



CONTRACT NO: CV/2012/07
DEVELOPMENT AT ANDERSON ROAD -
FOOTBRIDGE D AND ASSOCIATED WORKS AREA

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

-MARCH 2015 -

CLIENTS:

Lam-Po Wing Joint Venture

PREPARED BY:

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CERTIFIED BY:

A handwritten signature in blue ink, appearing to be "Derek Lo".

Derek Lo
Environmental Team Leader

DATE:

10 April 2015

Ref.: OAPANDSNEM00_0_1430L.15

22 April 2015

By Post and Fax: 2407 8382

Engineer's Representative
Ove Arup & Partners
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong

Attention: Mr. Dennis Leung

Dear Sir,

**Re: Contract No. CV/2012/07
Development at Anderson Road
Footbridge D and Associated Works Area
Monthly EM&A Report for March 2015**

Reference is made to the Environmental Team's submission of the Monthly EM&A Report for March 2015 received by e-mail on 22 April 2015 for our review and comment.

We are pleased to inform you that we have no adverse comment on the captioned report.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,



David Yeung
Independent Environmental Checker

c.c. Lam Attn.: Mr. Derek Lo
LPWJV Attn.: Mr. Tak-Leung Lo

Fax: 2882 3331
Fax: 3171 7222

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EXECUTIVE SUMMARY

- i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – [March 2015](#) of “Development at Anderson Road – Footbridge D and Associated Works Area” (Hereafter called “this Project”). The construction works of this project was commenced on 20 July 2013. This is the [21st](#) month of EM&A report presenting the environmental monitoring findings and information recorded during the period of [1 March 2015 to 31 March 2015](#). The cut-off date of reporting is at the end of each reporting month.

Construction Activities for the Reported Period

- [Construction of Tower A \(Portion C3\)](#)
- [Construction of pile cap \(Portion C2\)](#)
- [Construction of \$\Phi\$ 1500 drainage pipe](#)

Noise Monitoring

- ii. Noise monitoring during daytime was conducted at the stations NM1 and NM2 on a weekly basis in the reporting month. No exceedance was recorded in the reporting month.

Air Quality Monitoring

- iii. Air quality monitoring has been conducted at station AQM1. No exceedance was recorded in the reporting month.

Complaints, Notifications of Summons and Successful Prosecutions

- iv. No complaint and notifications of summons or successful prosecutions were recorded in this reporting month.

Site Inspections and Audit

- v. The Environmental Team (ET) conducted weekly site inspections for Contract no. CV/2012/07 in the reporting month. Major observations and recommendations made during the audit sessions were rectified by the Contractors. No non-conformance was identified during the site inspections.

Future Key Issues

- vi. In coming reporting month, the principal work activities of individual contracts are anticipated as follows:
- [Construction of Tower A \(Portion C3\)](#)
 - [Construction of pile cap \(Portion C2\)](#)



- Construction of Φ 1500 drainage pipe

Reporting Change

- vii. There are no reporting changes in this Reporting Period.



1. Introduction

1.1 Scope of the Report

- 1.1.1. Lam Environmental Services Limited (LES) has been appointed to work as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Development of Anderson Road.
- 1.1.2. This report presents the environmental monitoring and auditing work carried out in accordance to the Section 1.4 of EM&A Manual and “*Environmental Monitoring and Audit Requirements*” under Particular Specification Section 25.
- 1.1.3. The construction works of this project was commenced on 20 July 2013. This report documents the finding of EM&A works for this Project and during the period of [1 March 2015 to 31 March 2015](#). The cut-off date of reporting is at the end of each reporting month.

1.2 Structure of the Report

Section 1 ***Introduction*** – details the scope and structure of the report.

Section 2 ***Project Background*** – summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.

Section 3 ***Status of Regulatory Compliance*** – summarizes the status of valid Environmental Permits / Licenses during the reporting period.

Section 4 ***Monitoring Requirements*** – summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.

Section 5 ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.

Section 6 ***Compliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.

Section 7 ***Cumulative Construction Impact due to the Concurrent Projects*** – summarizes the relevant cumulative construction impact due to the concurrent



activities of the concurrent Projects.

Section 8 ***Site Inspection*** – summarizes the findings of weekly site inspections undertaken within the reporting period, with a review of any relevant follow-up actions within the reporting period.

Section 9 ***Complaints, Notification of summons and Prosecution*** – summarizes the cumulative statistics on complaints, notification of summons and prosecution

Section 10 ***Conclusion***

2. Project Background

2.1 Background

- 2.1.1. The main objective of the project “Development at Anderson Road – Footbridge D and Associated Works Area” (Hereafter called “this Project”) is to construct a footbridge, Footbridge D, and associated lift towers across Shun On Road between the existing Shun Tin Estate and the future development platform.
- 2.1.2. For this project, Tin Wan House (NM1) and Ning Po No.2 College (NM2 and AQM1) are the designated monitoring station during the construction period. Owing to this contract is under the master project and on the other hand, the construction area is vicinity to the monitoring station (On Yat House) ID2 and (Sau Nga House) ID3 of the master project, so that the baseline noise and air quality monitoring will adopt the baseline data from those stations instead of conducting baseline monitoring. All the baseline data are referred to the baseline report from the public domain web site (www.anderson-road.com/main.htm).
- 2.1.3. The construction works of this project was commenced on 20 July 2013. During the construction phase of the project, air quality (dust) and noise impacts from the development site itself and the adjacent Anderson Road Quarry and other nearby construction sites are identified as the major environmental issues of concern. Besides, waste management is also identified in the EIA study as another environmental issue during the construction phase of the project that requires mitigation measures.

2.2 Scope of the Project and Site Description

- 2.2.1. The Project is located mainly near Shun Tin Estate and Ning Po No.2 College, as shown in **Figure 2.1**.
- 2.2.2. The scope of the Project comprises:
- Construction of footbridge and associated lift towers between Shun On Road and future platform at +152mPD and across Shun On Road. In Conjunction with these footbridge works are the associated furniture, drainage system, irrigation system and traffic signs.
 - Construction of drainage system for diversion of an existing stream on the slope adjoining Footbridge D.
 - Site formation and associated slope works for Footbridge D adjacent to Shun On Road.

2.3 Project Organization and Contact Personnel

2.3.1. Civil Engineering and Development Department is the overall project controllers for this project. For the construction phase of the Project, Project Engineer, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.3.2. The proposed project organization and lines of communication with respect to environmental protection works are shown in **Figure 2.2**. Key personnel and contact particulars are summarized in **Table 2.1**.

Table 2.1 Contact Details of Key Personnel

Party	Role	Post	Name	Contact No.	Contact Fax
Ove Arup	Engineer	Chief Resident Engineer	Dennis Leung	2407 0300	2407 8382
		Resident Engineer	Kenneth Lee	3656 3000	3656 1000
Lam-Po Wing Joint Venture	Contractor under Contract no. CV/2012/07	Project Manager	K.C. Wong	2318 0281	3171 7222
		Site Agent	T.L. Lo	2318 0281	
		Safety Officer	K.W. Lau	2318 0281	
		Environmental Officer	K.I. Ip	2318 0281	
ENVIRON Hong Kong Limited	Independent Environmental Checker (IEC)	Independent Environmental Checker (IEC)	Mr. David Yeung	3465 2888	3465 2899
Lam Environmental Services Limited	Environmental Team (ET)	Environmental Team Leader (ETL)	Mr. Derek Lo	2882 3939	2882 3331



2.3.3. For Contract no. CV/2012/07, the principal work activities in this reporting month included:

- Construction of Tower A (Portion C3)
- Construction of pile cap (Portion C2)
- Construction of Φ 1500 drainage pipe

2.3.4. In coming reporting month, the principal work activities of individual contracts are anticipated as follows:

- Construction of Tower A (Portion C3)
- Construction of pile cap (Portion C2)
- Construction of Φ 1500 drainage pipe

3. Status of Regulatory Compliance

3.1 Status of Environmental Licensing and Permitting under the Project

3.1.1. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in **Table 3.1**.

Table 3.1 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project

Permits and/or Licences	Reference No.	Issued Date	Valid Period/ Expiry Date	Status
Discharge Licence	WT00015447-2013	27 March 2013	31 March 2018	Valid
Billing Account under Waste Disposal Ordinance	7017083	15 March 2013	N/A	Valid
The Air Pollution Control (Construction Dust) Regulation	355705	14 February 2013	N/A	Valid
Form A – Application for Water Pollution Control Licence	355706	14 February 2013	N/A	Valid
Application for Registration as a Chemical Waste Producer	WPN5213-292-L2825-01	28 November 2013	N/A	Valid

4. Monitoring Requirements

4.1 Noise Monitoring

NOISE MONITORING STATIONS

4.1.1. The noise monitoring has been undertaken at the designated locations Tin Wan House (NM1) and Ning Po No.2 College (NM2). The detailed information of monitoring stations for the Project are listed and shown in **Table 4.1** and **Figure 4.1**. **Appendix 4.1** shows the established Action/Limit Levels for the monitoring works.

Table 4.1 Noise Monitoring Stations

Station ID	Monitoring Location
NM1	G/F of Tin Wan House
NM2	G/F of Ning Po No.2 College

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

4.1.2. The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30\text{ minutes})}$ shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq(5\text{ minutes})}$ shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. Supplementary information for data auditing, statistical results such as L10 and L90 shall also be obtained for reference.

4.1.3. Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:

- one set of measurements between 0700 and 1900 hours on normal weekdays.

4.1.4. If construction works are extended to include works during the hours of 1900 – 0700 as well as public holidays and Sundays, additional weekly impact monitoring shall be carried out during respective restricted hours periods. Applicable permits under NCO shall be obtained by the Contractor.

MONITORING EQUIPMENT

4.1.5. As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound



pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agree to within 1.0 dB.

- 4.1.6. Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

4.2 Air Monitoring

AIR QUALITY MONITORING STATIONS

- 4.2.1. The air monitoring has been conducted at the designated location Ning Po No.2 College (AQM1).The air monitoring stations for the Project are listed and shown in **Table 4.2** and **Figure 4.1**. **Appendix 4.1** shows the established Action/Limit Levels for the monitoring works.

