

Our ref.: CCL/MA13003/Corres/Out/bw161111_Mrpt1610

Environmental Protection Department
Environmental Assessment Division
Assessment and Noise Group
27th Floor, Southorn Centre,
130 Hennessy Road
Wan Chai, Hong Kong

By Courier

11 November 2016

Attn.: Mr. LAM Wah King, Edward

Dear Sirs,

Environmental Permit (EP) No. FEP-24/004/1998/I
West Rail, Phase I - MTRC Works Contract 1117
Pat Heung Depot Modification Works


- Monthly Noise Monitoring Report (October 2016) for Pat Heung Depot Modification Works

On behalf of MTRCL, we are pleased to submit herewith three hard copies and one electronic copy of the captioned report in accordance with Condition 4.5 of the Project EP.

Please kindly note that the captioned report has been certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) as per Condition 4.5 of the Project EP.

Should you require any further information, please feel free to contact our Mr. Benjamin Wong at 2151-2098 or the undersigned at 2151 2089.

Yours faithfully,
Cinotech Consultants Ltd.


Dr. Priscilla Choy
Environmental Team Leader

Encl.

Cc. (all w/e)

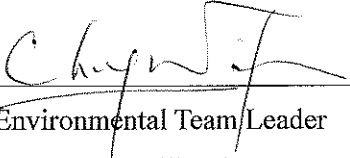
EPD	(Attn: Mr. Wai CHAU)	w/encl.
MTRCL	(Attn: Mr. Richard KWAN)	w/o encl.
Paul Y	(Attn: Mr. Edmond Chan)	w/encl.

Paul Y. Construction Company, Limited

**MTR Works Contract 1117-
Pat Heung Depot Modification Works**

**Monthly Noise Monitoring Report
for
October 2016**

(Version 1.0)

Certified By 
Environmental Team Leader
(Dr. Priscilla Choy)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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MTR Corporation Limited

West Rail

Pat Heung Modification Works
Monthly Noise Monitoring Report No. 44
[Period from 1 to 31 October 2016]

(November 2016)

Verified by: Fredrick Leong 

Position: Independent Environmental Checker

Date: 11 Nov 2016

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EXECUTIVE SUMMARY

Introduction

1. This is the 44th Monthly Noise Monitoring Report prepared by Cinotech Consultants Limited for MTR Works Contract 1117 - Pat Heung Depot (PHD) Modification Works. This report documents the findings of EM&A Works conducted from 1 October to 31 October 2016 since major construction works for Contract 1117 commenced on 1 March 2013.

Summary of Construction Works undertaken during Reporting Period

2. The major site activities undertaken in the reporting period include:
 - Site clearance and formation, site surveying
 - Compensatory Tree Planting Works
 - Painting of FAO Fencing
3. As of this reporting period, there is no record of any project changes from that originally proposed as described in the latest Environmental Review Report (ERR) for this Works Contract 1117.

Environmental Monitoring and Audit Progress

4. A summary of the monitoring activities in this reporting period is listed below:
 - Construction Noise Monitoring during normal weekdays
 - NM1 5 times
 - NM2 5 times
 - NM3A 5 times
 - Environmental Site Inspection 4 times

Noise

5. 5 sets of 30-minute construction noise measurements were carried out at each of the monitoring stations during normal weekdays of the reporting period. No exceedance was recorded during the reporting period.

Waste Management

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 4 m³ of inert C&D materials were generated during the reporting period. No Non-inert C&D wastes were generated during the reporting period. The inert C&D materials generated from the Project were disposed of at TM 38 Area Fill Bank.

Environmental Site Inspection

7. A monthly joint environmental site inspection was carried out by the representatives of the Contractor, the IEC and the ET. Details of the audit findings and implementation status are presented in Section 6.

Environmental Exceedance/Non-conformance/Complaint/Summon and Prosecution

8. Summary of the events and action taken and key information in the reporting month is tabulated in **Table I** and **Table II** respectively.

Table I Summary Table for Events Recorded in the Reporting Month

Parameter	No. of Exceedance		Action Taken
	Action Level	Limit Level	
Impact Noise Monitoring	0	0	N/A

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

9. All major construction activities of the Project were completed on 31-10-2016. The EM&A programme is terminated accordingly.

