blocks a	Remove Concrete Blocks and shotcrete (Completed)	30 工作日	3/1/2012	13/2/2012					
21 13		Concreting (Completed)	TO DESCRIPTION OF THE PROPERTY	50工作日	6/2/2012	13/4/2012					
T		1		100工作目	5/3/2012	25/5/2012					
23	Cat	Gabion		る工作日	28/5/2012	1/6/2012					
42	Maintair	Maintainence Staircase (Ch 315 LHS) (Completed)	15 LHS) (Completed)	4工作日	22/5/2012	25/5/2012				· •	
26	Drainage	Drainage & Footpath (Ch 270-330 LHS)	-330 LHS)	30工作日	6/6/2011	15/7/2011			B	• • •	
27		Construction of drainage & footpath	& footpath	30工作目	6/6/2011	15/7/2011			<u></u>	•	
28	F		N	14	11000	0,007761					
52 53	O dust	Utility and Pedestrian L	1 cmp Utility and Pedestrian Diversion at Ch230 (Completed)	日北丁 76I	1107///77	13/4/2012					
22	Towner C	ion of Interim Douther	Dangition of Interim Lockbuilde of Oly 20 (Completed)	13#1-11	3/10/2011	110/20175			_	**	
38	0-1 Jan 190 a a			İ					_	***	* " " "
37		Inclined Gabion Wall (Ch 218-240 LHS)	3-240 LHS)	129 工作日	3/1/2012	29/6/2012					
38	000000000000000000000000000000000000000	Remove Shotcrete & concrete block (Completed)	rete block (Completed)	30工作目	3/1/2012	13/2/2012					
39		Concreting		25工作目	14/5/2012	15/6/2012				::	
4	-oN	No-fine		3工作日	22/6/2012	26/6/2012					
41	G	Gabion		3工作目	27/6/2012	29/6/2012					
42	Mai	Maintainence Staircase (Ch 242 LHS)	Zh 242 LHS)	4工作日	18/6/2012	21/6/2012					
43		Formwork and concreting	sting.	4工作目	18/6/2012	21/6/2012					
4	Inclined	Inclined Gabion Wall (Ch 240-272 LHS)	1-272 LHS)	129 工作日	3/1/2012	29/6/2012			_	ľ	
45 m		nove Concrete Blocks a	Remove Concrete Blocks and shotcrete (Completed)	30工作目	3/1/2012	13/2/2012					
46		Concreting (Completed)		30 工作目	12/3/2012	20/4/2012				 	
		No-fine		3工作日	22/6/2012	26/6/2012					
48	Gal	Gabion		3工作日	27/6/2012	29/6/2012					
		Inclined RC Wall and Step 2A (Ch 272-290 LHS)	i (Ch 272-290 LHS)	51 工作日	9/4/2012	18/6/2012					
20		Concreting (Base)		10工作日	9/4/2012	20/4/2012					
51	S	Concreting (Ramp)		1工作目	11/5/2012	21/5/2012					
52	S	Concreting (Slab)		5.工作目	22/5/2012	28/5/2012					
53	Co	creting (Wall Stem and	Concreting (Wall Stem and Step 2A with stilling basin)	15工作目	29/5/2012	18/6/2012				·	
54		Drainage & Footpath (Ch 230-270 LHS)	-270 LHS)	20工作目	16772012	10/8/2012					
55	Grante to a late	Construction of drainage & footpath	& footpath	20工作目	16/7/2012	10/8/2012					
	Step 2(Ch 236)	Jh 236)		10工作日	19/6/2012	2/7/2012					
57		Stilling Basin		5工作目	19/6/2012	25/6/2012					
Moster	Programma TDD 11 Moy	任務	進度	線		外部任務	1916年	=>		ĺ	
22/5/201	日期: 22/5/2012		◆ 車場跡	以 案摘要報告		外部里程碑	•				

58 Ramp and Slab 59 Cascade (Ch 275) (Cong 62 Lighting at CH 250-320 63 EM Construction of Drav 64 Public lighting Instal	Of 1.			I	-	H2	HI	H2	H		171
Casc Ligh	21.1	日が上く			IH 7H			-	****	H2	ПП
Cass	Slab	I 1	70/0/7017	2/7/2012	,				^ ^		
igh.	Cascade (Ch 275) (Completed)	21 工作日	28/6/2012	26/7/2012							
	250-320	45 工作日	13/8/2012	12/10/2012						ľ	
	Construction of Drawpits / Ductings	21 工作目	13/8/2012	10/9/2012							
	Public lighting Installation (CE2318)	12工作目	11/9/2012	26/9/2012							
65 Public light	Public lighting Installation (CE2317)	12 工作日	11/9/2012	26/9/2012							
66 T&C		日圳工9	27/9/2012	4/10/2012	~ # v				* * *	<u>-</u>	
67 Removal or	Removal of existing lighting (VA1311-Z1)	日	5/10/2012	12/10/2012	• • •					<u></u>	
									* * *		
69 Footbridge TB04 (Ch 330)	04 (Ch 330)	181 工作日	12/10/2011	20/6/2012					P		
70 Construction	Construction of Abutment A (LHS) (Completed)	22 工作日	7/12/2011	5/1/2012				B			
78 Construction	Construction of Abutment B (RHS) (Completed)	24 工作日	12/10/2011	14/11/2011				B			
87 Construction	Construction of decking (steel deck) (Completed)	16工作日	11/5/2012	1/6/2012					₽		
91 Demolition	Demolition of Bridge TB-A (Completed)	17 工作目	17/5/2012	8/6/2012	.						
	Lighting at Footbridge TB04	11工作目	6/6/2012	20/6/2012							
95 EE Constr	Construction of Drawpits / Ductings	日制工7	6/6/2012	14/6/2012					Ä		
96 Public	Public lighting Installation (CE2315)	3工作目	15/6/2012	19/6/2012							
97 Public	Public lighting Installation (CE2316)	3工作用	15/6/2012	19/6/2012							
98 T&C		1工作日	20/6/2012	20/6/2012							
99 Construction of	Construction of Gabion Wall at TB-A (Completed)	5工作目	11/6/2012	15/6/2012					D .		
103									• • •		
104 Footbridge TB05 (ch 350)	55 (ch 350)	353 工作日	10/3/2011	16/7/2012					ľ		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Construction of Abutment A (LHS) (Completed)	20工作目	22/5/2012	18/6/2012							
	Construction of Abutment B (RHS) (Completed)	19 工作日	10/3/2011	5/4/2011			B				
	Construction of decking (Completed)	37工作日	11/5/2012	2/7/2012							
	Demolition of Bridge TB-B (Completed)	17 工作日	17/5/2012	8/6/2012					•		
Ligh	Lighting at Footbridge TB05	10 工作日	3/7/2012	16/7/2012							
	Construction of Drawpits / Ductings	日小工9	3/7/2012	107/2012					•••		
Average	Public lighting Installation (CE2313)	3工作日	11/7/2012	13/7/2012			* ** 1	-			
	Public lighting Installation (CE2314)	3工作日	11/7/2012	13/7/2012							
	***************************************	11作日	16/7/2012	16/7/2012							
	Consturction of Gabion Wall at TB-B (Completed)	5工作日	11/6/2012	15/6/2012					D.		
				MARKATA	· •						
	Inclined Gabion Wall (Ch 327-448 LHS) (Completed)	13工作目	11/5/2012						Þ		
	Drainage & Footpath (Ch 330-400 LHS)	30工作目	18/7/2011	26/8/2011	• • •		•	 D .			
	Construction of drainage & footpath	30工作日	18/7/2011	26/8/2011				 —			
	Gabion Wall (Ch 330-345 RHS) TG2 (Completed)	16工作日	15/11/2011	6/12/2011							
	Drainage & Footpath (Ch 400-450 LHS)	20工作日	29/8/2011	23/9/2011							
	Construction of drainage & footpath	20工作目	29/8/2011	23/9/2011				· · · · ·			
153		I de la companya de l					<u>.</u>				
doic		13.J. 7.	7107/0/51	7107/0/67					·		
CCI);n	/ T/FH	14/5/2012	27/2012		CANADAMANAMANAMANAMANAMANAMANAMANAMANAMAN	- Approximation of the contract of the contrac		4		and the second s
. Master Programme TPR 11 May 任務	######################################	複数		外部任務		期限	₽				
日期: 22/5/2012 分割	◆ 直接廠 →	專案摘要報告	以来摘要報告	外部里程碑	•						
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	Ramp	Ramp and Slab	term dalam and dalam katalam menganyan pendahan katalam pengapan pengapan menganyan penganyan menganyan mengan		5 工作日 23/5/2012	29/5/2012		-					
	Ch 45-100			505 工作日	/作日 1/11/2010	5/10/2012							
	Additional	Additional Boulder Trap		166工作日								•	
1	Roothridge	Footbridge TB02 (Ch 150)		日本上 505	(作日 1/11/2010	\$/10/2012							
1	Const	Construction of Abutment A (LHS)	nent A (LHS)	23 工作日								-	
	Const	Construction of decking	Bu	14 工作目		9/8/2012						Ð	
	I	Erection of steel deck+ conc deck	leck+ conc deck	T 4	4工作日 23772012	2671/2012							
		XXConcreting		土0	0工作日 26772012	26712012						2617	
<u> </u>	I	Deck finishing		10工作日	:作日 2777/2012	9/8/2012							
	4	Railing installation		IL	7工作日 2777/2012	6/8/2012					• • • • • •		
	Light	Lighting at Footbridge TB02	; TB02	51 工作目	.作目 27/7/2012	5/10/2012	. - ·					ľ	
	3	Construction of D	Construction of Drawpits / Ductings	21工作日	:作目 2777/2012	24/8/2012							
		Public lighting In	Public lighting Installation (CE2308)	12 I	12 工作日 27/8/2012	11/9/2012							
		Public lighting Ins	Public lighting Installation (CE2309)		.作日 12/9/2012	27/9/2012							
	-	Removal of existi	Removal of existing lighting (VA2642-A1)	Ξ9	6工作日 28/9/2012	5/10/2012							
			***************************************						~ ~		* * * *		
				William and the address that of the solid to the second term of the colour of the solid to the solid term to the solid t	had be bad to be the first to be a bad or before the second or the secon								
1	Gabion Wa	Gabion Wall (Ch 150-178 LHS) TG3A	LHS) TG3A	日引工 124 工作日	作日 5/4/2011	4/11/2011			.				
T	Gabion Wa	all (Ch 178-230)	Gabion Wall (Ch 178-230 LHS) TG5A/TG2	15 工作日	作日 3/10/2011	21/10/2011	- • •						
	Maintainer	Maintainence Staircase (Ch 178 LHS)	1 178 LHS)	日	作日 31/10/2011	3/11/2011							
	Drainage d	Drainage & Footpath (Ch 150-Ch230 LHS)	(50-Ch230 LHS)	30工作目	作日 13/8/2012	21/9/2012						B	
E AT	Drain	Drainage & Footpath	171 APT 181 1 1 1 1 1 1 1 1	30工作目		21/9/2012						<u></u>	
	Inclined G	Inclined Gabion Wal (Ch 110-130 RHS)	10-130 RHS)	日判工作		977/2012							
	Remo	Remove shotcrete (Completed)	npleted)	1000年		9/3/2012						***	
5	Concreting	eting		日彰工01		29/6/2012							
_	No-fine	ne		¥.		477/2012							
	Gabion	u		H _c		977/2012					* * .		
	Maintainer	Maintainence Staircase (Ch 130 RHS)	1 130 RHS)	4工作日		977/2012							
	Formy	Formwork and concreting	វិប	日4年	-	977/2012							
la l	Drainage &	Drainage & Footpath (Ch 0-150 RHS)	1-150 RHS)	45 工作日		10/9/2012							
	Constr	Construction of drainage & footpath	e & tootpath	45 工作日	/FE IO√7/2012	10/9/2012					 		
	Inclined Co	Inclined Gabion Wall (Ch. 130,220 RHS)	130.220 RHS)		/кн 7/2/2019	18/5/2012					^ ^		
	Remov	Remove Chotchate (Completed)	majetadi	日子に		510010			,		• · · · · · · · · · · · · · · · · · · ·		
	Concre	Concreting (Comleted)	nipacca)	日初上 55		24/4/2012							
	nij-oN	No-fine (Completed)		10工作日		8/5/2012							
	Gabion	n		8工作目		18/5/2012					}		
											5		
1	Footbridge	Footbridge TB03 (Ch 200)		229 工作日	作日 26/10/2011	10/9/2012				•		P	
	Consti	Construction of Abutment B (RHS)	nent B (RHS)	41工作日	作日 26/10/2011	21/12/2011			and an and an and an	S	The state of the s		
acter Programm	me TPR 11 May	任務		類		- 外部任務		柳随	⇔				
2/5/2012	EJU1: 22/5/2012	分割	◆	流光網遊	以实摘要報告		\$						