Table 4.2 Air Monitoring Station

Station ID	Monitoring Location
AQM1	Roof Top of Ning Po No.2 College

AIR MONITORING PARAMETERS, FREQUENCY AND DURATION

- 4.2.2. One-hour and 24-hour TSP levels should be measured to indicate the impacts of construction dust on air quality. The 24-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.
- 4.2.3. All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, etc., shall be recorded down in detail.
- 4.2.4. For regular impact monitoring, the sampling frequency of at least once in every six-days, shall be strictly observed at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

- 4.2.5. High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:
 - 0.6 - 1.7 m³ per minute adjustable flow range;
 - equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
 - installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;



- capable of providing a minimum exposed area of 406 cm²;
- flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
- equipped with a shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;
- equipped with a flow recorder for continuous monitoring;
- provided with a peaked roof inlet;
- incorporated with a manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easily changeable filter; and
- capable of operating continuously for a 24-hour period.

4.2.6. Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The calibration data shall be properly documented for future reference by concerned parties such as the IEC. All the data should be converted into standard temperature and pressure equivalents.

LABORATORY MEASUREMENT / ANALYSIS

4.2.7. A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory should be HOKLAS accredited.

4.2.8. If a site laboratory is set up or a non-HOKLAS accredited laboratory is retained for analysis, laboratory equipment shall be provided by the ER in consultation with the IC(E). Measurement performed by the laboratory shall be demonstrated to the satisfaction of the ER and the IC(E). The IC(E) shall conduct regular audit to the measurement performed by the laboratory to ensure the accuracy of measurement results. The ET leader shall provide the ER with one copy of the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), and Appendix B for his reference.

4.2.9. Filter paper of size 8" x 10" shall be labelled before sampling. It shall be a clean filter paper with no pinholes, and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.

4.2.10. After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

4.2.11. All the collected samples shall be kept in a good condition for 6 months prior to disposal.

5. Monitoring Results

5.0.1. The environmental monitoring will be implemented based on the sensitive receivers which would be mostly affected. Overall layout showing the work area, latest status of work commencement and monitoring stations are shown in **Figure 2.1** and **Figure 4.1**.

5.0.2. The environment monitoring schedules for reporting month and coming month are presented in **Appendix 5.1**.

5.1 Noise Monitoring Results

5.1.1. The noise monitoring results for Contract no. CV/2012/07 are summarized in **Table 5.1** below:

Table 5.1 Summary of Noise Monitoring Results at NM1 and NM2

Date	Time	Location	Leq (dB)
6-Mar-15	8:30	NM1	64.5
	9:40	NM2	63.8
12-Mar-15	8:55	NM1	63.2
	10:00	NM2	64.1
18-Mar-15	9:30	NM1	69.7
	10:40	NM2	63.5
24-Mar-15	8:30	NM1	61.4
	9:50	NM2	62.3
30-Mar-15	9:40	NM1	63.2
	10:30	NM2	62.1
Limit Level			65 / 70 /75*

Note :

- 70dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

5.1.2. Day time period noise monitoring was conducted at the Tin Wan House (NM1) and Ning Po No.2 College (NM2). In the reporting month, public examination is undertaken at Ning Po No.2 College (NM2) on 30 and 31 Mar 2015. Therefore, the noise Limited Level during that date would be reduced to 65dB(A).

5.1.3. Noise monitoring results measured in this reporting period are reviewed and summarized. No exceedance was recorded in reporting month. Details of noise monitoring results and graphical presentation can be referred in **Appendix 5.2**.

5.2 Air Monitoring Results

5.2.1. The air monitoring results are summarized in **Table 5.2** and **Table 5.3** below. No exceedance was recorded in the reporting month.

Table 5.2 Summary of Air Monitoring Results at AQM1 - 24 hr TSP Monitoring

Date	Time	TSP Level, ($\mu\text{g} / \text{m}^3$)
5-Mar-15	8:00	58
11-Mar-15	8:00	77
17-Mar-15	8:00	63
23-Mar-15	8:00	165
28-Mar-15	8:00	70
Action Level		200
Limit Level:		260

Table 5.3 Summary of Air Monitoring Results at AQM1 - 1 hr TSP Monitoring

Date	Time	TSP Level, ($\mu\text{g} / \text{m}^3$)
6-Mar-15	8:15	122
6-Mar-15	9:25	72
6-Mar-15	10:40	57
12-Mar-15	8:25	68
12-Mar-15	9:40	41
12-Mar-15	10:50	17
18-Mar-15	9:00	48
18-Mar-15	10:05	171
18-Mar-15	13:00	176
24-Mar-15	8:10	135
24-Mar-15	9:20	115
24-Mar-15	10:35	104
30-Mar-15	8:20	7
30-Mar-15	9:21	15
30-Mar-15	10:30	14
Action Level		197
Limit Level:		500

5.2.2. Air monitoring results measured in this reporting period are reviewed and summarized. No exceedance was recorded in reporting month. Details of air monitoring results can be referred in [Appendix 5.3](#).

5.3 Waste Monitoring Results

5.3.1. Inert and non-inert C&D waste were disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.4**.

Table 5.4 Details of Waste Disposal for Contract no. CV/2012/07

Waste Type	Quantity this month	Cumulative Quantity-to-Date	Disposal / Dumping Grounds
Inert C&D materials disposed, m ³	0.0448	8.29673	TKO137
Inert C&D materials recycled, m ³	0	0	N/A
Non-inert C&D materials disposed, m ³	0	0	N/A
Non-inert C&D materials recycled, kg	0	0	N/A
Chemical waste disposed, kg	0	0	N/A
General refuse, m ³ R	0.0039	0.01476	NENT

Remark: Cumulative Quantity-to-Date of Inert C&D materials disposed was updated by contractor



6. Compliance Audit

6.0.1. The Event Action Plan for construction noise, air quality and water quality are presented in [Appendix 6.1.](#)

6.1 Noise Monitoring

6.1.1. No exceedance was recorded in the reporting month.

6.2 Air Monitoring

6.2.1. No exceedance was recorded in the TSP monitoring in the reporting month.

6.3 Review of the Reasons for and the Implications of Non-compliance

6.3.1. There was no non-compliance from the site audits in the reporting period. The observations and recommendations made in each individual site audit session were presented in Section 8.

6.4 Summary of action taken in the event of and follow-up on non-compliance

6.4.1. There was no particular action taken since no project-related non-compliance was recorded from the site audits and environmental monitoring in the reporting period.



7. Environmental Site Audit

7.0.1. According to EM&A Manual stipulation, the regular weekly sit inspections on 3, 10, 17 and 24 March 2015 were carried out by ET, IEC, the Contractor and ARUP for Contracts no. CV/2012/07 to ensure the environmental performance. Observations and findings are summarized in **Table 7.1**.

Table 7.1 Summary of Environmental Inspections for Contract no. CV/2012/07

Date	Observations	Follow-Up
3-Mar-2015	The contractor was reminded to clean up the oil stain beneath te excavator. (Portion C2)	Oil stain was cleaned up
10-Mar-2015	No particular finding	N/A
17-Mar-2015	No particular finding	N/A
24-Mar-2015	No particular finding	N/A



8. Complaints, Notification of Summons and Prosecution

- 8.0.1. No complaint and notification of summons or successful prosecutions were recorded in this reporting month.
- 8.0.2. The details of cumulative complaint log and updated summary of complaints are presented in **Appendix 8.1**.
- 8.0.3. Cumulative statistic on complaints and successful prosecutions are summarized in **Table 8.1** and **Table 8.2** respectively.

Table 8.1 Cumulative Statistics on Complaints

Reporting Period	No. of Complaints
March 2015	0
Project-to-Date	1

Table 8.2 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	-	0	0
Noise	-	0	0
Waste	-	0	0
Total	-	0	0