1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) is commissioned by Paul Y. Construction Company, Limited as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Works Contract 1117 –Pat Heung Depot (PHD) Modification Works (hereafter referred to “the Project”).

Purpose of the Report

- 1.2 This is the 44th Monthly Noise Monitoring Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 October to 31 October 2016 since major construction works for Contract 1117 commenced on 1 March 2013.

Structure of the Report

- 1.3 The structure of the report is as follows:

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

Section 2: **Project Information** - summarises background and scope of the project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.

Section 3: **Environmental Monitoring Requirement** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, environmental mitigation measures as recommended in the Environmental Review Report (ERR) and relevant environmental requirements.

Section 4: **Implementation Status on Environmental Mitigation Measures** - summarises the implementation of environmental protection measures during the reporting period.

Section 5: **Monitoring Results** - summarises the monitoring results obtained in the reporting period.

Section 6: **Environmental Site Inspection** - summarises the audit findings of the weekly site inspections undertaken within the reporting period.

Section 7: **Environmental Non-conformance** - summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 8: **Future Key Issues** - summarises the impact forecast and monitoring schedule for the next three months.

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

- 2.1 West Rail Line (WRL) is one of the strategic rail infrastructures in Hong Kong providing the people of Hong Kong an environmentally friendly and convenient way to travel between the western part of the New Territories and western Kowloon. Under the approved WRL Environmental Impact Assessment (EIA) Report (EIA-149/BC), it has a total length of about 30.5km with 9 stations, including Nam Cheong, Mei Foo, Tsuen Wan West, Kam Sheung Road, Yuen Long, Long Ping, Tin Shui Wai, Siu Hong, Tuen Mun and one depot at Pat Heung.
- 2.2 The EIA Report of WRL was prepared and submitted to Environmental Protection Department (EPD) prior to the enactment of the Environmental Impact Assessment Ordinance (EIAO) in 1998. Since the first Environmental Permit (EP) (EP-004/1998), there have been amendments made to the permit through a number of EP variation applications related to the main line of WRL.
- 2.3 This Works Contract 1117 covers the modification works at the existing Pat Heung Depot (PHD) of WRL to meet future operational and maintenance requirements. The PHD modification works include the construction of a new train wash plant, locomotive shed, permanent - way workshop, stabling sidings, extension of maintenance building and modification of noise barriers.
- 2.4 Since the modification works at PHD forms part of the WRL, a variation of environmental permit (VEP) was applied and a VEP (EP No. EP-004/1998/I) were subsequently granted. Moreover, a further Environmental Permit (FEP) (EP No: FEP-24/004/1998/I) on construction and operation of WRL (including the PHD modification works) was issued by Director of Environmental Protection (DEP) to the MTR Corporation Limited on 23 July 2012.

General Site Description

- 2.5 The site layout and proposed modification works are illustrated in **Figure 1**.

Construction Programme and Activities

- 2.6 A summary of the major construction activities undertaken in this reporting period is shown as follows. The construction programme is presented in **Appendix A**.
- Site clearance and formation, site surveying
 - Compensatory Tree Planting Works
 - Painting of FAO Fencing

Project Organisation

- 2.7 Different parties with different levels of involvement in the project organization include:
- Engineer or Engineer’s Representative (ER)– MTR Corporation (MTRC)
 - Contractor’s Environmental Team (Contractor’s ET) – Cinotech Consultants Ltd. (Cinotech)
 - Independent Environmental Checker (IEC) – Meinhardt Infrastructure and Environment Limited (MIEL)
 - Contractor – Paul Y. Construction Company, Limited(Paul Y)
- 2.8 The responsibilities of respective parties are detailed in Section 2 of the approved EM&A Programme for PHD Modification Works.
- 2.9 The project organisation including key personnel contact names and telephone numbers is presented in **Figure 2**.

Status of Environmental Licences, Notification and Permits

- 2.10 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 2.1**.