2.0 Countricate of Decking (T200) S. 17 FE S00/101 S00/	Φ Construction of Decking (TSD) ST 17FB 26/20/2012 R1 HB HB End of Modification of Life State (TSD) ST 17FB 26/20/2012 26/20/2012 HB HB Realing includion Construction of the deck or one deck A 17FB 26/20/2012 26/20/2012 HB HB HB HB 17/20/2012 ST/20/2012 ST/20/2012<				•••		te			-		H
Machine of Libbids (1999) 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17 17.17	Fig. Countroine of Decking (TEDS)) 25 Triple 26/20012							H	H	H2		TT
Decir in class sheep 2.17f 2.95022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.97022 2.	First Modelination of LES table to by 2.1 First 30,000.2		Construction of	Decking (TB03)	85工作日	26/3/2012	20/7/2012					
Decir classed better 17th	Deck initiating of seed beck core deck 4 1 1 1 1 1		Modificatio	on of LHS table top	25工作目	26/3/2012	27/4/2012				—	
State Sta	Deck Streiching	T	Erection of	steel deck+ conc deck	4工作目	3/7/2012	6/7/2012					
2 177 2 10 20 20 20 20 20 20	Exaling installation Carolings Carol	222	Deck finish	in in	10工作目	9/7/2012	2077/2012		,			
Contraction of Chargest Designation (CESS1) 17.17012 13.692012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02012 24.02	Lighting at Pootbridge TB02 Lighting at Rootbridge TB03 Lighting at Rootbridge CESS210 Lighting Localist CESS210 Lighting Localist CESS210 Lighting CESS210 Lighting Localist CESS210 Lighting CESS210 Lighting Localist CESS210 Lighting	223	Railing inst	tallation	2工作目	9/7/2012	10/7/2012		, ,, ,,			
Communic CENTRAL CHANGES CONTRAL SACOND	Construction of Denseyle's Densings 12 Try H 11/17/2012	224	Lighting at Fool	thridge TB03	27工作日	:	16/8/2012					
Poblic lighting transitions (CE221) 6 THF 1770212 350212 Pack in glating transitions (CE221) 6 THF 1870212 1850212 Perm and relating lighting (VALSD-21) 1 THF 1880212 1850212 Behaving a Bana 1 THF 1880212 1870212 1870212 Silling Bana 2 THF 1 SYRADIA 2 SYRADIA 1 SYRADIA Silling Bana 2 THF 1 SYRADIA 2 SYRADIA 1 SYRADIA Poblic Bana 2 THF 1 SYRADIA 2 SYRADIA 1 SYRADIA Poblic Bana 2 THF 1 SYRADIA 2 SYRADIA 2 SYRADIA Poblic Bana 2 THF 1 SYRADIA 2 SYRADIA 3 SYRADIA Poblic Bana 3 THF 3 SYRADIA 3 SYRADIA 3 SYRADIA Remond of scaling lighting (VALSIO-ALI) 2 THF 3 SYRADIA 3 SYRADIA 3 SYRADIA Remond of scaling lighting (VALSIO-ALI) 2 THF 3 SYRADIA 3 SYRADIA 3 SYRADIA Remond of scaling lighting (VALSIO-ALI) 2 THF 3 SYRADIA 3 SYRADIA 3 SYRADIA	Public lighting Installation (CE2221) 6 Tift 277/7012	225	Constructio	on of Drawpits / Ductings	12工作日	11/7/2012	26/7/2012					
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### A Lift H 1992/10 270/2010 Work at Boulder Trap)	Netaning Wall at Access D (Boulder Trap)		1 -22-45 (Completed)		111111111111111111111111111111111111111	0.00000	21172012				• •	
Work at Boulder Trap (RHS of downstream)	Filling Work at Boulder Trap (RHS of downstream) 6 L/fe H 3002010	745	Ketaning Wall at A	ccess D (Boulder Trap)		0107/6/1	0107/01/17					
Wall (Ch. 60-75) RHS Jack (1975) RHS Wall (Ch. 450-450 LHS) TR1 (AD) (Completed) Wall (Ch. 400-450 LHS) TR1 (AD) (Completed) Construction of Abutment A (LHS) Construction of Abutment A (LHS) Construction of decking Lighting at Footbridge TB66 Construction of Dawpits / Ductings ABC (HS) Jack (HS) Jack (HS) Jack (HS) Wall (HS)	Dwarf Wall (Ch 60-75) RHS 23 工作目 3/10/2011 1 Box Calvert 03 (Ch 45) (Completed) 340 工作目 3/11/2011 1 Retaining Wall at Access D (Boulder Trap) 340 工作目 3/11/2011 1 Ch 350-450 Ch 350-450 LHS) TR1 (AD) (Completed) 489 工作目 3/1/2011 1 Gabion Wall (Ch 400-450 LHS) TR1 (AD) (Completed) 48 工作目 3/1/2011 1 Footbridge TB06 (Ch 400) 66 Ching 14 工作目 11/5/2012 1 Construction of Abument A (LHS) 30 工作目 11/5/2012 1 Lighting at Footbridge TB06 1 1 1 1 1 1 1 1 1	265	Filling Work at Bou	lder Trap (RHS of downstream)	□ #↓	30/8/2010	6/9/2010		14		* ^ -	
1 1 1 1 1 1 1 1 1 1	Box Culvert 03 (Ch 45) (Completed) 31 工作目 3/11/2011 1	tel Flei fell	Dwarf Wall (Ch 60-	75) RHS	23 工作日	3/10/2011	2/11/2011			B	• • •	
Mall (Ch 550-400 LHS) TR1 (AD) (Completed) 48 工作目 3/1/2011 15/11/2012 Wall (Ch 550-400 LHS) TR1 (AD) (Completed) 48 工作目 3/1/2011 15/11/2012 Wall (Ch 400-450 LHS) TR1 (AD) (Completed) 48 工作目 22/12/2011 15/11/2012 Orderige TB06 (Ch 400) 162 工作目 22/12/2011 15/11/2012 Construction of Abutment A (LHS) 30 工作目 22/12/2011 1/12/2012 Construction of Abutment A (LHS) 30 工作目 1/12/2012 3/05/2012 Construction of Abutment A (LHS) 30 工作目 1/17/2012 3/05/2012 Construction of Abutment A (LHS) 14 工作目 1/17/2012 3/05/2012 Construction of Abutment A (LHS) 30 工作目 1/17/2012 3/07/2012 Construction of Checking 14 工作目 1/17/2012 3/07/2012 Public lighting a Footbridge TB06 3 工作目 3/07/2012 1/17/2012 Public lighting Installation (CE2310) 3 工作目 3/07/2012 1/18/2012 A分類 3 工作目 3/07/2012 1/18/2012 A分前 3/07/2012 1/18/2012 A分前 3/07/2012 3/07/2012 A分前 3/07/2012	Retaining Wall at Access D (Boulder Trap) 340 工作目 1877/2011		Box Culvert 03 (Ch.	45) (Completed)	31工作日	3/11/2011	15/12/2011			•	* *	
Wall (Ch 350-400 LHS) TR1 (AD) (Completed)	Ch 350-450	287	Retaining Wall at As	ccess D (Boulder Trap)	340 工作日	18/7/2011	2/11/2012				•	
Wall (Ch 350-400 LHS) TR1 (AD) (Completed)	Ch 350-450										* * *	
Wall (Ch 350-400 LHS) TR1 (AD) (Completed)	Gabion Wall (Ch 350-400 LHS) TR1 (AD) (Completed)	er i b. 1-a i Pri	h 350-450			3/1/2011	15/11/2012			. :		
Wall (Ch 400-450 LHS) TR1 (AD) (Completed)	Gabion Wall (Ch 400-450 LHS) TR1 (AD) (Completed)	321	Gabion Wall (Ch 35)	0-400 LHS) TR1 (AD) (Completed)		31/10/2011	28/12/2011					
cobridge TB06 (Ch 400) 489 工作目 3/1/2011 15/1/10012 construction of Abutment A (LES) 162 工作目 22/12/2011 3/8/2012 Construction of Abutment A (LES) 30 工作目 1/2/12/2011 1/2/2012 Construction of decking 14 工作目 1/17/2012 3/8/2012 Lighting at Poologidge TB06 14 工作目 1/17/2012 3/8/2012 Construction of Dawynits / Ductings 6 工作目 1/17/2012 3/8/2012 Public lighting Installation (CE2310) 3 工作目 2/7/2012 1/8/2012 Public lighting Installation (CE2310) 3 工作目 3/6/1/2012 1/8/2012 在杏 [TB66	326	Gabion Wall (Ch 40)	0-450 LHS) TR1 (AD) (Completed)	48 工作日	22/12/2011	27/2/2012		.,	ľ		
orbridge TB06 (Ch 400) Li62 LfF目 22/12/2011 38/2012 Construction of Abutment A (LES) 30 LfF目 22/12/2011 1/2/2012 Construction of decking 14 LfF目 1/17/2012 3/8/2012 Lighting at Poolocides TB06 6 LfF目 1/17/2012 3/8/2012 Construction of Dawynits / Ductings 6 LfF目 1/17/2012 3/8/2012 Public lighting Installation (CE2310) 3 LfFE 25/17/2012 1/8/2012 Public lighting Installation (CE2310) 3 LfFE 3/8/17/2012 1/8/2012 Ability Lighting Installation (CE2310) 3 LfFE 3/8/17/2012 1/8/2012 Ability Lighting Installation (CE2310) 3 LfFE 3/8/17/2012 1/8/2012	Footbridge TB66 (Ch 400) 162 工作目 22/12/2011 Construction of Abutment A (LHS) 30 工作目 22/12/2011 Construction of decking 14 工作目 11/5/2012 Lighting at Footbridge TB06 14 工作目 11/7/2012 Construction of Drawpits / Ducings 6 工作目 17/1/2012 Public lighting Installation (CE2311) 3 工作目 25/1/2012 Data Lister Leading (CE2311) 2 T/FE 25/1/2012 Data Lister Leading (CE23111) 2 T	331	TB06		489 工作日	3/1/2011	15/11/2012					
Construction of Abutment A (LES) 30 工作目 22/12/2011 1/2/2012 Construction of decking 14 工作目 11/5/2012 30/5/2012 Lighting at Poolocides TB06 6 工作目 1/1/1/2012 3/8/2012 Construction of Drawpits / Ductings 6 工作目 1/1/1/2012 3/8/2012 Public lighting Installation (CE2310) 3 工作目 25/1/2012 1/8/2012 Public lighting Installation (CE2310) 3 工作目 30/1/2012 1/8/2012 在務 [Construction of Abutment A (LHS) 30 工作日 22/12/2011 Construction of decking 14 工作日 11/5/2012 Lighting at Footbridge TB06 14 工作日 11/7/2012 Construction of Drawpits / Ductings 6 工作日 17/1/2012 Public lighting Installation (CE2311) 3 工作日 25/17/2012 Data that I are I are always 25/17/2012 Data that I are I are always 25/17/2012 Data that I are always 2	332	Footbridge TB0	36 (Ch 400)	162 工作目	22/12/2011	3/8/2012			L	ľ	
Construction of decking 14工作目 11572012 30572012 Lighting at Pootboridge TB06 14工作目 17772012 3872012 Construction of Drawpits / Ductings 6工作目 17772012 34772012 Public lighting Installation (CE2310) 3工作目 25772012 27772012 Public lighting Installation (CE2310) 3 工作目 36772012 1/872012 在務 [日本] 11872012 1/872012 分類 11822 44路任務 44路任務	Construction of decking	333	Constructic	on of Abutment A (LHS)	30工作日	22/12/2011	1/2/2012			B	* * *	