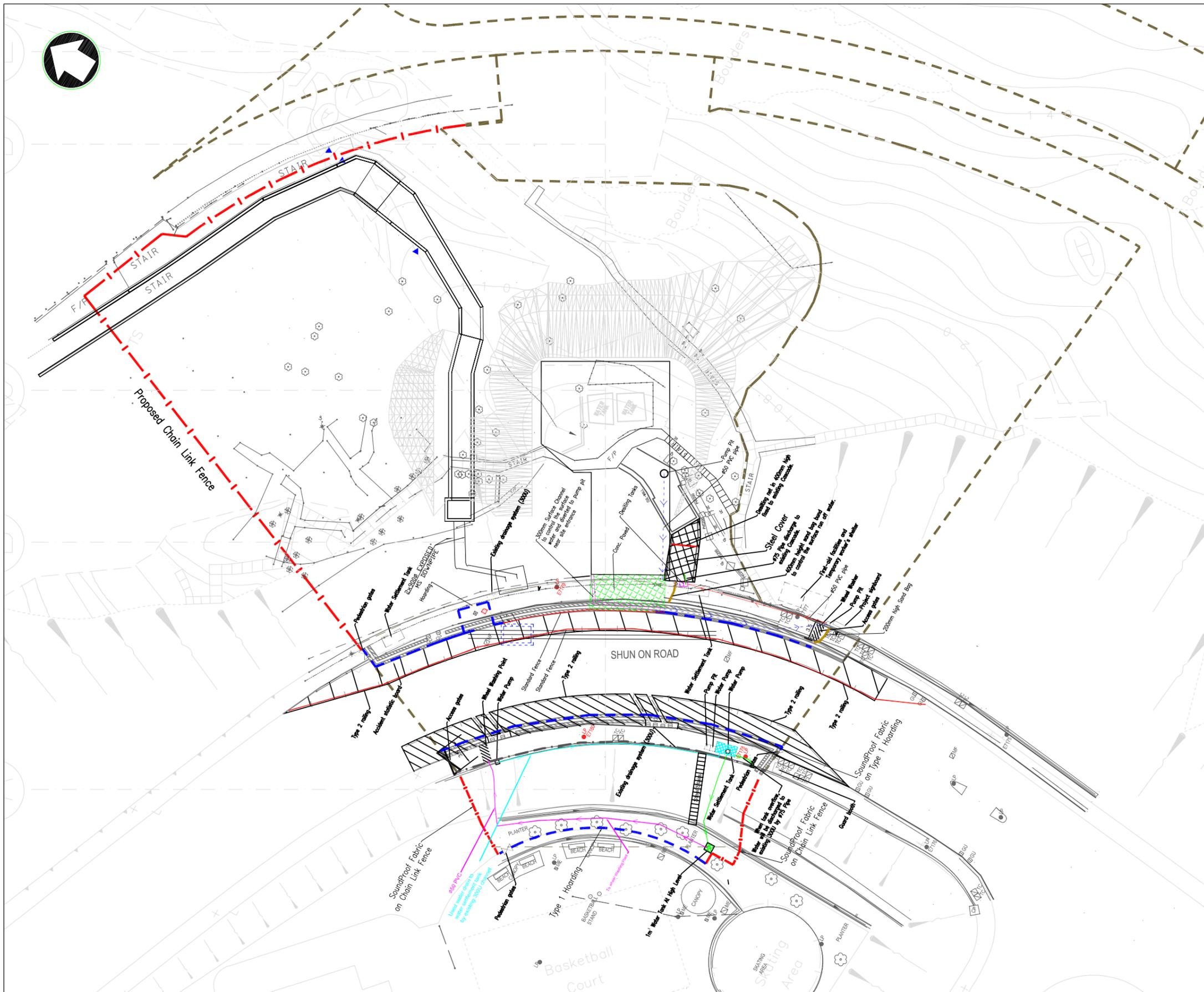
9. Conclusion

- 9.0.1. The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.
- 9.0.2. No construction air and noise monitoring results that triggered the Limit Level was recorded. No complaint of air and noise were received by the ARUP and the contractor. Furthermore, no notification of summons or successful prosecution was received in this reporting month.
- 9.0.3. Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants and installation of temporary noise barrier at the construction noise predominate area should be fully implemented as accordance with the EM&A requirement. Moreover, pay attention should be the potential construction dust impact since the construction site located nearby residential area of Shun Tin Estate. It is reminded that mitigation measures for dust should be properly implemented.



Figure 2.1

Project Layout



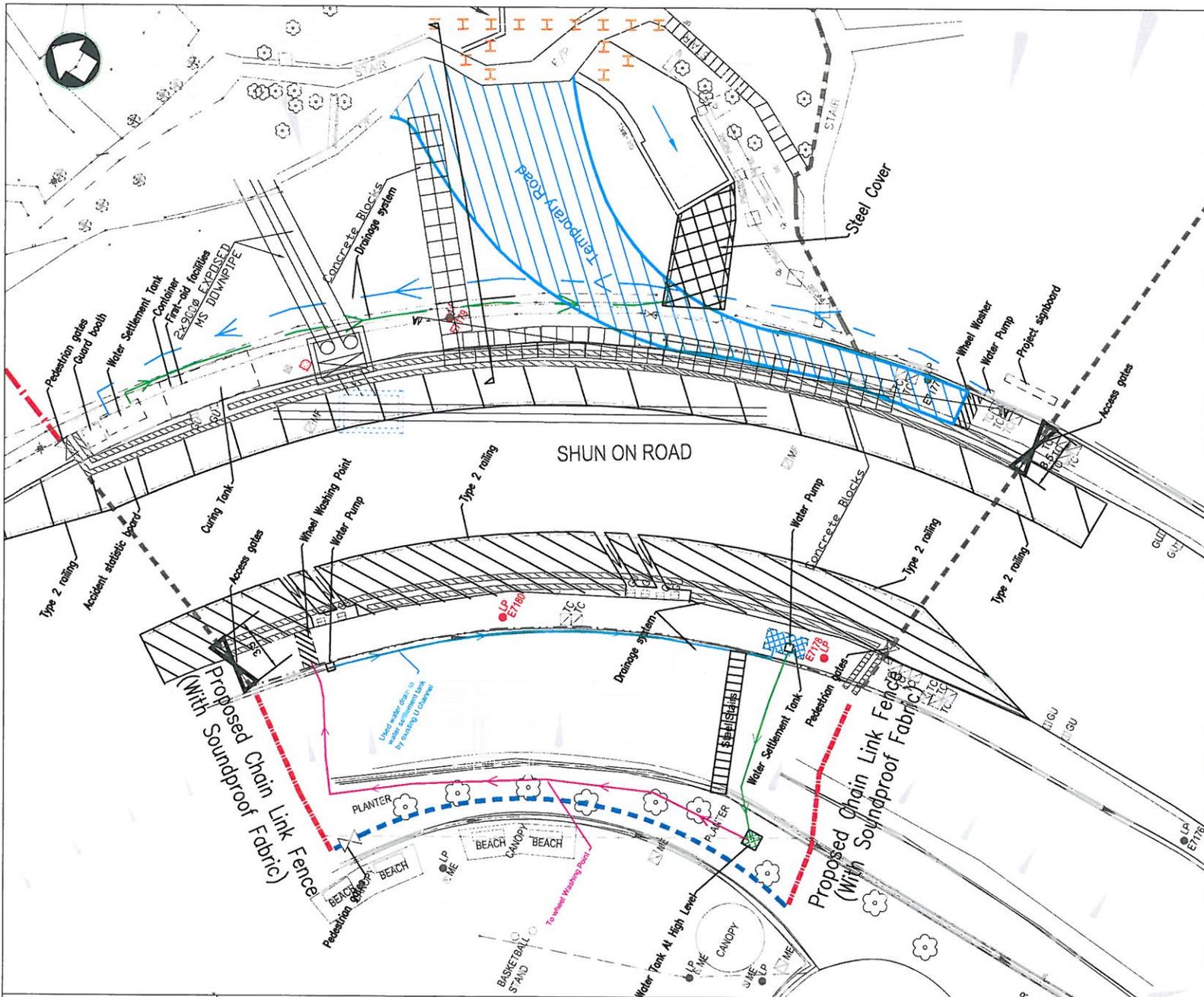
NOTES:

1. This drawing shall be read in conjunction with Drawing 24711/1052.
2. The location of fencing and hoarding is indicative only. The exact location is approved on site by Engineer.
3. For Detail of Access gate refer to CEDD Standard Drawing No. C1007.
4. Dimensions Are in Meters Unless Otherwise Shown.
5. The surface water inside Portion C3 will be collected by a pump pit and pump into water settlement tank for recycle purpose. In case the water inside the settlement tank is overflow, a $\phi 75$ pipe will discharge the overflow water into existing 300U on slope toe.

Legend

- - - - - Proposed Chain Link Fence
- - - - - Proposed Safety Fence (Type A)
- - - - - Proposed Hoarding (Type I)
- - - - - Site Boundary

SCALE	1:500 @ A3	DATE	30 Sept. 2013
CHECK	HUNG	DRAWN	Bobby
JOB NO.	CV/2012/07	DRAWING NO.	SK011
		REV	I



- NOTES:
1. This drawing shall be read in conjunction with Drawing 24711/1052.
 2. The location of fencing and hoarding is indicative only. The exact location is approved on site by Engineer.
 3. For Detail of Access gate refer to CEDD Standard Drawing No. C1007.
 4. Dimensions Are in Meters Unless Otherwise Shown.

Legend

	Proposed Chain Link Fence
	Proposed Safety Fence (Type A)
	Proposed Hoarding (Type I)
	Site Boundary

ARUP 奧雅納工程顧問
Ove Arup & Partners Hong Kong Limited

CEDD 土木工程拓展署
Civil Engineering and Development Department

Contract No. CV/2012/07
Development at Anderson Road –
Footbridge D and Associated Works

Lam-Po Wing Joint Venture

DRAWING TITLE:
Wheel Washing System

SCALE	1:250 @ A3	PRINT DATE	20 Nov. 2013
CHECK	HUNG	DATE	20 Nov. 2013
JOB NO.	CV/2012/07	DRAWN	Bobby
		DRAWING NO.	SK024
		REV	A

(Sheet 1/1)