Table 2.1 Status of Environmental Licenses, Notification and Permits

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
FEP-24/004/1998/J	21/10/2013	End of the Project	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.351534	31/10/2012	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No. 7016256	2/11/2012	N/A	Valid
Registration of Chemical Waste Producer			
5218-531-P2991-02	4/12/2012	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance (WPCO)			
WT00015378-2013	26/3/2013	31/3/2018	Valid
Construction Noise Permit			
GW-RN0511-16 (Area D: Location 5 Noise Barrier and OHL Modification) - 2nd Renewal	19/7/2016	13/10/2016	Expired on 13/10/2016

Summary of EM&A Requirements

- 2.11 The EM&A programme under Works Contract 1117 require construction noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:
- all monitoring parameters;
 - environmental quality performance limits (Action and Limit levels);
 - Event-Action Plans;
 - Environmental mitigation measures, as recommended in the Environmental Review Report (ERR) for the VEP (EP No. FEP-24/004/1998/I); and
 - Environmental requirements in contract documents.
- 2.12 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.
- 2.13 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely construction noise as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Construction Noise Monitoring

Monitoring Requirements

- 3.1 Noise monitoring was conducted in accordance with the approved EM&A Programme for PHD Modification Works.
- 3.2 With reference to the baseline monitoring report for the Project, **Table 3.1** and **Table 3.2** summarises the location of noise monitoring stations and shows the established Action and Limit Levels for construction noise monitoring works respectively. Location of the monitoring stations is shown on **Figure 3**.

Table 3.1 Construction Noise Monitoring Stations

ID in the approved EM&A Programme	ID in Baseline Noise Monitoring Report	Construction Noise Monitoring Station
NM1	NM1	Tourmaline Villa
NM2	NM2	Kam Po Road
NM3	NM3A ⁽¹⁾	Tai Kek Tsuen

Note:

- (1) Since permission of access could not be obtained, an alternative location at a village house just next to the original proposed monitoring location in the EM&A Programme was adopted for the baseline noise monitoring.

Table 3.2 Criteria for Action and Limit Levels for Construction Noise

Time Period ⁽¹⁾	Noise Monitoring Station	Action Level	Limit Level, dB (A)
0700-1900 hrs of normal weekdays	Tourmaline Villa (NM1)	When one documented valid complaint is received.	75.0
	Kam Po Road (NM2)		
	Tai Kek Tsuen (NM3A)		

Note:

- (1) If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority should be followed.

- 3.3 Should non-compliance of the criteria in **Table 3.2** occur, action in accordance with the Event and Action Plan in **Appendix B** should be carried out.

Monitoring Equipment

3.4 **Table 3.3** summarizes the noise monitoring equipment model being used.

Table 3.3 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	Svantek Model 955 (Serial no. 27455);	1
Calibrator	Pulsar Instruments Model 105 (Serial no. 51342)	1

Monitoring Parameters, Frequency and Duration

3.5 **Table 3.4** summarizes the monitoring parameters, frequency and total duration of monitoring.

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

Station	Parameter	Period	Frequency
NM1, NM2 and NM3A	$L_{eq,30 \text{ min.}}^{(1)}$ (L_{10} and L_{90} were also recorded as supplementary information)	0700-1900 hours on normal weekdays	Once a week

Note (1): $L_{eq, 30 \text{ min.}}$ as six consecutive $L_{eq, 5 \text{ min}}$ readings.

Monitoring Methodology and QA/QC Procedures

Field Monitoring

3.6 The monitoring procedures are as follows:

- The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - Frequency weighting : A
 - Time weighting : Fast
 - Measurement time : 5 minutes (obtaining six consecutive $L_{eq, 5 \text{ min}}$ readings for a $L_{eq, 30 \text{ min.}}$ reading)
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- At the end of the monitoring period, the L_{eq} , L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- A façade correction of +3dB (A) shall be made to the noise parameter obtained by free field measurement.

Maintenance and Calibration

3.7 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator were checked and calibrated at yearly intervals. Copies of calibration certificates are attached in **Appendix C**.