Lighting at Pootboridge TB06 14工作目 17/172012 3/8/2012 Construction of Drawpits / Ductings 6工作目 17/172012 24/172012 Public lighting Installation (CE2310) 3工作目 25/172012 27/172012 Public lighting Installation (CE2310) 3 工作目 36/172012 1/8/2012 任務 [日本 日本 日	Lighting at Pootbridge TB06 Construction of Drawpits / Ductings 6 工作日 17772012 Public lighting Installation (CE2311) 3 工作日 25772012	342	Constructic	on of decking	14工作目	11/5/2012	30/5/2012			• • •	Þ	
Construction of Drawpits / Ductings 6工作目 17/17012 24/17012 Public lighting Installation (CE2310) 3工作目 25/17012 27/17012 Public lighting Installation (CE2310) 3工作目 25/17012 1/8/2012 在務 [日本 日本 日	Construction of Drawpits / Ductings 6 工作日 17/72012 Public lighting Installation (CE2311) 3 工作日 25/7/2012	347	Lighting at	L Footbridge TB06	14工作	17/7/2012	3/8/2012				•	
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Public lighting Installation (CE2310) 3工作日 30772012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/2012 1/8/	Public Library Land and Control Contro	349	Public	: lighting Installation (CE2311)	3工作日	25/7/2012	27/7/2012	·			<u></u>	
任務 [2] 進度 一 海安/約 中 小部任務 開展 期限 分割 里程牌 專 海家納獎報告 中 小部日程牌 ◆	Fubic inguing installation (CC231V)	350	Public	lighting Installation (CE2310)	3工作日	30/7/2012	1/8/2012	a de la companya de l			<u>.</u>	
任務 進度 事業補要報告 本部主義 外部任務 動業補要報告 本部主義時 特限						14.00						
分割 事業物學報告 中華 外部里程碑 中華	任務 [2] 進度	以案: Master Programme TP			悄受		外部任務		<>			
	→ 財産 → 財産 → 外部里程碑 → 外部里程碑	日期: 22/5/2012			專案摘要報告		外部里程碑	•				
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4					H2 H1	H2	H	H2	H	H2	Ξ
351	18c	2 14 =	2/8/2012	3/8/2012		- Andrews		- American management			
	Demolition of Bridge TB-C	4工作目		5/6/2012							
1	Consturction of Gabion Wall at TB-C	35 工作日	6/6/2012	24/7/2012					.	D	
359		10 Carterian 10 Ca									
360 Gabio	Gabion Wall (Ch 400-450 RHS) TR1 (replaced by AD1)	30工作目	3/1/2011	11/2/2011			•				
		20工作日	11/5/2012	7/6/2012					.		
365 B	Basin	5工作目	11/5/2012	17/5/2012							
	Ramp and Slab	\$\tag{\psi}\$	18/5/2012	24/5/2012							
stranger of an armitian of an armitian and a second and a	Step 5	10工作目	25/5/2012	7/6/2012							
368	Basin	5工作日	25/5/2012	31/5/2012							
369	Ramp and Slab	5工作目	1/6/2012	7/6/2012							
370		**************************************		100							
371 Box C	Box Culvert TB01 (Ch 450) (Completed)	40 工作日	10/3/2011	4/5/2011							
381			:								
Table 1	Drainage & Footpath (Ch330-450) RHS	30工作目	4/9/2012	15/10/2012					•••	3	
	Drainage & Footpath	30工作日	4/9/2012	15/10/2012							
384				-	~ • •				• • • • • • •		
	Lighting at CH 350-380	23工作日	16/10/2012	15/11/2012							
	Construction of Drawpits / Ductings	14工作目		2/11/2012		-					
	Public lighting Installation (CE2312)	7.11/1		13/11/2012						ی	
77.	T&C	2 工作日	14/11/2012	15/11/2012						_	
389.											
년 전		424 工作日	16/3/2011	29/10/2012						ľ	
	Retaining Wall (ch 450-500) TR2 (RHS)	48 工作目		7/12/2011					~		
	Retaining Wall (ch 450-500) TR2 (LHS)	24 工作日	29/11/2011	10/2/2012				•	 P.		
Drai	Drainage & Footpath (Ch 450-490 RHS)	20工作日	15/6/2012	12/7/2012					.	_	
	Construction of drainage & footpath and wall stem 2nd portion	20工作目	15/6/2012	12/1/2012						•-	
Reta	Retaining Wall (Ch 500-530) TR3 (RHS)	338 工作日		29/6/2012					. .		
	Base Slab Construction Bay 1 (RHS)	28 工作日		22/4/2011							
492 Wall S	Wall Stem Construction Bay 1 (RHS)	10工作日	25/4/2011	6/5/2011	~ • •				• • •		
	Base Slab Construction Bay 1 (RHS)	10 工作日		15/6/2012	•		. .		D .		
	Excavation and Formation	5工作日		8/6/2012					.		
	Formwork and rebar fixing	3工作目		13/6/2012							
100000000000000000000000000000000000000	Concreting	1工作目	14/6/2012	14/6/2012							
	Stripping off formwork	1工作	15/6/2012	15/6/2012							
	Wall Stem Construction Bay 2 (RHS)	10 工作日	18/6/2012	29/6/2012					.		
								İ			
	Cascades (Ch 500 LHS)	28 工作日	3/10/2011	9/11/2011							
	11, A41, A41, A44, A44, A74, A74, A74,								I		
· · · · · · · · · · · · · · · · · · ·	Retaining Wall (Ch 500-530) TR3 (LHS)	24 工作日	9/11/2011	23/1/2012					 Þ.		
530 Drainage &	Drainage & Bootnath (Ch. 490,-525 RHS)	10 工作品	16/10/2012	2100/01/60							
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540	Construct	Construction of drainage & footpath	"	cold also de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la coldante de la colda		10工作目	16/10/2012	29/10/2012		-				***************************************		
541	Chartendar TOOT (Ch 505)	77 (Ch 505)				013 工作日	3/10/2011	25/7/2012								
740	roculuge 11	Uluge 1 DU/ (Cll 323)			to the contract of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of the case of	17 工作日	3/10/2011	20/10/2011					· •	•		
2	Tempora	Temporary recession Division	10) Q Qu			174	2770017	0100003					 >			
242	Demond	Construction of Abritment A	6 1 D-D (CII 3%.			78 工作日	31/5/2012	9/7/2012						3	** ** **	
	Construct	ion of Abuttucian A				1 1 1 7 0 C	11/6/0012	2102777								
256	Construct	Construction of Abutment B	4 bite common to be 10 10 10 10 10 10 10 10 10 10 10 10 10			23.1.15	7107011	210211102						<u> </u>		
565	Footbridge TB07 (Ch 525)	07 (Ch 525)				31工作日	11/6/2012	23/1/2012								
566	Construct	Construction of decking				16工作日	11/6/2012	277/2012).		
567	Erec	Erection of steel deck+ conc deck	leck			4工作目	11/6/2012	14/6/2012								
568	Deck	Deck finishing				10工作目	15/6/2012	28/6/2012								
695	NA				***************************************	日北丁0	28/6/2012	28/6/2012						•	9/8	
570	Raili	Railing installation				2工作目	29/6/2012	2/7/2012								
200	Footbride	Roothridge TB07 Lighting				15工作日	3/7/2012	23/7/2012								
223	Sec.	Construction of Drawnits / Ducting	icting			7工作目	3772012	11/7/2012								
716	11.7	Constituted of Diampies / Ducting	TOOOS			日型上タ	0100000	C10C1C01						<u>}</u>		
2	Lubi	c ngning instantation (C	E2320)				1277012	21027701						•		
574	Iduri	lighti	E2329)			0 T	12/1/2012	2102/1/61			- :			<u></u>		
575	T&C					2 J./F	710711107	23/1/2012								
		***					0.000									
	Ch 525-615					547 工作日	15/10/2010	19/11/2012						-	<u> </u>	
578	Retaining Wa	Retaining Wall (Ch 535-546) TR4 (LHS)	HS)			37 工作目	11/5/2012	2/7/2012								
598						1	o constant	0.000								
	Retaining Wa	Retaining Wall (Ch 535-546) TR4 (RHS)	HS)			25工作日	23/5/2012	26/6/2012			•					
009	Excavatio	Excavation and Formation				5工作目	23/5/2012	29/5/2012						.		
109	Base Slat	Base Slab Construction Bay 1+2 (RHS)	(RHS)			8工作日	30/5/2012	8/6/2012								
209	Forn	Formwork and rebar fixing (with DWF)	vith DWF)			5工作目	30/5/2012	5/6/2012						Ţ.		
603	Con	Concreting				二二作品	6/6/2012	6/6/2012						;		
604	Strip	Stripping off formwork				2工作日	7/6/2012	8/6/2012						1		
905	Wall Ster	Wall Stem Construction Bay 1 (RHS) del	CHS) del			日本工0	8/6/2012	8/6/2012						* * *		
019	Base Slat	Base Slab Construction Bay 2 (RHS) del	HS) del			0工作日	8/6/2012	8/6/2012								
614	Wall Ster	Wall Stem Construction Bay 1+2 (RHS)	(RHS)			12工作日	11/6/2012	26/6/2012								
615	Forn	Formwork and rebar fixing				5工作目	11/6/2012	15/6/2012								
919	Cox					1工作目	18/6/2012	18/6/2012						. 		
617	Strip	Stripping off formwork				2工作目	19/6/2012	20/6/2012								
618	Backfill	III.	:			4工作目	21/6/2012	26/6/2012					.			
619	Retaining Wa	Retaining Wall TR5 Ch (546-596 RHS) TR5 (AD)	S) TR5 (AD)	100 mm mm m m m m m m m m m m m m m m m		269 工作日	15/10/2010	26/10/2011					 P	***		
627						1	0,000,000	CLOCKOR						••	~ * * *	
979	Ketaming Wa	Retaining Wall TROA CHO46-585 LHS	S			38 ⊥ /f≓ ⊞	7107/001	2/8/2012	• • •							
629	River dive	River diversion, Excavation and Formation	ormation			24工作日	27/6/2012	30/7/2012								
630	Base Slat	Base Slab Construction TR5A Bay 1 LHS	y 1 LHS			8工作日	11/7/2012	2077/2012			~					
634	Wall Ster	Wall Stem Construction TR5A Bay 1 LHS	ay 1 LHS			9工作日	2377/2012	2/8/2012			.					
639	Base Slat	Base Slab Construction TR5A Bay 2 LHS	y 2 LHS			8工作日	2377/2012	1/8/2012						•••		
643	Wall Ster	Wall Stem Construction TR5A Bay 2 LHS	ay 2 LHS			9工作日	16/5/2012	28/5/2012						Þ	T II	
			1									Ε				
以来: Master Programme TPR 11 May						国际		か記記数	4		ANIX	>				
: 22/5/2012		分割		里程碑	•	專案摘要報告,	A THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE	外部里程碑	>							