Figure 2.2

Project Organization Chart



Project Organization Chart

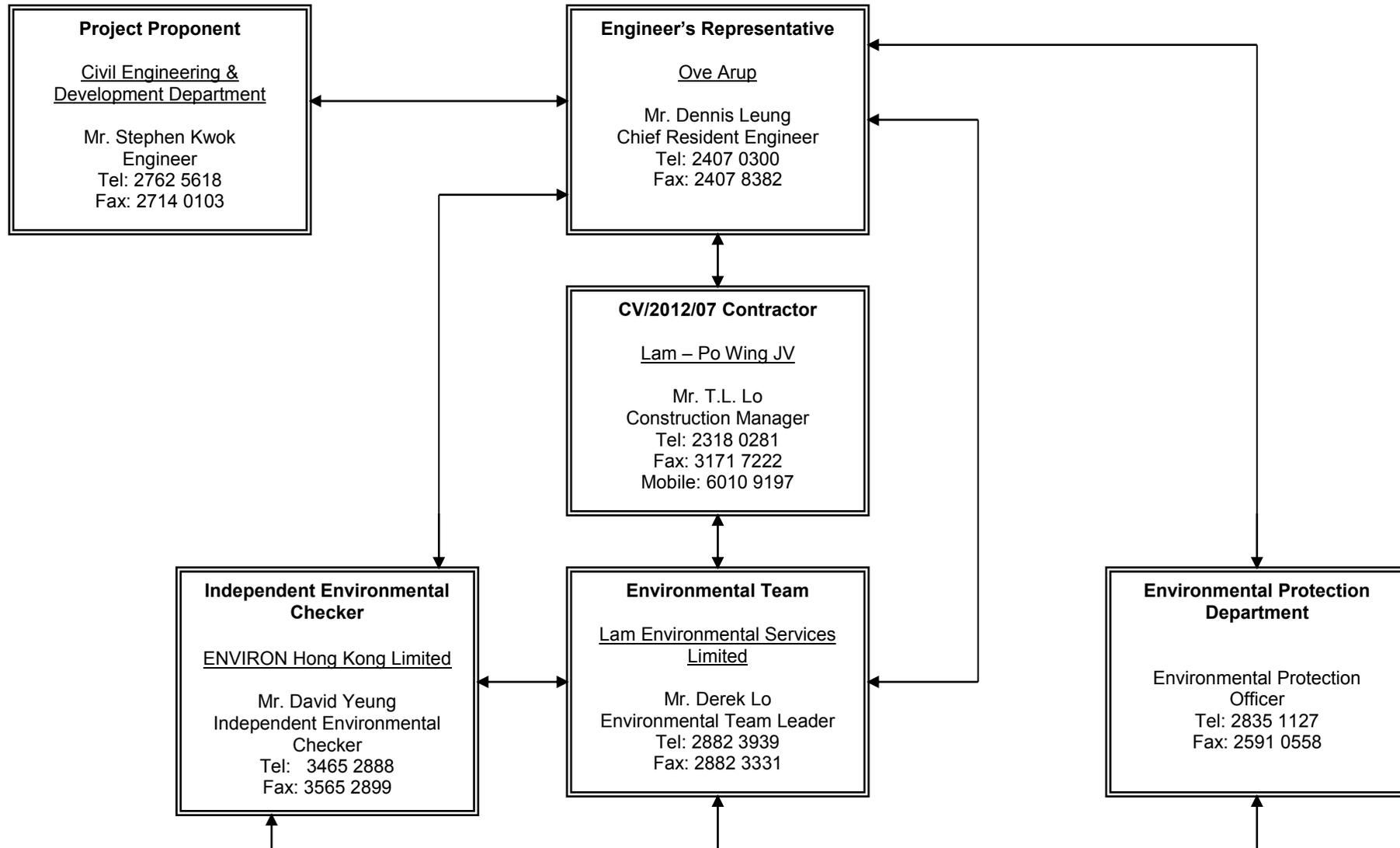




Figure 4.1

Locations of Environmental Monitoring Stations

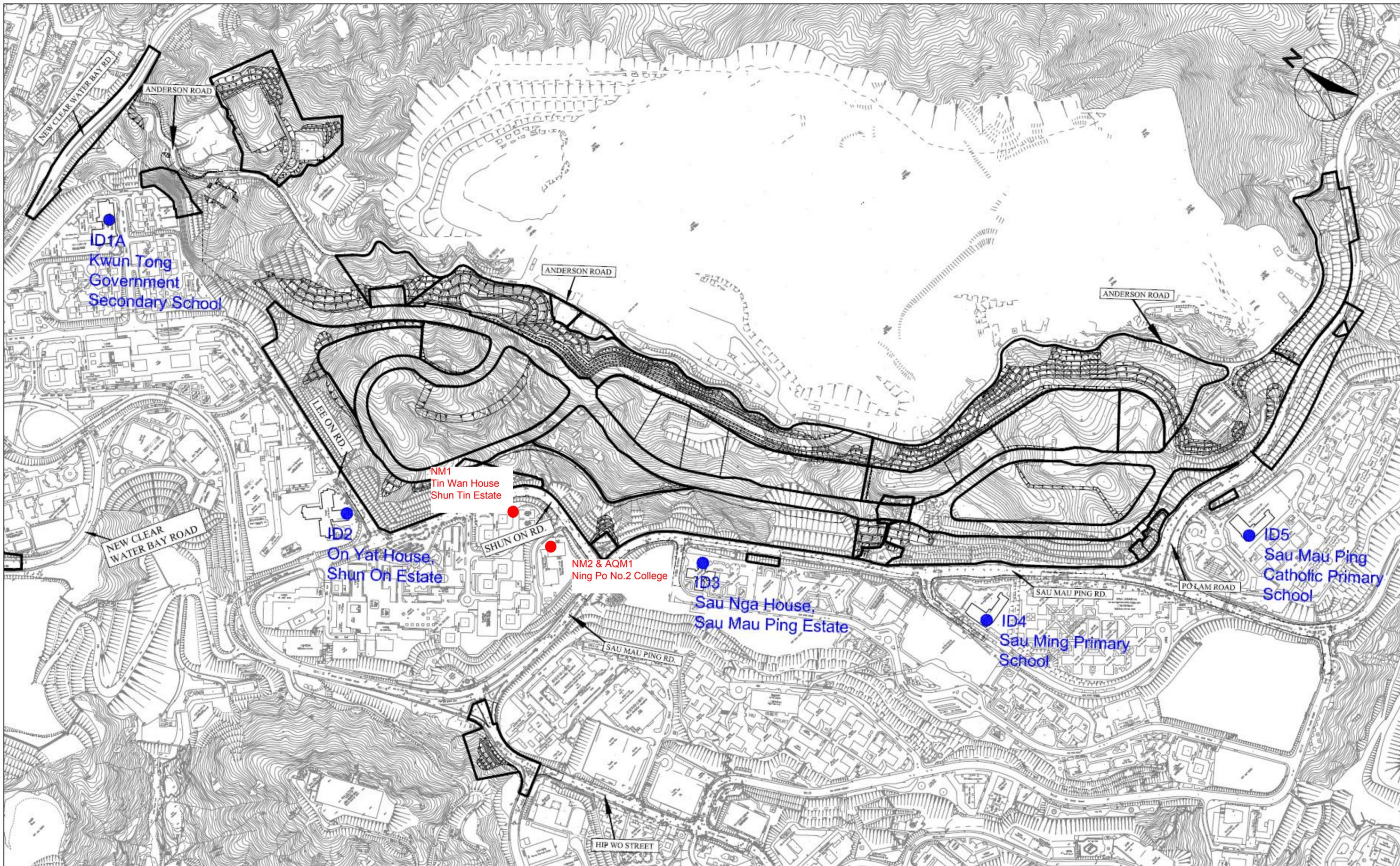


Figure 4.1. Environmental Monitoring Location

LEGEND

- impact monitoring station
- Monitoring station of master project



Appendix 3.1

Environmental Mitigation Implementation Schedule



Environmental Mitigation Implementation Schedule

Implementation Schedule for Construction Dust Control

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location (duration/ completion of measures)	Funding Agent	Implementation Agent	Implementation Stages**		Relevant Legislation & Guidelines
						D	C	
S2.7	S1, S2.8	<p><i>Site Practice</i></p> <ul style="list-style-type: none"> • Mean vehicle speed of haulage trucks at 10 km/hr. • Twice daily watering of all open site areas. • Regular watering (once every 1 hour) of all site roads and access roads with frequent truck movement. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary. • Suitable side and tailboards on haulage vehicles. • Watering of temporary stockpiles. <p><i>Blasting</i></p> <ul style="list-style-type: none"> • Use of select aggregate and fines to stem the charge with drill holes and watering of blast face. • Use of vacuum extraction drilling methods. • Carefully sequenced blasting. <p><i>Crushing</i></p> <ul style="list-style-type: none"> • Fabric filters installed for the crushing plant. • Water sprays on the crusher. <p><i>Loading and Unloading Points, and conveyor Belt System</i></p> <ul style="list-style-type: none"> • Water sprays at all fixed loading and unloading points (at the crusher and conveyor belts). • The loading point at the crusher is enclosed with dust curtains are used for controlling dust. • When transferring materials from conveyor belt or crusher to the dump trucks, chutes or dust curtains are used for controlling dust. • Cover the conveyor belts with steel roof and canvas sides. 	All Construction sites (late 2007 to 2016)	CEDD	Lam – Po Wing JV	√	√	TM on EIA Process, APCO, Air Pollution Control (Construction Dust) Regulation

* All recommendations and requirements are summarized from approved EIA resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project,

** D=Design, C=Construction



Implementation Schedule for Construction Noise Control

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location (duration/ completion of measures)	Funding Agent	Implementation Agent	Implementation Stages**		Relevant Legislation & Guidelines
						D	C	
S3.7	S1, S3.7	<p><i>Site Formation</i></p> <ul style="list-style-type: none"> Silenced powered mechanical equipment (PME) for most equipment5 (including drill rig, backhoe, dump truck, breaker and crane) and the decrease of percentage on time usage of drill rig among the Central Area form 50% to 40% is prosed. Temporary movable noise barrier shall be used to shield the noise emanating from the drilling rig in order to provide adequate shielding for the affected NSRs. 	All Construction sites (late 2007 to 2016)	CEDD	Lam – Po Wing JV	√	√	TM on EIA Process, NCO, TM on Noise from Construction Work other than Percussive Pilling, ProPECC Note PN2/93

* All recommendations and requirements are summarized from approved EIA resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project,

** D=Design, C=Construction



Implementation Schedule for Water Quality Control

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location (duration/ completion of measures)	Funding Agent	Implementation Agent	Implementation Stages**		Relevant Legislation & Guidelines
						D	C	
S6.4	S1	<p><i>Construction Phase</i></p> <ul style="list-style-type: none"> All active working areas should be bounded to retain storm water with sufficient retention time to ensure that suspended solids are not discharged from the site in concentrations above those specified in the TM for the Victor Harbour (Phase I) WCZ. All fuel storage areas should be bounded with drainage directed to an oil interceptor. Separate treatment facilities may be required for effluent from site offices, toilets (unless chemical toilets are used) and canteens. Discharged wastewater from the construction sites to surface water and /or public drainage systems should be controlled through licensing. Discharges should follow fully the terms and conditions in the licences. Relevant practice for dealing with various typr of construction discharges provided in EPD's ProPECC Note 1/94 should be adopted. 	All Construction sites (late 2007 to 2016)	CEDD	Lam – Po Wing JV	√	√	TM on EIA Process, WPCO, ProPECC Note PN 1/94

* All recommendations and requirements are summarized from approved EIA resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project,

** D=Design, C=Construction



Implementation Schedule for Construction Waste Management

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location (duration/ completion of measures)	Funding Agent	Implementation Agent	Implementation Stages**		Relevant Legislation & Guidelines
						D	C	
S8.4	S1,S4	<p><i>Waste Disposal</i></p> <ul style="list-style-type: none"> Different types of wastes should be segregated, stored, transported and disposed of proper practice of waste management. Sorting of wastes should be done on-site. Different types of wastes should be segregated and stored in different stockpiles, containers or skips to enhance recycling of materials and proper disposal of wastes. Excavated spoil should be used as much as possible to minimize off-site fill material requirements and disposal of spoil. During road transportation of excavated spoil, vehicles should be covered to avoid dust impact. Wheel washing facilities should be installed at all site exits together with regular watering of the site access roads. Chemical waste should be recycled on-site or removed by licenced companies. It should be handled according to the Code of practice on the packaging, Labelling and Storage of Chemical Wastes. When off-site disposal is required, it should be collected and delivered by licenced contractors to Tsing Yi Chemical Waste Treatment Facility and disposed of in accordance with the Chemical Waste (General) Regulation. Necessary mitigation measures should be adopted to prevent the uncontrolled disposal of chemical and hazardous waste into air, soil, surface waters and ground waters. 	All Construction sites (late 2007 to 2016)	CEDD	Lam – Po Wing JV	√	√	TM on EIA Process, WDO, DGO, Waste Disposal (Chemical Waste) (General) Regulation