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the ERR, the Environmental Permit and approved EM&A Programme for PHD Modification Works. The status of submission required under the Environmental Permit is summarized in **Table 4.1**. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix D**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 4.5	Monthly Noise Monitoring Report (September 2016)	14 th October 2016

5 MONITORING RESULTS

Noise

- 5.1 In this reporting period, noise monitoring during non-restricted hours was conducted as scheduled at the designated locations. The noise monitoring schedule is shown in **Appendix E**.
- 5.2 The details of the monitoring results and graphical presentations are shown in **Appendix F**. The weather during the monitoring sessions was mainly cloudy and sunny.
- 5.3 Based on the on-site measurement, traffic on nearby major road is considered as a noise source other than construction works of the Project that affects the monitoring results of the reporting month.
- 5.4 No Action/Limit Level exceedance for construction noise monitoring was recorded in the reporting period.

Waste Management

- 5.5 Waste generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and dredging materials. Non-inert C&D materials are made up of general refuse, chemical waste, paper/cardboard packaging materials, plastic materials and metals. Metals generated from the project are also grouped into non-inert C&D materials as the metals were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting period are summarised in **Table 5.1**. The inert C&D materials generated from the Project were disposed of at TM 38 Area Fill Bank. No paper/cardboard packaging materials were generated during the reporting period. Detail of waste management data is presented in **Appendix G**.

Table 5.1 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)				
		General Refuse	Chemical Waste	Paper/cardboard	Plastics	Metals
October 2016	4 m ³	0 m ³	0 kg	0 kg	0 kg	0 kg

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.

(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

6 ENVIRONMENTAL SITE INSPECTION

Site Audits

- 6.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 6.2 Site audits were conducted on 5, 12, 18 and 27 October 2016 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 27 October 2016. No site inspection was conducted by EPD during the reporting period. The details of observations during site audit can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

- 6.3 According to the ERR, Environmental Permit and the approved EM&A Programme of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix D**.
- 6.4 During site inspections in the reporting period, no non-conformance was identified. The observations made during the audit sessions are summarized in **Table 6.1**.

Table 6.1 Site Audit Observations

Parameters	Date	Observations	Follow-up
<i>Water Quality</i>	N/A	N/A	N/A
<i>Noise</i>	N/A	N/A	N/A
<i>Tree Protection/ Landscape and Visual</i>	N/A	N/A	N/A
<i>Air Quality</i>	N/A	N/A	N/A
<i>Waste / Chemical Management</i>	5 October 2016	<u>Reminder:</u> The Contractor was reminded to properly remove the general refuse observed in Area A.	All the general refuse was removed by the Contractor. Closing date: 12 October 2016
	18 October 2016	<u>Reminder:</u> To remove the C&D waste found on the road in Area D.	All the C&D waste was removed by the Contractor. Closing date: 27 October 2016
<i>Permits/ Licenses</i>	N/A	N/A	N/A

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 7.1 No exceedance of monitoring results was recorded in the reporting period. The summary of exceedance is provided in **Appendix I**.

Summary of Environmental Non-Compliance

- 7.2 No environmental non-compliance was recorded in the reporting period.

Summary of Environmental Complaint

- 7.3 No environmental Project-related complaint was received in the reporting month. The

Cumulative Complaint Log since the commencement of the Project is presented in **Appendix J**.

Summary of Environmental Summon and Successful Prosecution

- 7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix J**.

8 FUTURE KEY ISSUES

Key Issues in the Coming Month

- 8.1 No key issues in the coming month.

Monitoring Schedule for the Next Month

- 8.2 No noise monitoring is required.

Construction Programme for the Next Month

- 8.3 The construction programme is provided in **Appendix A**. All major construction works were completed.

9 CONCLUSIONS

Conclusions

- 9.1 This Monthly Noise Monitoring Report presents the EM&A works undertaken during the period from 1 October to 31 October 2016 since major construction works for Contract 1117 commenced on 1 March 2013 in accordance with approved EM&A Programme for PHD Modification Works and the requirement under FEP-24/004/1998/I.
- 9.2 As of this reporting period, there is no record of any project changes from that originally proposed as described in the latest Environmental Review Report (ERR) for this Works Contract 1117.
- 9.3 No exceedance of monitoring results was recorded in the reporting period.
- 9.4 There was no environmental complaint, prosecution or notification of summons received.