0							***************************************	H2	H	H2	IU	712 July 213	IU	H2	H
644		Formwork and rebar fixing	bar fixing		4工作日	16/5/2012	21/5/2012			 .					
645	-	Concreting			1元作日:	22/5/2012	22/5/2012						<u></u>		
646	:	Stripping off formwork	nwork		1工作目	23/5/2012	23/5/2012						<u></u>		
647		Backfill			3.工作日	24/5/2012	28/5/2012								
648	Base	Slab Construction	Base Slab Construction TR5A Bay 3 LHS		8工作日	11/7/2012	20/7/2012								
652	Wall	Stem Constructs	Wall Stem Construction TRSA Bay 3 LHS		10 工作日	23/7/2012	3/8/2012			•					
657															
859	Box Culv	Box Culvert TB02 (ch 580)	(6		39工作日	24/1/2012	16/3/2012					5 .	*		
899					1		0,00					!	^ ^ ^		
1	Ketaning	wall TK5A &	Retaining Wall TK5A & TR6 CH585-595 LHS		20 ⊥1/F⊒	2102/211	10/4/2012					-	· · ·		
670	Rive	r/Haul Road Dive	River/Haul Road Diverison (to TR3 and TR5 RHS)		3工作日	7/2/2012	9/2/2012					_			
671	Exca	Excavation and Blinding	gu.		14工作日	10/2/2012	29/2/2012								
672	Base	Slab Construction	Base Slab Construction TR6 Bay 1 LHS		10工作日	1/3/2012	14/3/2012								
676	Wall	Stem Constructi	Wall Stem Construction TR6 Bay 1 LHS		10 工作日	15/3/2012	28/3/2012								
681	Base	Slab Construction	Base Slab Construction TR5A Bay 4 LHS		8工作目	14/3/2012	23/3/2012						 D		
685	Wall	Stem Constructi	Wall Stem Construction TR5A Bay 4 LHS		10工作日	26/3/2012	6/4/2012								
069		Slab Construction	Base Slab Construction TR5A Bay 5 LHS		8工作日	22/3/2012	2/4/2012								
	Wall	Stem Constructi	Wall Stem Construction TR5A Bay 5 LHS		10工作日	3/4/2012	16/4/2012			• 4-			 B		
669				3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						•		
700	Retaining	Retaining Wall (ch 595-615) TR3 (Bay 3)	15) TR3 (Bay 3)		36工作日	3/10/2011	21/11/2011					Ľ			
715	Concrete	Concrete Slab (Ch546 - Ch596) LHS	h596) LHS		27工作日	15/6/2012	23/7/2012								
716	Bay 1	1			11 工作日	15/6/2012	29/6/2012)		
717		Excavation/Blinding	ling		3工作日	15/6/2012	19/6/2012						<u></u>		
718		Formwork and re	Formwork and rebar fixing for DWF		4工作目	20/6/2012	25/6/2012								
719		Concreting of DWF	WF		1工作日	26/6/2012	26/6/2012								
720	:	Formwork and re	Formwork and rebar fixing for slab		4工作日	22/6/2012	27/6/2012						*		
721		Concreting of slab	q		1工作日	28/6/2012	28/6/2012								
722		Stripping off formwork	nwork		1工作日	29/6/2012	29/6/2012						^		
723	Bay 2	2			12工作日	20/6/2012	5/7/2012								
724		Excavation/Blinding	gui		2工作日	20/6/2012	21/6/2012						<u>_</u>		
725		Formwork and re	Formwork and rebar fixing for DWF		4工作目	26/6/2012	29/6/2012								
726		Concreting of DWF	WF		1工作日	27772012	277/2012								
727		Formwork and re	Formwork and rebar fixing for stab		4工作日	28/6/2012	3/7/2012						*		
728		Concreting of slab	qı		1工作日	4772012	4772012								
729		Stripping off formwork	nwork	0 20 20 20 20 20 20 20 20 20 20 20 20 20	1工作日・	517/2012	5/1/2012			* * :					
730	Bay 3	3			14工作日	22/6/2012	11/7/2012								
731		Excavation/Blinding	gail		2工作日	22/6/2012	25/6/2012						<u></u>		
732		Fornwork and re	Formwork and rebar fixing for DWF		4工作日	29/6/2012	4772012								
733		Concreting of DWF	WF		1工作日	577/2012	5/7/2012								
734		Fornwork and re	Fornwork and rebar fixing for slab		4工作目	47/2012	977/2012			* * *					
735		Concreting of slab	q.		1工作日	1077/2012	10/7/2012								
736		Stripping off formwork	nwork		1工作日	11772012	11/7/2012						_		
737	Bay 4	4	нистейскій ідді фаралізаціялася Афантистичник перетина правитальна адаментальна правитальна правитальна правит		16工作日	26/6/2012	17/7/2012		-	4 A	О В В В В В В В В В В В В В В В В В В В		•	2. 2. 2. Section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of t	
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0					Ì	,		H2	HI	H2	HI	H2	HI	H2	H)
738	- fut	Excavation/Blinding	ng		2工作日	26/6/2012	27/6/2012	•••							
739		Formwork and reb	Formwork and rebar fixing for DWF		4工作目	57772012	107//2012						₽		
740		Concreting of DWF	-F		1工作日	11/7/2012	11,772012						·		
74]		Formwork and rebar fixing for slab	nar fixing for slab		4工作目	10/7/2012	13/7/2012						₩	,	
		Concreting of slab	A		1工作日	16/7/2012	16/7/2012						<u></u>		
743		Stripping off formwork	work		1工作目	17/7/2012	17/17/2012							.	
744	Bay 5	5			18工作日	28/6/2012	23/7/2012								
751		14 M M M M M M M M M M M M M M M M M M M					1 to 1 to 1 to 1 to 1 to 1 to 1 to 1 to						•		
	Drainage	and Footpath (Ch.	Drainage and Footpath (Ch525-615 LHS & RHS)		15 工作日	16/10/2012	5/11/2012							B	
753	Cons	struction of footpat	Construction of footpath & drainage works		15工作日	16/10/2012	5/11/2012						• • •	 	
754	Lighting a	Lighting at CH 550-610			10工作日	6/11/2012	19/11/2012							•	
755	Const	Construction of Drawpits / Ducting	its / Ducting		6工作目	6/11/2012	13/11/2012								
	Public	Public lighting Installation (CE2325)	ion (CE2325)		2工作目	14/11/2012	15/11/2012								
757	Public	Public lighting Installation (CE2326)	ion (CE2326)		2工作日	14/11/2012	15/11/2012							 	
758	Public	Public lighting Installation (CE2327)	tion (CE2327)		2工作目	14/11/2012	15/11/2012						• • •	_d	
759	T&C				1工作目	16/11/2012	16/11/2012						* * *	 L	
760	Remo	oval of existing ligi	Removal of existing lighting (CE1600-B2)		1工作日	19/11/2012	19/11/2012			** **			^ ^ 6	· · · ·	
班家: Master Program	mme TPR 11 May	任務		進度	缩吸		外部任務		柳條	磁	□				
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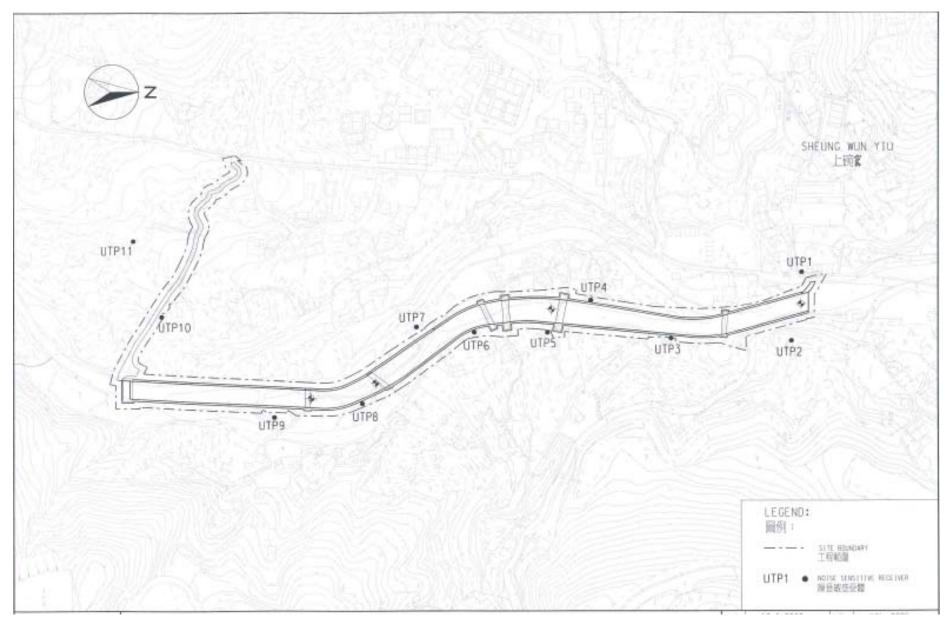