		<p><i>Waste Storage</i></p> <ul style="list-style-type: none">• Chemical material storage areas should be bounded, constructed of impervious materials, and have the capacity to contain 120 percent of the total volume of the containers. Indoor storage areas must have sufficient ventilation to prevent the build-up of fumes, and must be capable of evacuating the space in the event of an accidental release. Outdoor storage areas must be covered with a canopy or contain provisions for the safe removal of rainwater. In both cases, storage areas must not be connected to the foul or stormwater sewer system.• Dangerous materials as defined under the DGO, including fuel, oil and lubricants, should be stored and properly labeled on site in accordance with the requirements in the DGO. If transportation of hazardous materials is necessary, hazardous materials, chemical wastes and fuel should be packed or stored in containers or vessels of suitable design and construction to prevent leakage, spillage or escape.• Human waste should be discharged into septic tanks provided by the contractors and removed regularly by a hygiene services company. Refuse containers such as open skips should be provided at every work site for use by the workforce; On-site refuse collection points must also be provided.						
--	--	--	--	--	--	--	--	--

* All recommendations and requirements are summarized from approved EIA resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project,

** D=Design, C=Construction



Appendix 4.1

Action and Limit Level



Action and Limit Level

Action and Limit Level for Noise Monitoring

Time Period	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received.	75 dB(A)/ 70 dB(A)/ 65 dB(A) ^{Note 1}

Note 1:

- 70dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.
- If works are to be carried out during the restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

Action and Limit Level for Air Monitoring

Monitoring Location	1-hour TSP Level in $\mu\text{g}/\text{m}^3$		24-hour TSP Level in $\mu\text{g}/\text{m}^3$	
	Action Level	Limit Level	Action Level	Limit Level
AQM1	197	500	200	260



Appendix 4.2

Copies of Calibration Certificates



Certificate of Calibration 校正證書

Certificate No. : C142113
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0855) Date of Receipt / 收件日期 : 28 March 2014
Description / 儀器名稱 : Sound Level Meter (EN04)
Manufacturer / 製造商 : Cesva
Model No. / 型號 : SC-20e
Serial No. / 編號 : T217501
Supplied By / 委託者 : Honkei Technology Hong Kong Limited
Unit 7, 18/F., Treasure Centre, 42 Hung To Road,
Kwun Tong, Kowloon

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C 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 : 4 April 2014

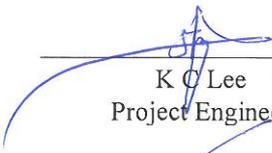
TEST RESULTS / 測試結果

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


K C Lee
Project Engineer

Certified By
核證


K M Wu
Engineer

Date of Issue
簽發日期

7 April 2014

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室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C142113

證書編號

- 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.
- Self-calibration using the laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting		Applied Value		UUT Reading (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)	
L _F	A	94.00	1	95.0

6.1.1.2 After Self-calibration

UUT Setting		Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L _F	A	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting		Applied Value		UUT Reading (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)	
L _F	A	94.00	1	94.0 (Ref.)
		104.00		104.1
		114.00		114.1

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

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting		Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L _F	A	94.00	1	94.0	Ref.
L _S				94.0	± 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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6.2.2 Tone Burst Signal (2 kHz)

UUT Setting		Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Burst Duration		
L _F	A	106.00	Continuous	106.0	Ref.
L _F Maximum			200 ms	105.0	-1.0 ± 1.0
L _S			Continuous	106.0	Ref.
L _S Maximum			500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L _F	A	94.00	31.5 Hz	54.3	-39.4 ± 1.5
			63 Hz	67.7	-26.2 ± 1.5
			125 Hz	77.7	-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	95.3	+1.2 ± 1.0
			4 kHz	95.0	+1.0 ± 1.0
			8 kHz	92.8	-1.1 (+1.5 ; -3.0)
			12.5 kHz	88.0	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L _F	C	94.00	31.5 Hz	90.8	-3.0 ± 1.5
			63 Hz	93.1	-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	93.9	-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	86.0	-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.

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室所書面批准。

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校正證書

Certificate No. : C142113
證書編號

6.4 Time Averaging

UUT Setting			Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Time Weighting	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
LeqT	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
					1/10 ²		90	90.0	± 0.5
		60 sec.			1/10 ³		80	80.0	± 1.0
					5 min.		1/10 ⁴	70	69.9

Remarks : - UUT Microphone Model No. : C-130 & S/N : 12624

- 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	: ± 0.70 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)

- 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.



CERTIFICATE OF CALIBRATION

Certificate No.: 14CA0311 02 Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1L)
Manufacturer: CESVA, SPAIN
Type/Model No.: CB-5
Serial/Equipment No.: 0035092
Adaptors used: Yes

Item submitted by

Customer: Pilot Testing Ltd.
Address of Customer: -
Request No.: -
Date of receipt: 11-Mar-2014

Date of test: 13-Mar-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	17-Dec-2014	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 hPa

Test specifications

- 1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 14-Mar-2014

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA0311 02 Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.92	0.10

(Output level in dB re 20 μ Pa)

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.002 dB**
 Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 1000.9 Hz**
 Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.9 %**
 Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

<p>Calibrated by: Date: 13-Mar-2014</p>	<p>Checked by: Date: 14-Mar-2014</p>
---	--

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



CERTIFICATE OF CALIBRATION

Certificate No.: 14CA1201 04

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Rion Co., Ltd.
Type/Model No.: NC-73
Serial/Equipment No.: 10707358
Adaptors used: -

Item submitted by

Customer: Lam Geotechnics Ltd.
Address of Customer: -
Request No.: -
Date of receipt: 01-Dec-2014

Date of test: 10-Dec-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	13-May-2015	SCL
Preamplifier	B&K 2673	2239857	10-Apr-2015	CEPREI
Measuring amplifier	B&K 2610	2346941	08-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI
Digital multi-meter	34401A	US36087050	01-Dec-2015	CEPREI
Audio analyzer	8903B	GB41300350	07-Apr-2015	CEPREI
Universal counter	53132A	MY40003662	11-Apr-2015	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1010 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

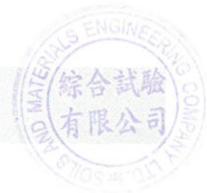
Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 11-Dec-2014

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA1201 04

Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	94.09	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.001 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 993.19 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.9 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date: 10-Dec-2014

Fung Chi Yip

Checked by:

Date: 11-Dec-2014

Lam Tze Wai

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



Lam Environmental Services Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : Ning Po No.2 College
ID : AQM1

Calibration Date : 13-Feb-15
Calibration Due Date : 13-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	286	Kelvin	Pressure, P _a
			1027 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.6	6.6	13.2	1.8747	54	55.4926
2	5.4	5.4	10.8	1.6958	47	48.2991
3	4.2	4.2	8.4	1.4956	42	43.1609
4	2.7	2.7	5.4	1.1992	30	30.8292
5	1.7	1.7	3.4	0.9516	22	22.6081

By Linear Regression of Y on X

Slope, m = 35.6226 Intercept, b = -11.3384
 Correlation Coefficient* = 0.9983
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar
Date : 13-Feb-15

Checked by : Derek Lo
Date : 13-Feb-15



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELAND, OH
 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jul 14, 2014 Rootsmeter S/N 0438320 Ta (K) - 298
 Operator Tisch Orifice I.D. - 0005 Pa (mm) - 749.3

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3870	3.2	2.00
2	NA	NA	1.00	0.9830	6.4	4.00
3	NA	NA	1.00	0.8760	7.9	5.00
4	NA	NA	1.00	0.8340	8.8	5.50
5	NA	NA	1.00	0.6860	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9817	0.7078	1.4042	0.9957	0.7179	0.8919
0.9775	0.9944	1.9859	0.9915	1.0086	1.2613
0.9754	1.1135	2.2203	0.9894	1.1294	1.4101
0.9743	1.1683	2.3286	0.9882	1.1849	1.4790
0.9692	1.4128	2.8084	0.9830	1.4330	1.7837
Qstd slope (m) = 1.99175			Qa slope (m) = 1.24720		
intercept (b) = -0.00041			intercept (b) = -0.00026		
coefficient (r) = 0.99991			coefficient (r) = 0.99991		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



Appendix 5.1

Monitoring Schedules for Reporting Month and Coming Reporting Month



Contract No. CV/2012/07
Development at Anderson Road - Footbridge D and Associated Works Area
Tentative Environmental Monitoring Schedule
March 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Mar	2-Mar	3-Mar	4-Mar	5-Mar 24 hr TSP	6-Mar 1hr TSP x 3 Noise	7-Mar
8-Mar	9-Mar	10-Mar	11-Mar 24 hr TSP	12-Mar 1hr TSP x 3 Noise	13-Mar	14-Mar
15-Mar	16-Mar	17-Mar 24 hr TSP	18-Mar 1hr TSP x 3 Noise	19-Mar	20-Mar	21-Mar
22-Mar	23-Mar 24 hr TSP	24-Mar 1hr TSP x 3 Noise	25-Mar	26-Mar	27-Mar	28-Mar 24 hr TSP
29-Mar	30-Mar 1hr TSP x 3 Noise	31-Mar	1-Apr	2-Apr	3-Apr	4-Apr

Noise Monitoring Station
 NM1: Tin Wan House
 NM2: Ning Po No. 2 College

Air Monitoring Station
 AQM1: Ning Po No.2 College



Contract No. CV/2012/07
Development at Anderson Road - Footbridge D and Associated Works Area
Tentative Environmental Monitoring Schedule
April 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29-Mar 1hr TSP x 3 Noise	30-Mar	31-Mar	1-Apr 24 hr TSP	2-Apr 1hr TSP x 3	3-Apr	4-Apr
5-Apr	6-Apr	7-Apr 24 hr TSP	8-Apr 1hr TSP x 3 Noise	9-Apr	10-Apr	11-Apr 24 hr TSP
12-Apr 1hr TSP x 3 Noise	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr 24 hr TSP	18-Apr 1hr TSP x 3
19-Apr	20-Apr	21-Apr	22-Apr	23-Apr 24 hr TSP	24-Apr 1hr TSP x 3 Noise	25-Apr
26-Apr	27-Apr	28-Apr	29-Apr 24 hr TSP	30-Apr 1hr TSP x 3 Noise	1-May	2-May

Noise Monitoring Station
 NM1: Tin Wan House
 NM2: Ning Po No. 2 College

Air Monitoring Station
 AQM1: Ning Po No.2 College



Appendix 5.2

Noise Monitoring Results and Graphical Presentations



Contract No. CV/2012/07
Development at Anderson Road -
Footbridge D and Associated Works Area

JOB NO : CS_J2013-02_CV201207
CLIENT : LPWJV

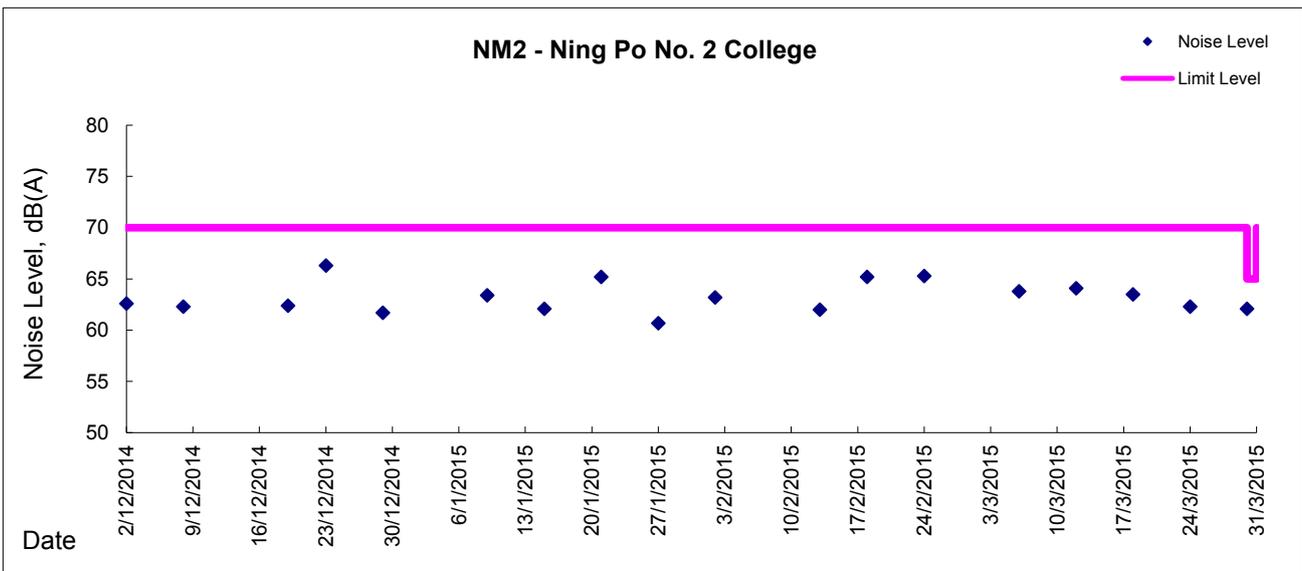
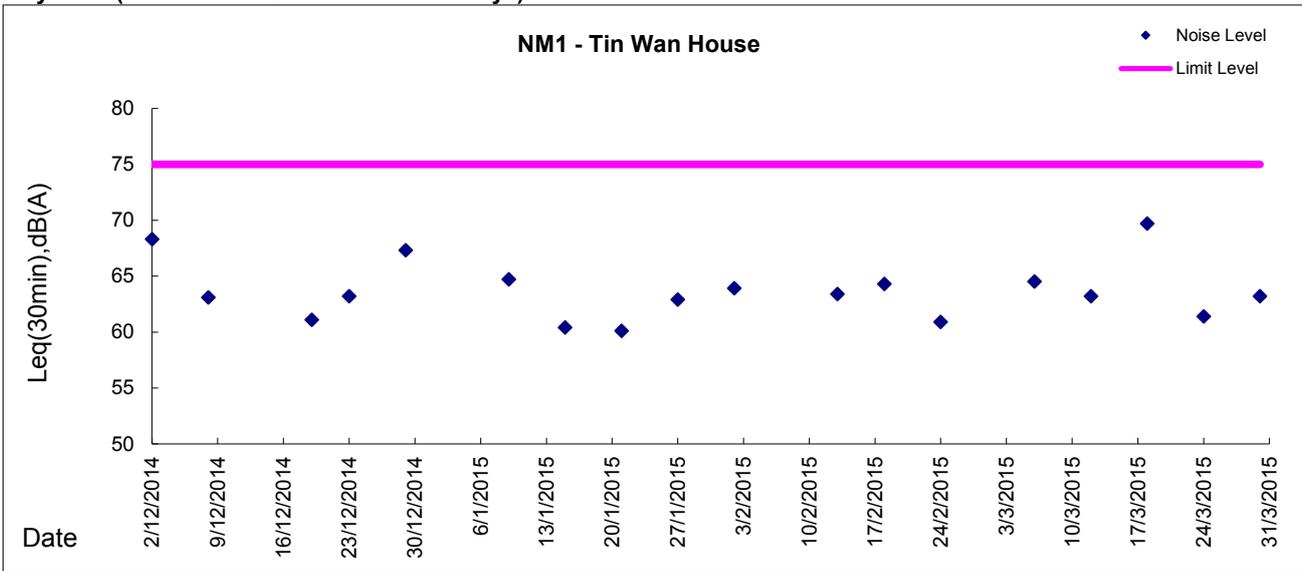
Daytime(07:00-19:00)					
Date	Time	Location	Leq (dB)	L10 (dB)	L90 (dB)
6-Mar-15	8:30	NM1	64.5	67.3	62.8
	9:40	NM2	63.8	66.6	58.1
12-Mar-15	8:55	NM1	63.2	65.4	58.8
	10:00	NM2	64.1	66.4	59
18-Mar-15	9:30	NM1	69.7	74.5	52.3
	10:40	NM2	63.5	65.8	57.1
24-Mar-15	8:30	NM1	61.4	63.2	58.2
	9:50	NM2	62.3	64.5	58.9
30-Mar-15	9:40	NM1	63.2	66.7	60.1
	10:30	NM2	62.1	65.4	59.9

NM1 - Tin Wan House
NM2 - Ning Po No. 2 College



Graphic Presentation of Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)





Appendix 5.3

Air Quality Monitoring Results and Graphical Presentations



Location: AQM1-Ning Po No.2 College

Report on 24-hour TSP monitoring
Action Level ($\mu\text{g}/\text{m}^3$) - 200
Limit Level ($\mu\text{g}/\text{m}^3$) - 260

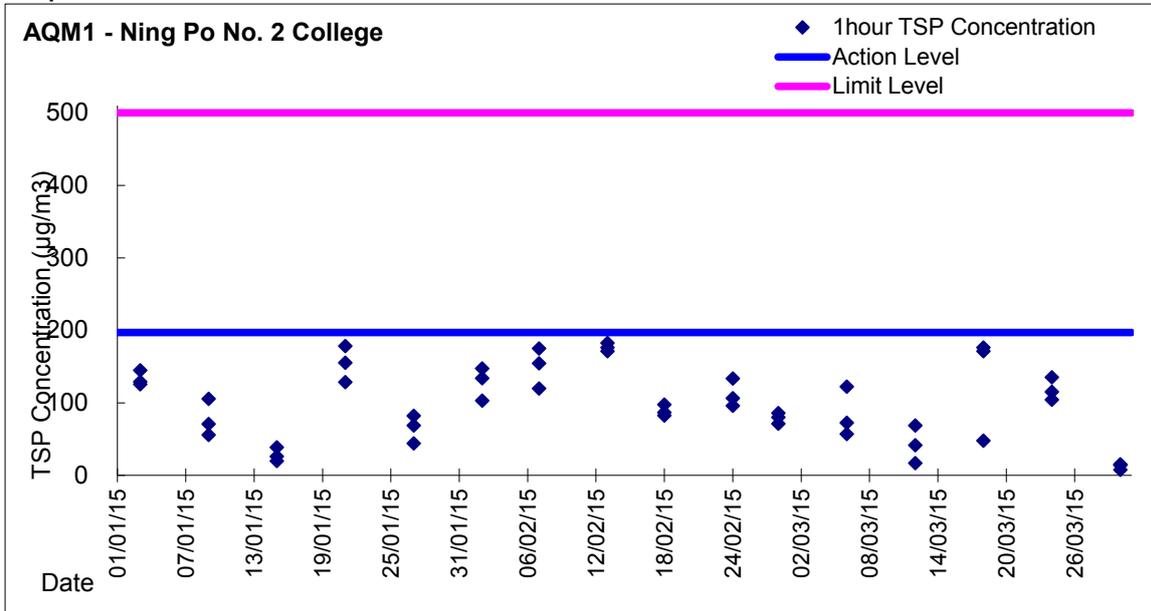
Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow Rate, m^3/min			Total Volume, m^3	TSP Level, mg/m^3
				Initial	Final	Initial	Final		Initial, Q_{si}	Final, Q_{sf}	Average		
5-Mar-15	8:00	Cloudy	011117	2.7229	2.8397	2803.83	2827.85	24.02	1.41	1.41	1.41	2031	58
11-Mar-15	8:00	Cloudy	011121	2.7291	2.8852	2830.85	2854.85	24.00	1.41	1.41	1.41	2034	77
17-Mar-15	8:00	Cloudy	011125	2.7407	2.8673	2857.85	2881.85	24.00	1.40	1.40	1.40	2011	63
23-Mar-15	8:00	Cloudy	011421	2.7558	3.0898	2884.85	2908.85	24.00	1.40	1.41	1.40	2022	165
28-Mar-15	8:00	Cloudy	011479	2.7593	2.9002	2911.85	2935.84	23.99	1.40	1.40	1.40	2014	70

Report on 1-hour TSP monitoring
Action Level ($\mu\text{g}/\text{m}^3$) - 197
Limit Level ($\mu\text{g}/\text{m}^3$) - 500