Appendix C

Environmental Monitoring Locations

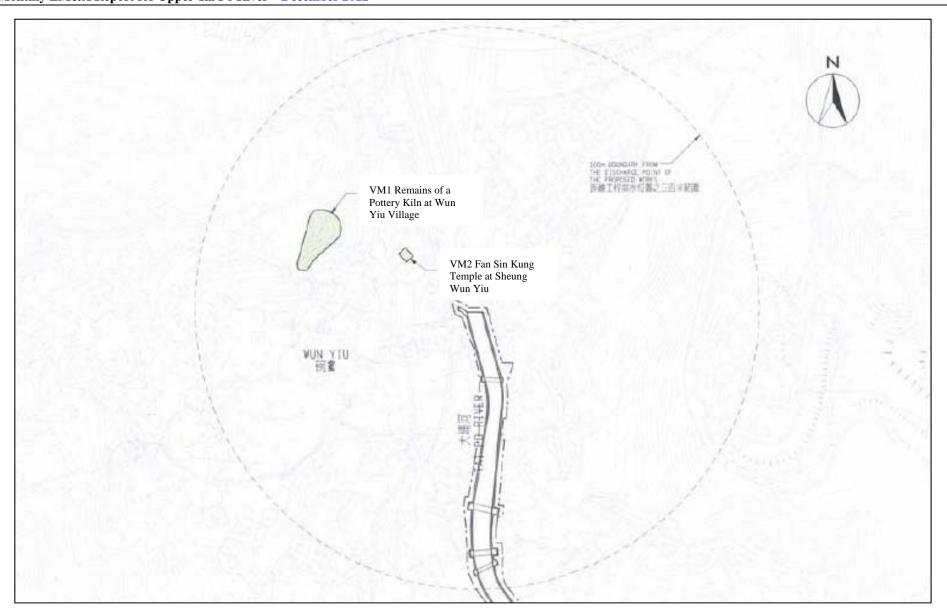
Construction Noise and Vibration





Construction Noise Monitoring Location



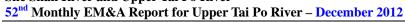


Vibration Monitoring Location



Appendix D

Calibration certificates of the monitoring equipment





Equipment Calibration List

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1		Bruel & Kjaer Integrating Sound Level Meter (Serial No. 2285762) AUES Equipment ID: EQ006	7 May 2012	7 May 2013
2		Bruel & Kjaer Integrating Sound Level Meter (Serial No. 2285722) AUES Equipment ID: EQ009	20 July 2012	20 July 2013
2	Noise	Bruel & Kjaer Integrating Sound Level Meter (Serial No. 2285721) AUES Equipment ID: EQ010	20 April 2012	20 April 2013
3	Noise	Bruel & Kjaer Integrating Sound Level Meter (Serial No. 2337676) AUES Equipment ID: EQ065	18 May 2012	18 May 2013
4		Rion NL-31 Sound Level Meter (Serial No. 00410221) AUES Equipment ID: EQ067	8 May 2012	8 May 2013
5		Bruel & Kjaer Acoustical Calibrator (Serial No. 2326408) AUES Equipment ID: EQ081	7 May 2012	7 May 2013



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C122713

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC12-0960)

Description / 儀器名稱 :

Integrating Sound Level Meter (EQ006)

Manufacturer / 製造商

Bruel & Kjaer

Model No./型號

2238

Serial No. / 編號

2285762

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 :

 $(23 \pm 2)^{\circ}C$

Line Voltage / 電壓 : ---

Relative Humidity / 相對濕度 : (55 ± 20)%

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

7 May 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試

K Yeung

Certified By

核證

K/C Lee

Date of Issue 簽發日期 8 May 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



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證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.
- Self-calibration using the B & K Acoustic Calibrator 4231, S/N: 2326408 was performed before the test. 2.
- The results presented are the mean of 3 measurements at each calibration point. 3.
- 4. Test equipment:

Equipment ID

Certificate No.

CL280 CL281

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

C120016

DC110233

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

	UUT	Setting		Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	± 0.7

6.1.2

	UU	Γ Setting	Applie	Applied Value		
Range Parameter (dB)		Frequency Time Weighting Weighting		Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

Time Weighting 6.2

6.2.1 Continuous Signal

	UUT Setting				Applied Value		IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S		1 1 2	94.1	± 0.1
	L _{AIP}		I			94.2	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



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Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C122713

證書編號

Tone Burst Signal (2 kHz)

	UUT	Setting		App	lied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)			Type 1 Spec. (dB)
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

A-Weighting 6.3.1

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	31.5 Hz	55.2	-39.4 ± 1.5
	2.00				63 Hz	68.0	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	95.1	$+1.0 \pm 1.0$
					8 kHz	93.0	-1.1 (+1.5; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

		Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.5	-3.0 ± 1.5
					63 Hz	93.4	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
				11	2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
			41		8 kHz	91.0	-3.0 (+1.5; -3.0)
	1		M		12.5 kHz	87.9	-6.2 (+3.0; -6.0)

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗所 c/o 香港新界屯門與安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C122713

證書編號

6.4 Time Averaging

UUT Setting					Aj		UUT	IEC 60804		
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
	-Acq	1.35	1 -03-2-2			1/102	1100	90	90.0	± 0.5
			60 sec.			1/103		80	79.4	± 1.0
		L	5 min.	-		1/104		70	69.3	± 1.0

Remarks: - Mfr's Spec.: IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : \pm 0.40 dB

104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB) 114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB) Burst equivalent level : ± 0.2 dB (Ref. 110 dB

continuous sound level)

Note:

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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⁻ The uncertainties are for a confidence probability of not less than 95 %.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C124263

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號:IC12-0960)

Description / 儀器名稱

Integrating Sound Level Meter (EQ009)

Manufacturer / 製造商

Bruel & Kjaer

Model No. / 型號

2238

Serial No. / 編號

2285722

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS/測試條件

Temperature / 溫度

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

20 July 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試

Certified By 核證

C Lee

Date of Issue 簽發日期

20 July 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory. 本證書所載校正用之測試器材均可溯源至國際標準。 局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗所

c/o 香港新界屯門與安里一號青山灣機樓四樓 Tel/電話: 2927 2606 Fax/傳真: 2744 8986

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Page 1 of 4



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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.:

C124263

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.

Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4. 2.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment:

Equipment ID

Description

Certificate No.

CL280 CL281 40 MHz Arbitrary Waveform Generator

C120016

Multifunction Acoustic Calibrator

DC110233

Test procedure: MA101N. 5.

6. Results:

6.1 Sound Pressure Level

Reference Sound Pressure Level 6.1.1

6.1.1.1 Before Self-calibration

	UUT	Setting	Applie	d Value	UUT	
Range (dB)	Parameter	Frequency Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	
50 - 130	L_{AFP}	A	Weighting F	94.00	1	93.6

6.1.1.2 After Self-calibration

	UUT	Setting		Applied Value		UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

	UU'	Γ Setting	Applie	d Value	UUT	
Range	Parameter	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C124263

證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

Continuous	Digital						
	UUT	Setting		Applied Value		UUT	IEC 60651
Range	Time	Level	Freq.	Reading	Type 1 Spec.		
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.1
	LAIP		I			94.0	± 0.1

Tone Burst Signal (2 kHz) 6.2.2

TOILE DUIDE	Dignar (2 Kill	,					
	UUT	Setting		App	lied Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Burst	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	Duration	(dB)	(dB)
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.5	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	$+1.2 \pm 1.0$
					4 kHz	95.2	$+1.0 \pm 1.0$
					8 kHz	94.0	-1.1 (+1.5; -3.0)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



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Certificate of Calibration

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Certificate No.: C124263

證書編號

6.3.2 C-Weighting

C-Weighting		Setting		Applie	ed Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	L_{CFP}	С	F	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

	UUT	Setting			Aj	oplied Valu	е		UUT	IEC 60804
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration	Burst Duty	Burst Level	Equivalent Level	Reading (dB)	Type 1 Spec.
					(ms)	Factor	(dB)	(dB)		(dB)
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						1/10 ²		90	89.7	± 0.5
			60 sec.			1/10 ³		80	79.1	± 1.0
			5 min.			1/10 ⁴		70	69.1	± 1.0

Remarks: - Mfr's Spec.: IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : \pm 0.35 dB

250 Hz - 500 Hz : ± 0.30 dB 1 kHz : ± 0.20 dB 2 kHz - 4 kHz : ± 0.35 dB 8 kHz : ± 0.45 dB

12.5 kHz : \pm 0.70 dB 104 dB : 1 kHz : \pm 0.10 dB (Ref. 94 dB)

114 dB: 1 kHz : ± 0.10 dB (Ref. 94 dB) Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note:

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C122427

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC12-0960)

Description / 儀器名稱

Integrating Sound Level Meter (EQ010)

Manufacturer / 製造商

Bruel & Kjaer

Model No. / 型號

2238

Serial No. / 編號

2285721

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : Line Voltage / 電壓 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

20 April 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By

測試

L K Yeung

Certified By

核證

K/C Lee

Date of Issue 簽發日期

23 April 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C122427

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.