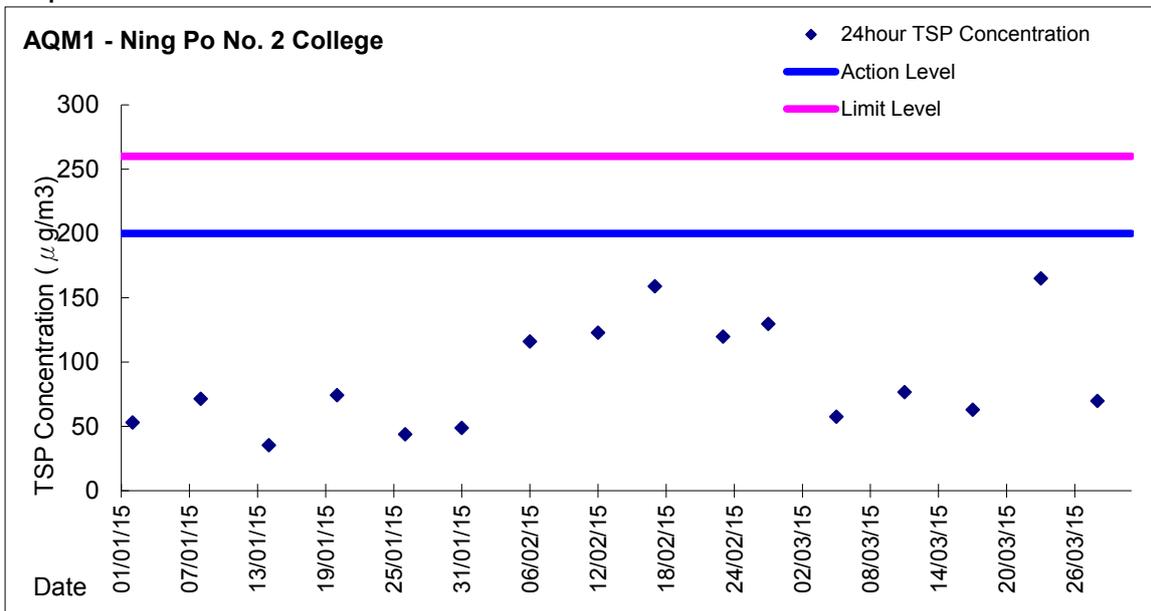
Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow Rate, m^3/min			Total Volume, m^3	TSP Level, mg/m^3
				Initial	Final	Initial	Final		Initial, Q_{si}	Final, Q_{sf}	Average		
6-Mar-15	8:15	Cloudy	011118	2.7338	2.7441	2827.85	2828.85	1.00	1.41	1.41	1.41	84	122
6-Mar-15	9:25	Cloudy	011119	2.7301	2.7362	2828.85	2829.85	1.00	1.41	1.41	1.41	84	72
6-Mar-15	10:40	Cloudy	011120	2.7196	2.7244	2829.85	2830.85	1.00	1.41	1.41	1.41	84	57
12-Mar-15	8:25	Cloudy	011122	2.7458	2.7516	2854.85	2855.85	1.00	1.41	1.41	1.41	85	68
12-Mar-15	9:40	Cloudy	011123	2.7372	2.7407	2855.85	2856.85	1.00	1.41	1.41	1.41	85	41
12-Mar-15	10:50	Cloudy	011124	2.7376	2.7390	2856.85	2857.85	1.00	1.41	1.41	1.41	85	17
18-Mar-15	9:00	Cloudy	011418	2.7738	2.7778	2881.85	2882.85	1.00	1.40	1.40	1.40	84	48
18-Mar-15	10:05	Cloudy	011419	2.7481	2.7512	2882.85	2883.85	1.00	1.40	1.40	1.40	84	171
18-Mar-15	13:00	Cloudy	011420	2.7524	2.7558	2883.85	2884.85	1.00	1.40	1.40	1.40	84	176
24-Mar-15	8:10	Cloudy	011476	2.7532	2.7646	2908.85	2909.85	1.00	1.41	1.41	1.41	84	135
24-Mar-15	9:20	Cloudy	011477	2.7655	2.7752	2909.85	2910.85	1.00	1.41	1.41	1.41	84	115
24-Mar-15	10:35	Cloudy	011478	2.7743	2.7831	2910.85	2911.85	1.00	1.41	1.41	1.41	84	104
30-Mar-15	8:20	Cloudy	011480	2.7636	2.7642	2935.84	2936.84	1.00	1.34	1.34	1.34	81	7
30-Mar-15	9:21	Cloudy	011481	2.7586	2.7598	2936.84	2937.84	1.00	1.34	1.34	1.34	81	15
30-Mar-15	10:30	Cloudy	011482	2.7778	2.7789	2937.84	2938.84	1.00	1.34	1.34	1.34	81	14



Graphic Presentation of 1 hour TSP Result



Graphic Presentation of 24 hour TSP Result





Appendix 6.1

Event Action Plans



Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
Exceedance for Action Level	<ol style="list-style-type: none"> 1. Notify IC(E) and Contractor; 2. Carry out investigation; 3. Report the results of investigation to IC(E) and Contractor; 4. Discuss with Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by ET; 2. Review the proposed remedial measures by the Contractor and advise ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IC(E); 2. Implement noise mitigation proposals.
Exceedance for Limited Level	<ol style="list-style-type: none"> 1. Notify IC(E), ER, EPD and Contractor; 2. Identify sources; 3. Repeat measurements to confirm finding; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IC(E), ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 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 ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.



Event / Action Plan for Construction Air Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify source; Inform IC(E) and ER; Repeat measurement to confirm finding; Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method. 	<ol style="list-style-type: none"> Notify Contractor. 	<ol style="list-style-type: none"> Rectify any unacceptable practice; Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Identify source; Inform IC(E) and ER; Repeat measurements to confirm findings; Increase monitoring frequency to daily; Discuss with IC(E) and Contractor for remedial actions required; If exceedance continues, arrange meeting with IC(E) and ER; If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> Submit proposals for remedial actions to IC(E) within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
LIMITED LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify source; Inform ER, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Notify IEC, ER, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; In consolidation with the IC(E), agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; 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. 	<ol style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IC(E) 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.



Appendix 6.2

Summary for Notification of Exceedance_Air and Noise



Ref. No.	Date	Time	Location	Construction Noise Level	Unit	Action Level	Limit Level	Follow-up action
N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A



Appendix 8.1

Complaint Log



Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
140813	13 Aug 2014	Resident complained via hotline by RE	The slope opposite to Tin Wan House, Shun Tin Estate, Kowloon	Noise was emanated from the construction site at the slope opposite to Tin Wan House, Shun Tin Estate, Kowloon at around 1620 hrs on 13 Aug 2014 and requested follow up action by relevant department.	<ol style="list-style-type: none">1) RSS notified ET on 15 Aug 20142) ET confirmed with site staff the major noise generating construction activities undertaken at works area at the slope opposite to Tin Wan House including slope works3) After reviewing the noise monitoring data at monitoring stations (NM1 - Tin Wan House and NM2 - Ning Po No.2 College), no limit level exceedances were recorded during routine noise monitoring event on 14 Aug 2014. As similar construction works activities conducted on 13 Aug 2014 was continued across the above monitoring period, the noise emanated from the construction activities under Contract CV/2012/07 was considered to comply with the statutory requirement.4) In addition, weekly environmental site inspection was conducted on 12 Aug 2014 at around 10:00. According to the inspection record, no particular observation regarding noise impact was recorded and the mitigation measures including erection of temporary noise barrier was observed in place.	Closed



Appendix 9.1

Construction Programme

**Master Programme For Contract No. CV/2012/07
Development at Anderson Road - Footbridge D and Associated Works
(Rev. 2)**

ID	WBS	Task Name	Duration	Start	Finish	Predecessors	Successors	Total Slack	2013												2014												2015												2016												
									Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	Development at Anderson Road - Footbridge D and Associated Works	1119 days	Thu 31/01/13	Wed 30/11/16			0 days																																																	
2	1.1	PRELIMINARY WORK	578 days	Thu 31/01/13	Sun 01/02/15			541 days																																																	
3	1.1.1	Application of XP, Site Access from Highways	140 days	Thu 31/01/13	Wed 31/07/13		88	889 days																																																	
4	1.1.2	Tree Survey	12 days	Mon 18/02/13	Sat 02/03/13		5	0 days																																																	
5	1.1.3	Transplant	30 days	Mon 04/03/13	Thu 11/04/13	4		0 days																																																	
6	1.1.4	Air & noise baseline monitoring	50 days	Mon 18/02/13	Sat 20/04/13		46,47	8 days																																																	
7	1.1.5	Record Survey, Condition Survey and Setting Out	90 days	Thu 31/01/13	Thu 30/05/13			1029 days																																																	
8	1.1.6	Erect Fencing and Hoarding As Directed	48 days	Mon 08/04/13	Tue 04/06/13		16	491 days																																																	
9	1.1.7	Design and material submission	120 days	Thu 31/01/13	Sat 06/07/13		38,79	128 days																																																	
10	1.1.8	Handover of Portion A, B & C1	0 days	Sat 28/09/13	Sat 28/09/13		61	109 days																																																	
11	1.1.9	Handover of Portion E1	0 days	Fri 31/05/13	Fri 31/05/13			1029 days																																																	
12	1.1.10	Handover of Portion E2	0 days	Sun 01/02/15	Sun 01/02/15			541 days																																																	
13	1.2	Section 1	781 days	Mon 08/04/13	Tue 01/12/15			20 days																																																	
14	1.2.1	Lift Tower D-A	475 days	Wed 05/06/13	Wed 14/01/15			491 days																																																	
15	1.2.1.1	Method statement and material submission	30 days	Mon 23/09/13	Tue 29/10/13	18SS-60 days		905 days																																																	
16	1.2.1.2	Excavation for Raft footing	150 days	Wed 05/06/13	Tue 03/12/13	8		17SS	491 days																																																
17	1.2.1.3	Rock Joint Mapping for founding material of raft footing	150 days	Wed 05/06/13	Tue 03/12/13	16SS		18	491 days																																																
18	1.2.1.4	Construct Raft footing	30 days	Wed 04/12/13	Fri 10/01/14	17		19,15SS-60 days	491 days																																																
19	1.2.1.5	Construct RC Lift Tower and Retaining Wall	80 days	Sat 11/01/14	Sat 26/04/14	18		20,41	491 days																																																
20	1.2.1.6	Erect Steelwork for Lift Shaft	70 days	Mon 28/04/14	Tue 22/07/14	19		21,22	491 days																																																
21	1.2.1.7	Installation of Lift	100 days	Wed 23/07/14	Wed 19/11/14	20		22FF+5 days, 23,24FS-60 days, 54	491 days																																																
22	1.2.1.8	M&E Installation	100 days	Tue 29/07/14	Tue 25/11/14	20,21FF+5 days		23,24FS-60 days	550 days																																																
23	1.2.1.9	T & C of M&E Equipment	30 days	Wed 26/11/14	Fri 02/01/15	21,22		24FF+7 days	553 days																																																
24	1.2.1.10	Finishing and Metal Works	100 days	Mon 15/09/14	Wed 14/01/15	21FS-60 days, 22FS-60 days, 23FF+7 days			550 days																																																
25	1.2.2	Lift Tower D-B	480 days	Tue 08/10/13	Mon 01/06/15			439 days																																																	
26	1.2.2.1	Method statement and material submission	30 days	Tue 08/10/13	Tue 12/11/13	27SS-60 days		893 days																																																	
27	1.2.2.2	Excavation for Raft footing	100 days	Wed 18/12/13	Tue 29/04/14	74		28SS,26SS-60 days	379 days																																																
28	1.2.2.3	Rock Joint Mapping for founding material of raft footing	100 days	Wed 18/12/13	Tue 29/04/14	27SS		29	379 days																																																
29	1.2.2.4	Construct Raft footing	30 days	Wed 30/04/14	Thu 05/06/14	28		30	379 days																																																
30	1.2.2.5	Construct RC Lift Tower and Retaining Wall	80 days	Fri 06/06/14	Wed 10/09/14	29		31,41	379 days																																																
31	1.2.2.6	Erect Steelwork for Lift Shaft	70 days	Thu 11/09/14	Wed 03/12/14	30		32,33	379 days																																																
32	1.2.2.7	Installation of Lift	100 days	Thu 04/12/14	Mon 13/04/15	31		33FF,34,35FS-60 days, 54	379 days																																																