Self-calibration using the B & K Acoustic Calibrator 4231, S/N: 2713428 was performed before the test. 2.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment:

Equipment ID

Description

Certificate No.

CL280

40 MHz Arbitrary Waveform Generator

C120016

CL281

Multifunction Acoustic Calibrator

DC110233

5. Test procedure: MA101N.

6. Results:

Sound Pressure Level 6.1

Reference Sound Pressure Level 6.1.1

	UUT	Setting		Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

	UU	Γ Setting		Applie	d Value	UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00) =!	104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

	UUT	Setting		Applie	d Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	LAFP	A	F	94.00	1	94.0	Ref.	
	L _{ASP}	8	S	10000		94.0	± 0.1	
	L _{AIP}		I			94.1	± 0.1	

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.:

C122427

證書編號

Tone Burst Signal (2 kHz)

	UUT	Setting		App	lied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	101.9	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.6	-39.4 ± 1.5
	2000	100			63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	$+1.2 \pm 1.0$
					4 kHz	95.0	$+1.0 \pm 1.0$
					8 kHz	92.9	-1.1 (+1.5; -3.0)
	0 0000 01	11			-12.5 kHz	89.7	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.1	-3.0 ± 1.5
			100.75		63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0; -6.0)

本證書所載校正用之測試器材均可測源至國際標準 + 局部複印本證書需先獲本實驗所書而批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗所 c/o 香港新界屯門與安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/配郵: callab@suncreation.com

Website/網址: www.sunereation.com

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C122427

證書編號

6.4 Time Averaging

	UUT	Setting			A	pplied Valu	e		UUT	IEC 60804
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
	1.00	TY to				1/102		90	89.6	± 0.5
			60 sec.			1/103		80	79,8	± 1.0
			5 min.			1/104		70	69.8	± 1.0

Remarks: - Mfr's Spec.: IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : $31.5 \, \text{Hz} - 125 \, \text{Hz}$: $\pm 0.40 \, \text{dB}$

104 dB: 1 kHz : ± 0.10 dB (Ref. 94 dB) 114 dB: 1 kHz : ± 0.10 dB (Ref. 94 dB) Burst equivalent level : ± 0.2 dB (Ref. 110 dB

continuous sound level)

Note

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

⁻ The uncertainties are for a confidence probability of not less than 95 %.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C123007

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC12-0960)

Description / 儀器名稱

Integrating Sound Level Meter (EQ065)

Manufacturer / 製造商

Bruel & Kjaer

Model No. / 型號

2238

Serial No. / 編號

2337676

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 :

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 :

18 May 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

K/C/Lee

C Cheung

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試

Certified By 核證

Date of Issue

22 May 2012

簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

本證書所載校正用之測試器材均可測源至國際標準。局部複印本證書需先獲本實驗所書而批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, I Hing On Lane, Tuen Mun, New Territories, Hong Kong

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Page 1 of 4



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.: C123007

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.

Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4. 2.

The results presented are the mean of 3 measurements at each calibration point. 3.

4. Test equipment:

Equipment ID

Description

Certificate No.

CL280 CL281

40 MHz Arbitrary Waveform Generator

C120016

Multifunction Acoustic Calibrator

DC110233

5. Test procedure: MA101N.

6. Results:

Sound Pressure Level 6.1

Reference Sound Pressure Level 6.1.1

6.1.1.1 Before Self-calibration

	UUT	Setting		Applie	d Value	UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	LAFP	A	F	94.00	1	94.3

6.1.1.2 After Self-calibration

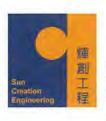
	UUT	Setting		Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	± 0.7

6.1.2 Linearity

	UU	Γ Setting	Applied	d Value	UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	LAFP	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.: C123007

證書編號

6.2 Time Weighting

Continuous Signal 6.2.1

	UUT Setting			Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	ency Time Level Freq.		Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.1	± 0.1
	LAIP		I			94.1	± 0.1

Tone Burst Signal (2 kHz) 6.2.2

	UUT Setting			App	lied Value	UUT	IEC 60651
Range (dB)	Parameter	200 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Burst Duration	Reading (dB)	Type 1 Spec. (dB)	
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}	222			200 ms	105.1	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

A-Weighting 6.3.1

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	95.1	$+1.0 \pm 1.0$
					8 kHz	93.0	-1.1 (+1.5; -3.0)
	1		1		12.5 kHz	89.9	-4.3 (+3.0; -6.0)

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校正證書

Certificate No.: C123007

證書編號

6.3.2 C-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.3	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
		/			125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.1	-3.0 (+1.5; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0; -6.0)

Time Averaging

6.4

UUT Setting				A	UUT	IEC 60804				
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Leyel (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						1/102		90	89.7	± 0.5
			60 sec.			1/103		80	79.7	± 1.0
			5 min.		-	1/104		70	69.7	±1.0

Remarks: - Mfr's Spec.: IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value: 94 dB : 31.5 Hz - 125 Hz : ± 0.35 dB

250 Hz - 500 Hz : ± 0.30 dB 1 kHz : ± 0.20 dB 2 kHz - 4 kHz : ± 0.35 dB 8 kHz : ± 0.45 dB

12.5 kHz : $\pm 0.70 \text{ dB}$

- The uncertainties are for a confidence probability of not less than 95 %.

Note:

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, | Hing On Lane, Tuen Mun, New Territories, Hong Kong

原創工程有限公司 - 校正及檢測實驗所 c/o 香港新昇屯門興安里一號青山灣機樓四樓

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Certificate of Calibration 校正證書

Certificate No.: C122715

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC12-0960)

Description / 儀器名稱

Sound Level Meter (EQ067)

Manufacturer / 製造商

Rion

Model No./型號 Serial No. / 編號

NL-31 00410221

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : Line Voltage / 電壓 :

 $(23 \pm 2)^{\circ}C$

Relative Humidity / 相對濕度 : (55 ± 20)%

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

8 May 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By

測試

L K Yeung

Certified By

Q Lee

Date of Issue 簽發日期

9 May 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

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輝創工程有限公司 - 校正及檢測實驗所 c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 4



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.: C122715

證書編號

校正證書

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

The results presented are the mean of 3 measurements at each calibration point. 3.

4. Test equipment:

CL281

Equipment ID CL280

Description

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

Certificate No. C120016

DC110233

5. Test procedure: MA101N.

Results: 6.

Sound Pressure Level 6.1

6.1.1 Reference Sound Pressure Level

UUT Setting			Applied	d Value	UUT	IEC 60651 Type 1	
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
30 - 120	LA	A	Fast	94.00	1	93.9	± 0.7

6.1.2 Linearity

	U	UT Setting		Applied	Value	UUT
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 120	LA	A	Fast	94.00	1	93.9 (Ref.)
- Y - 1				104.00		103.9
				114.00		113.9

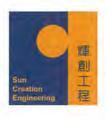
IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

Time Weighting 6.2

6.2.1 Continuous Signal

UUT Setting			Applied	d Value	UUT	IEC 60651 Type 1	
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
30 - 120	LA	A	Fast	94.00	1	93.9	Ref.
San I by Co.	2.4		Slow			93.9	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory



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Certificate No.: C122715

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6.2.2 Tone Burst Signal (2 kHz)

UUT Setting			Appl	ied Value	UUT	IEC 60651 Type 1	
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Spec. (dB)
20 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	L _A max			1	200 ms	105.1	-1.0 ± 1.0
	LA		Slow		Continuous	106.0	Ref.
	Lamax		2000		500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UU	T Setting		Appl	ied Value	UUT	IEC 60651 Type 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
30 - 120	LA	A	Fast	94.00	31.5 Hz	54.2	-39.4 ± 1.5
			*****		63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.0
					250 Hz	85.2	-8.6 ± 1.0
					500 Hz	90.6	-3.2 ± 1.0
					1 kHz	93.9	Ref.
					2 kHz	95.2	$+1.2 \pm 1.0$
					4 kHz	95.0	$+1.0 \pm 1.0$
					8 kHz	92.8	-1.1 (+1.5; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

	UU	T Setting	1	Appl	ied Value	UUT	IEC 60651 Type 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
30 - 120	L _C	C	Fast	94.00	31.5 Hz	90.8	-3.0 ± 1.5
				63 Hz	93.0	-0.8 ± 1.5	
				125 Hz	93.7	-0.2 ± 1.0	
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	0.0 ± 1.0	
				21	1 kHz	93.9	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	4 kHz 93.2 -0.8 ±	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5; -3.0)
				12.5 kHz	88.1	-6.2 (+3.0; -6.0)	

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Certificate No.: C122715

證書編號

Time Averaging

	UUT Setting				Applied Value					IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type I Spec. (dB)
20 - 110	LAcq	A	10 sec. 4	4	4. 1	1/10	110	100	100.0	± 0.5
		1 12 1				1/102		90	90.0	± 0.5
			60 sec.			1/103		80	80.0	± 1.0
			5 min.			1/104		70	70.0	± 1.0

Remarks: - Mfr's Spec.: IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value: 94 dB : 31.5 Hz - 125 Hz: ± 0.35 dB

 $250 \text{ Hz} - 500 \text{ Hz} : \pm 0.30 \text{ dB}$ $\pm 0.20 \, dB$ 1 kHz 2 kHz - 4 kHz : $\pm 0.35 \text{ dB}$ 8 kHz $\pm 0.45 \, dB$

12.5 kHz $\pm 0.70 \text{ dB}$

104 dB : 1 kHz $\pm 0.10 \text{ dB (Ref. 94 dB)}$ 114 dB : 1 kHz $\pm 0.10 \text{ dB (Ref. 94 dB)}$: ± 0.2 dB (Ref. 110 dB Burst equivalent level continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note:

Tel/電話: 2927 2606

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

C122712 Certificate No.:

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC12-0960)

Description / 儀器名稱

Acoustical Calibrator (EQ081)

Manufacturer / 製造商

Bruel & Kjaer

Model No. / 型號

4231

Serial No. / 編號

2326408

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度

Relative Humidity / 相對濕度:

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

7 May 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

All results are within manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試

Certified By

核證

K/C/Lee

Date of Issue 簽發日期

8 May 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laborator



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Certificate No.: C122712

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point. 2.
- Test equipment: 3.

Equipment ID CL130 CL281 TST150A

Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier

Certificate No. C113350 DC110233 C120886

4. Test procedure: MA100N.

Results:

Sound Level Accuracy 5.1

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
(KIIZ)	1 000 0	1 kHz ± 0.1 %	± 0.1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

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Appendix E

Event and Action Plan

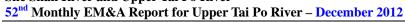




Event Action Plan for Construction Noise

		AC'	TION	
EVENT	ET Leader	IEC	ER	Contractor
Action Level	1. Notify IEC and Contractor 2. Carry out investigation. 3. Report the results of investigation to the IEC, ER and Contractor. 4. Discuss with the Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness.	Review the analyzed results submitted by the ET. Review the proposed remedial measures by the Contractor and advise the ER accordingly Supervise the implementation of remedial measures	Confirm receipt of notification of failure in writing Notify Contractor Require Contractor to propose 'remedial measures for the analyzed noise problem Check remedial measures are properly implemented.	Submit noise mitigation proposals to IEC Implement noise mitigation proposals
Limit Level	1. Notify IEC, ER, EPD and Contractor 2. Identify source. 3. Repeat measurements to confirm findings 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions 2. Review Contractor's' remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Check remedial measures properly implemented. 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	 Take immediate action to avoid further exceedance Submit proposals for remedial actions to IEC within 3 working days of notification Implement the agreed proposals Resubmit proposals if problem still not under control Stop the relevant portion of works as determined by the ER until the exceedance is abated

DSD Contract DC/2007/06 – River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River





Event Action Plan for Ecology

Event			_	Act	ion			
Event		ET		ER		IEC		Contractor
Non-conformity on one occasion	1. 2. 3.	Identify Source Inform the IEC and the ER; Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed	1. 2. 3. 4.	Check report Check the Contractor's working method Discuss with the ET and the Contractor on possible remedial measures, Advise the Contractor on effectiveness of proposed remedial measures Check implementation of remedial measures	1.	Ensure Remedial measures are properly implemented	1. 2.	Amend working methods
Repeated Non conformity	1. 2. 3. 4. 5.	Identify Source Inform the IEC and the ER Increase monitoring frequency Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed. If exceedance stops, cease additional monitoring	 2. 3. 4. 	Check the Contractor's working method Discuss with the ET and the Contractor on possible remedial measures Advise the Contractor on effectiveness of proposed remedial measures Check implementation of remedial measures	1.	Ensure Remedial measures are properly implemented	1. 2.	Amend working methods Rectify damage and undertake any necessary replacement

DSD Contract DC/2007/06 – River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River 52nd Monthly EM&A Report for Upper Tai Po River – December 2012



Contingency Plan of Vibration of exceedance

If there be any exceed of limit level;

- 1. ET will notify IEC, ER and contractor at once.
- 2. A joint investigation will be carried out in order to identify the possible source and remedial actions required and agreed between ER, IEC, ET and the Contractor.
- 3. During such investigation, piling and drilling works will be suspended.



Appendix F

Monitoring Schedule in Reporting Period and the Coming Month



Monitoring / Inspection Schedule during the Reporting Period –December 2012

	D 4		Monitoring		Site Ins	pection	CCENTC
	Date	Noise	Ecology	Vibration	General*	Ecology	SSEMC
Sat	1-Dec-12						
Sun	2-Dec-12						
Mon	3-Dec-12						
Tue	4-Dec-12						
Wed	5-Dec-12						
Thu	6-Dec-12						
Fri	7-Dec-12						
Sat	8-Dec-12						
Sun	9-Dec-12						
Mon	10-Dec-12						
Tue	11-Dec-12						
Wed	12-Dec-12						
Thu	13-Dec-12						
Fri	14-Dec-12						
Sat	15-Dec-12						
Sun	16-Dec-12						
Mon	17-Dec-12						
Tue	18-Dec-12						
Wed	19-Dec-12						
Thu	20-Dec-12						
Fri	21-Dec-12						
Sat	22-Dec-12						
Sun	23-Dec-12						
Mon	24-Dec-12						
Tue	25-Dec-12						
Wed	26-Dec-12						
Thu	27-Dec-12						
Fri	28-Dec-12						
Sat	29-Dec-12						
Sun	30-Dec-12				ath 10th 10th	1 agth D	

^{*} IEC carried out joint site inspection with the RE and Contractor on 5th, 12th, 18th and 27th December 2012.

Monitoring / Inspection Day
Sunday or Public Holiday



Predict Monitoring / Site Inspection for the coming month – January 2013

	D 4		Monitoring		Site Ins	pection	CCENTC
	Date	Noise	Ecology*	Vibration	General	Ecology	SSEMC
Tue	1-Jan-13						
Wed	2-Jan-13						
Thu	3-Jan-13						
Fri	4-Jan-13						
Sat	5-Jan-13						
Sun	6-Jan-13						
Mon	7-Jan-13						
Tue	8-Jan-13						
Wed	9-Jan-13						
Thu	10-Jan-13						
Fri	11-Jan-13						
Sat	12-Jan-13						
Sun	13-Jan-13						
Mon	14-Jan-13						
Tue	15-Jan-13						
Wed	16-Jan-13						
Thu	17-Jan-13						
Fri	18-Jan-13						
Sat	19-Jan-13						
Sun	20-Jan-13						
Mon	21-Jan-13						
Tue	22-Jan-13						
Wed	23-Jan-13						
Thu	24-Jan-13						
Fri	25-Jan-13						
Sat	26-Jan-13						
Sun	27-Jan-13						
Mon	28-Jan-13						
Tue	29-Jan-13						
Wed	30-Jan-13						
Thu	31-Jan-13						

Monitoring / Inspection Day
Sunday or Public Holiday



Appendix G

Meteorological Data of Reporting Period





Meteorological Data in Reporting Period

		g	-	Tai Po	Station	Shatin Station		
Date		Weather	Total Rainfall (mm)	Mean Air Temp. (°C)	Mean Relative Humidity (%)	Wind Speed (km/h)	Wind Direction	
1-Dec-12	Sat	Cool, fine, moderate to fresh east to northeasterly winds	0.3	20.4	86	7.1	N	
2-Dec-12	Sun	Cloudy, rain, moderate to fresh east to northeasterly winds	3.2	17.5	84	10.5	N	
3-Dec-12	Mon	Cloudy ,rain , moderate north to northeasterly winds	10.9	15.5	87.5	7	N	
4-Dec-12	Tue	Cloudy, rain, moderate to fresh east to northeasterly winds	8.7	15.4	85.5	10.1	N	
5-Dec-12	Wed	Cloudy, rain, moderate to fresh northerly winds	6.5	15.7	79	11.5	N/NE	
6-Dec-12	Thu	Cool, fine, moderate to fresh east to northeasterly winds	0	15.1	71	6.1	N/NE	
7-Dec-12	Fri	Sunny intervals, cloudy, moderate northeasterly winds.	Trace	17.5	75	6	N/NE	
8-Dec-12	Sat	Sunny periods, cloudy, fresh easterly winds	0.9	18	75.7	8.4	N/NE	
9-Dec-12	Sun	Cloudy, rain, sunny intervals, moderate northeasterly winds	0	18.4	71	10.4	E/NE	
10-Dec-12	Mon	Sunny periods, cloudy, fresh easterly winds	0	18.4	70	9.6	E/NE	
11-Dec-12	Tue	Cloudy, rain, sunny intervals, moderate northeasterly winds	0	17.7	74.5	8.5	N/NE	
12-Dec-12	Wed	Cloudy, sunny periods, moderate to fresh easterly winds	0	16.1	74.7	11.1	N	
13-Dec-12	Thu	Cloudy, sunny periods, moderate to fresh easterly winds	0	18.4	73.2	11.1	E/SE	
14-Dec-12	Fri	Cloudy, rain, sunny intervals, moderate northeasterly winds	0	20.3	82.2	6.4	E/NE	
15-Dec-12	Sat	Cloudy, rain, sunny intervals, moderate northeasterly winds	0	21.7	88	7.3	E/NE	
16-Dec-12	Sun	Cloudy, rain, sunny intervals, moderate northeasterly winds	0	23.4	85.7	7.5	E/NE	
17-Dec-12	Mon	Sunny intervals, cloudy, moderate northeasterly winds.	0	21.3	86	10.2	NE	
18-Dec-12	Tue	Cloudy, rain, fresh northerly winds	2.3	16	80.7	11	N	
19-Dec-12	Wed	Sunny periods, cloudy, fresh easterly winds	1.1	14.3	77	9.5	Е	
20-Dec-12	Thu	Cloudy, rain, moderate to fresh east to northeasterly winds	0	17.8	83	9.5	N/NE	
21-Dec-12	Fri	Cloudy, sunny periods, moderate to fresh easterly winds	Trace	20.5	88	7.7	N/NE	
22-Dec-12	Sat	Cloudy, rain, fresh northerly winds	0	16.9	50	15.7	N/NE	
23-Dec-12	Sun	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	0	12.1	52	14	N/NE	
24-Dec-12	Mon	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	0	11.3	64.2	13.6	NE	
25-Dec-12	Tue	Cloudy, rain, fresh northerly winds	0		Ho	liday		
26-Dec-12	Wed	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	Trace		Hol	liday		
27-Dec-12	Thu	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	Trace	17.3	82.2	13.6	E/NE	
28-Dec-12	Fri	Sunny periods, cloudy, fresh easterly winds	Trace	19.1	73.7	6.5	E/NE	
29-Dec-12	Sat	Sunny periods, cloudy, fresh easterly winds	22.1	15.4	55.7	10.7	E/NE	
30-Dec-12	Sun	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	Trace	9.4	45	16.2	N/NE	
31-Dec-12	Mon	Fine, dry, cloudy, moderate northeasterly winds, fresh offshore.	0	8.8	39.5	10.5	N/NE	

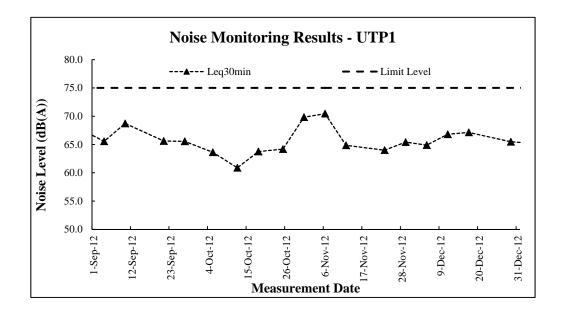
^{*} The record was downloaded from The Hong Kong Observatory Weather Stations