Date: Mon 10/06/13
Prepared By: T.L. Lo



Assume Contract Start On 31-Jan-2013
and Finish On 30-Nov-2016 (1399 days)
Duration as shown by week day

**Master Programme For Contract No. CV/2012/07
Development at Anderson Road - Footbridge D and Associated Works
(Rev. 2)**

ID	WBS	Task Name	Duration	Start	Finish	Predecessors	Successors	Total Slack	2013												2014												2015												2016											
									Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
33	1.2.2.8	M&E Installation	100 days	Thu 04/12/14	Mon 13/04/15	32FF,31	34,35FS-60 days	443 days	[Gantt bar for 33: Thu 04/12/14 to Mon 13/04/15]																																															
34	1.2.2.9	T & C of M&E Equipment	30 days	Tue 14/04/15	Tue 19/05/15	32,33	35FF+7 days	446 days	[Gantt bar for 34: Tue 14/04/15 to Tue 19/05/15]																																															
35	1.2.2.10	Finishing and Metal Works	100 days	Fri 30/01/15	Mon 01/06/15	32FS-60 days,33FS-60 days,34FF+7 days		443 days	[Gantt bar for 35: Fri 30/01/15 to Mon 01/06/15]																																															
36	1.2.3	Bridge Deck D-AB	563 days	Wed 24/04/13	Wed 25/03/15			188 days	[Gantt bar for 36: Wed 24/04/13 to Wed 25/03/15]																																															
37	1.2.3.1	Method statement and material submission	30 days	Wed 24/04/13	Thu 30/05/13	38SS-60 days		1029 days	[Gantt bar for 37: Wed 24/04/13 to Thu 30/05/13]																																															
38	1.2.3.2	Ordering of Material	100 days	Mon 08/07/13	Tue 05/11/13	9	39,37SS-60 days	128 days	[Gantt bar for 38: Mon 08/07/13 to Tue 05/11/13]																																															
39	1.2.3.3	Fabrication of Steel work off site	100 days	Wed 06/11/13	Thu 13/03/14	38	40,80	128 days	[Gantt bar for 39: Wed 06/11/13 to Thu 13/03/14]																																															
40	1.2.3.4	Connecting the Bridge on site	60 days	Fri 14/03/14	Wed 28/05/14	39	41	582 days	[Gantt bar for 40: Fri 14/03/14 to Wed 28/05/14]																																															
41	1.2.3.5	Erecting Steel bridge frame	7 days	Thu 11/09/14	Thu 18/09/14	40,30,19	89,42	496 days	[Gantt bar for 41: Thu 11/09/14 to Thu 18/09/14]																																															
42	1.2.3.6	Irrigation system installation	60 days	Fri 19/09/14	Sat 29/11/14	41	43	496 days	[Gantt bar for 42: Fri 19/09/14 to Sat 29/11/14]																																															
43	1.2.3.7	Roofing and finishing works on bridge	90 days	Mon 01/12/14	Wed 25/03/15	42		496 days	[Gantt bar for 43: Mon 01/12/14 to Wed 25/03/15]																																															
44	1.2.4	Lift Tower D-C	726 days	Thu 02/05/13	Tue 20/10/15			0 days	[Gantt bar for 44: Thu 02/05/13 to Tue 20/10/15]																																															
45	1.2.4.1	Method statement and material submission	30 days	Tue 08/10/13	Tue 12/11/13	48SS-60 days		893 days	[Gantt bar for 45: Tue 08/10/13 to Tue 12/11/13]																																															
46	1.2.4.2	Pre-drill & determine F/L (included all necessary preparation and test)	40 days	Thu 02/05/13	Wed 19/06/13	6	47,70,73	0 days	[Gantt bar for 46: Thu 02/05/13 to Wed 19/06/13]																																															
47	1.2.4.3	Demolish the existing structure	30 days	Thu 20/06/13	Fri 26/07/13	46,6	48	120 days	[Gantt bar for 47: Thu 20/06/13 to Fri 26/07/13]																																															
48	1.2.4.4	Construct Pre-bored H pile (60 no) (included all necessary preparation and test)	160 days	Wed 18/12/13	Sat 12/07/14	47,72,74	49,45SS-60 days	0 days	[Gantt bar for 48: Wed 18/12/13 to Sat 12/07/14]																																															
49	1.2.4.5	Pile Testing	40 days	Mon 14/07/14	Thu 28/08/14	48	50	0 days	[Gantt bar for 49: Mon 14/07/14 to Thu 28/08/14]																																															
50	1.2.4.6	Construct pile cap	30 days	Fri 29/08/14	Mon 06/10/14	49	51	0 days	[Gantt bar for 50: Fri 29/08/14 to Mon 06/10/14]																																															
51	1.2.4.7	Construct superstructure to level 103.8	30 days	Tue 07/10/14	Mon 10/11/14	50	52	0 days	[Gantt bar for 51: Tue 07/10/14 to Mon 10/11/14]																																															
52	1.2.4.8	Backfilling above pile cap	12 days	Tue 11/11/14	Mon 24/11/14	51	53	0 days	[Gantt bar for 52: Tue 11/11/14 to Mon 24/11/14]																																															
53	1.2.4.9	Construct superstructure level 103.8-158.05	160 days	Tue 25/11/14	Mon 15/06/15	52	54,58,55,82	0 days	[Gantt bar for 53: Tue 25/11/14 to Mon 15/06/15]																																															
54	1.2.4.10	Installation of Lift	80 days	Tue 16/06/15	Sat 19/09/15	53,21,32	56,57FS-49 days	327 days	[Gantt bar for 54: Tue 16/06/15 to Sat 19/09/15]																																															
55	1.2.4.11	M&E Installation	80 days	Tue 16/06/15	Sat 19/09/15	53	56	327 days	[Gantt bar for 55: Tue 16/06/15 to Sat 19/09/15]																																															
56	1.2.4.12	T & C of M&E Equipment	24 days	Mon 21/09/15	Tue 20/10/15	54,55		327 days	[Gantt bar for 56: Mon 21/09/15 to Tue 20/10/15]																																															
57	1.2.4.13	Roofing Connection Tower D-B & D-C	60 days	Fri 24/07/15	Mon 05/10/15	54FS-49 days		340 days	[Gantt bar for 57: Fri 24/07/15 to Mon 05/10/15]																																															
58	1.2.4.14	Finishing and Metal Works	100 days	Tue 16/06/15	Thu 15/10/15	53		331 days	[Gantt bar for 58: Tue 16/06/15 to Thu 15/10/15]																																															
59	1.2.5	Pier D-D	450 days	Thu 18/07/13	Mon 02/02/15			169 days	[Gantt bar for 59: Thu 18/07/13 to Mon 02/02/15]																																															
60	1.2.5.1	Method statement and material submission	30 days	Thu 18/07/13	Thu 22/08/13	61SS-60 days		960 days	[Gantt bar for 60: Thu 18/07/13 to Thu 22/08/13]																																															
61	1.2.5.2	Slope Cutting	10 days	Sat 28/09/13	Thu 10/10/13	10	62,60SS-60 days	109 days	[Gantt bar for 61: Sat 28/09/13 to Thu 10/10/13]																																															
62	1.2.5.3	Working platform for mini pile	40 days	Fri 11/10/13	Wed 27/11/13	61	63	109 days	[Gantt bar for 62: Fri 11/10/13 to Wed 27/11/13]																																															
63	1.2.5.4	Pre-drill & determine F/L (included all necessary preparation and test)	20 days	Thu 28/11/13	Fri 20/12/13	62	64	109 days	[Gantt bar for 63: Thu 28/11/13 to Fri 20/12/13]																																															
64	1.2.5.5	Construct mini pile (30 nos) (included all necessary preparation and test)	90 days	Sat 21/12/13	Thu 17/04/14	63		109 days	[Gantt bar for 64: Sat 21/12/13 to Thu 17/04/14]																																															

Date: Mon 10/06/13
Prepared By: T.L. Lo

Baseline Milestone ◊ Task [Blue bar] Milestone [Diamond] Baseline [Grey bar] Progress [Black bar]

Baseline Summary [Grey bar] Critical Task [Red bar] Summary [Red bar]