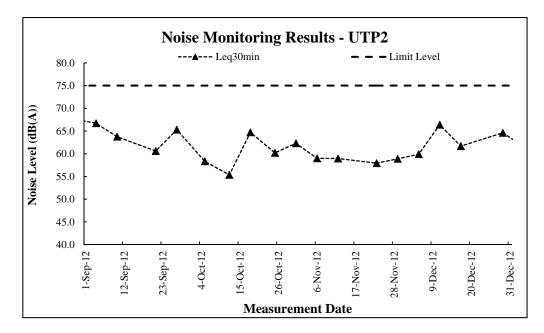


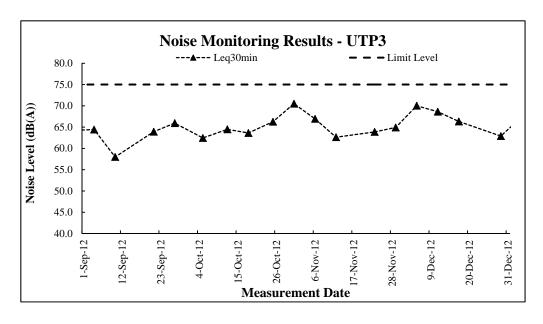
Appendix H

Graphical Plots of Noise Monitoring

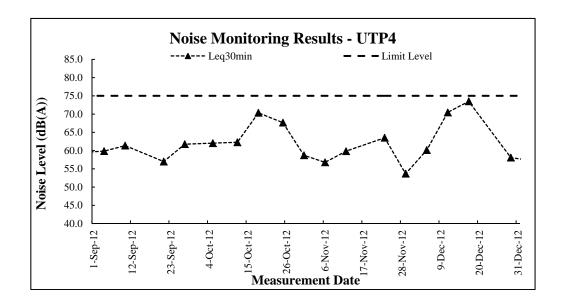


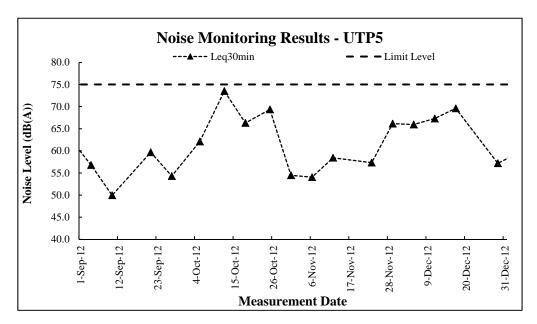


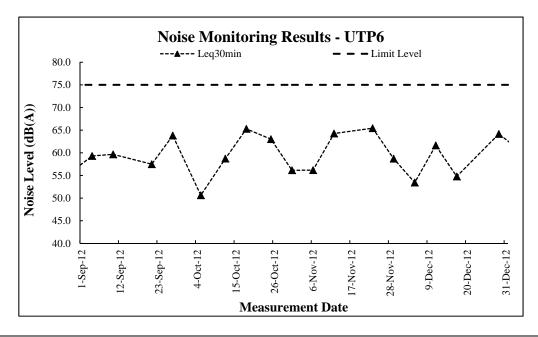




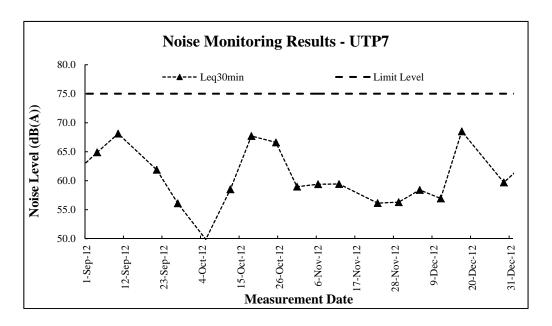


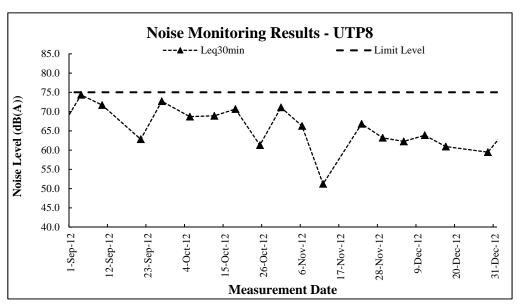


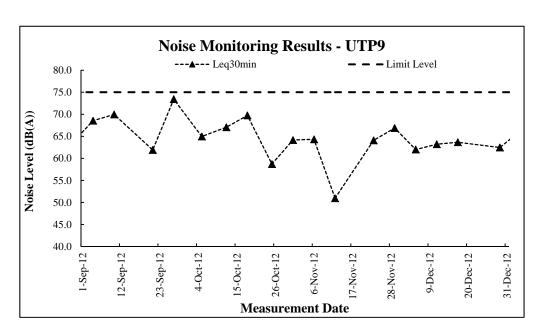




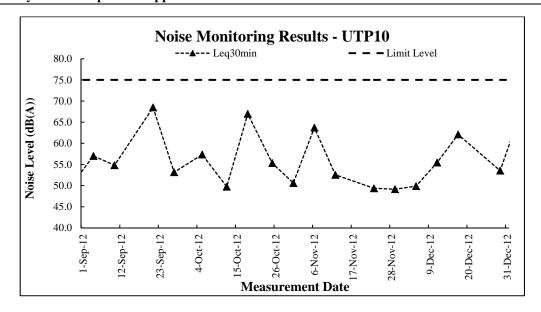


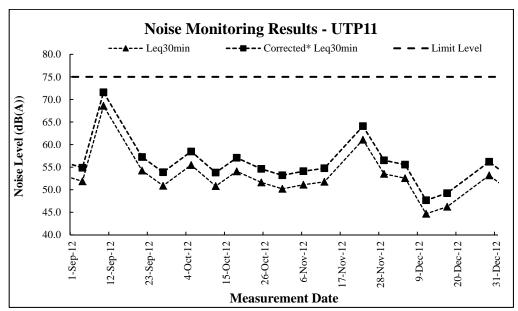






52nd Monthly EM&A Report for Upper Tai Po River – December 2012







Appendix I

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: DSD Contract No.: <u>DC/2007/06</u>

Monthly Summary Waste Flow Table of Upper Tai Po River for 2012

	Ad	ctual Quantities o	f Inert C&D Mat	erials Generated M	Ionthly			Actual Quantities	of C&D Waste	s Generated Monthl	у
Month	Total Quantity of Inert C&D Materials Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste*	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	1.920	0.490	0.490	1.430	0.000	0.000	0.050	0.040	0.020	0.002	0.030
Feb	2.110	1.970	2.000	0.110	0.000	0.000	0.030	0.020	0.015	0.001	0.020
Mar	1.401	0.107	0.281	1.120	0.000	0.000	0.040	0.045	0.020	0.000	0.030
Apr	0.710	0.280	0.280	0.295	0.135	0.000	0.035	0.040	0.015	0.000	0.030
May	0.161	0.160	0.161	0.000	0.000	0.000	0.040	0.035	0.020	0.000	0.035
June	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.040	0.025	0.000	0.030
July	0.128	0.128	0.128	0.000	0.000	0.000	0.040	0.045	0.025	0.000	0.050
Aug	0.128	0.128	0.128	0.000	0.000	0.000	0.050	0.050	0.030	0.001	0.060
Sept	0.764	0.764	0.764	0.000	0.000	0.000	0.045	0.040	0.030	0.000	0.050
Oct	0.244	0.244	0.244	0.000	0.000	0.000	0.050	0.050	0.040	0.000	0.045
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
Total	7.566	4.271	4.476	2.955	0.135	0.000	0.415	0.405	0.240	0.004	0.385

^{*}For all the three rivers in the Contract



Appendix J

Observed Noise Source During Noise Monitoring



J1 Observed Noise Source During Noise Monitoring for UTP1

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	-	Human voice, animals sound and low road traffic noise
11-Dec-12	Excavation	Human voice and low road traffic noise
17-Dec-12	-	Human voice and medium road traffic noise
29-Dec-12	Excavation	Human voice and low road traffic noise

J2 Observed Noise Source During Noise Monitoring for UTP2

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Excavation	Human voice and low road traffic noise
11-Dec-12	Excavation	Human voice and low road traffic noise
17-Dec-12	-	Low road traffic noise
29-Dec-12	Excavation	Human voice and low road traffic noise

J3 Observed Noise Source During Noise Monitoring for UTP3

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Dredging	Human voice, animals sound and low road traffic noise
11-Dec-12	Excavation	Human voice
17-Dec-12	-	Human voice, animals sound
29-Dec-12	Dredging	Human voice

J4 Observed Noise Source During Noise Monitoring for UTP4

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Excavation and drilling	Human voice
11-Dec-12	Excavation and cutting	Human voice
17-Dec-12	Excavation	Human voice
29-Dec-12	Excavation	Human voice

J5 Observed Noise Source During Noise Monitoring for UTP5

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Excavation and drilling	Human voice
11-Dec-12	Excavation and cutting	Human voice
17-Dec-12	Excavation and uploading	Human voice
29-Dec-12	Excavation and uploading	Human voice

J6 Observed Noise Source During Noise Monitoring for UTP6

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Dredging	Human voice, animals sound
11-Dec-12	Dredging	Human voice, animals sound
17-Dec-12	-	Human voice and animals sound
29-Dec-12	Dredging	Human voice

J7 Observed Noise Source During Noise Monitoring for UTP7

	(
Date	Construction Activities	Other Noise Source





	under the Project	
5-Dec-12	Excavation	Human voice
11-Dec-12	Cutting	Human voice
17-Dec-12	Dredging	Human voice and animals sound
29-Dec-12	Dredging	Human voice

J8 Observed Noise Source During Noise Monitoring for UTP8

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Dredging	Human voice and animals sound
11-Dec-12	Dredging	Human voice, animals sound and low road traffic noise
17-Dec-12	Formworks	Human voice, animals sound and low road traffic noise
29-Dec-12	Dredging	Human voice and low road traffic noise

J9 Observed Noise Source During Noise Monitoring for UTP9

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	Dredging	Human voice, animals sound and low road traffic noise
11-Dec-12	Dredging	Human voice, animals sound and low road traffic noise
17-Dec-12	Excavation	Human voice, animals sound and low road traffic noise
29-Dec-12	Dredging	Human voice and low road traffic noise

J10 Observed Noise Source During Noise Monitoring for UTP10

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	-	Human voice and animals sound
11-Dec-12	-	Human voice and animals sound
17-Dec-12	-	Human voice and animals sound
29-Dec-12	-	Human voice and animals sound

J11 Observed Noise Source During Noise Monitoring for UTP11

Date	Construction Activities under the Project	Other Noise Source
5-Dec-12	-	Human voice and animals sound
11-Dec-12	-	Human voice and animals sound
17-Dec-12	-	Animals sound
29-Dec-12	-	Human voice and animals sound