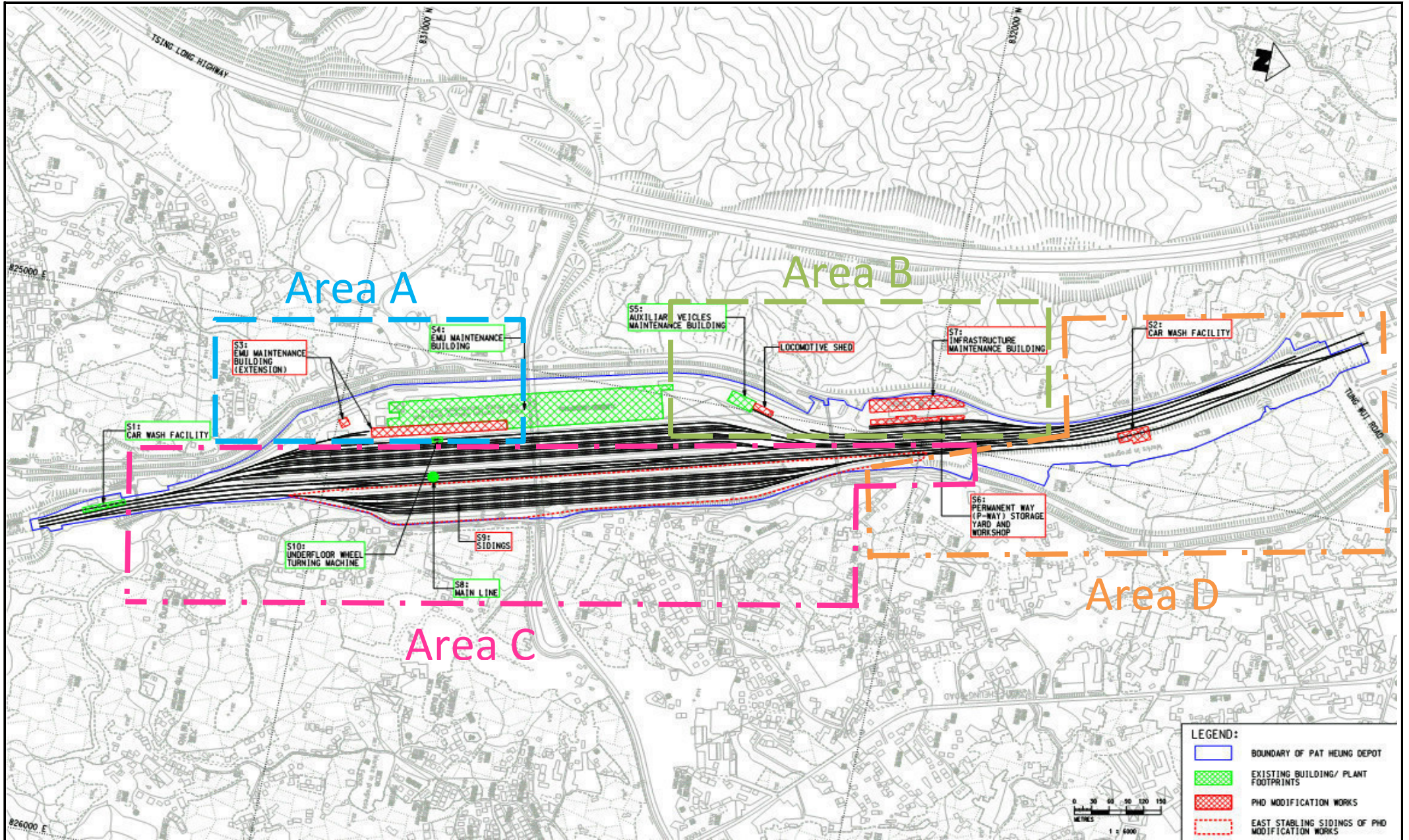
Recommendations

- 9.5 The following recommendations were made in the reporting month to the Contractor during the site audits:

Waste and Chemical Management

- General refuse should be frequently removed to avoid accumulation.
 - C&D waste should be frequently removed to avoid accumulation.
- 9.6 All major construction activities of the Project were completed on 31-10-2016. The EM&A programme is terminated accordingly.

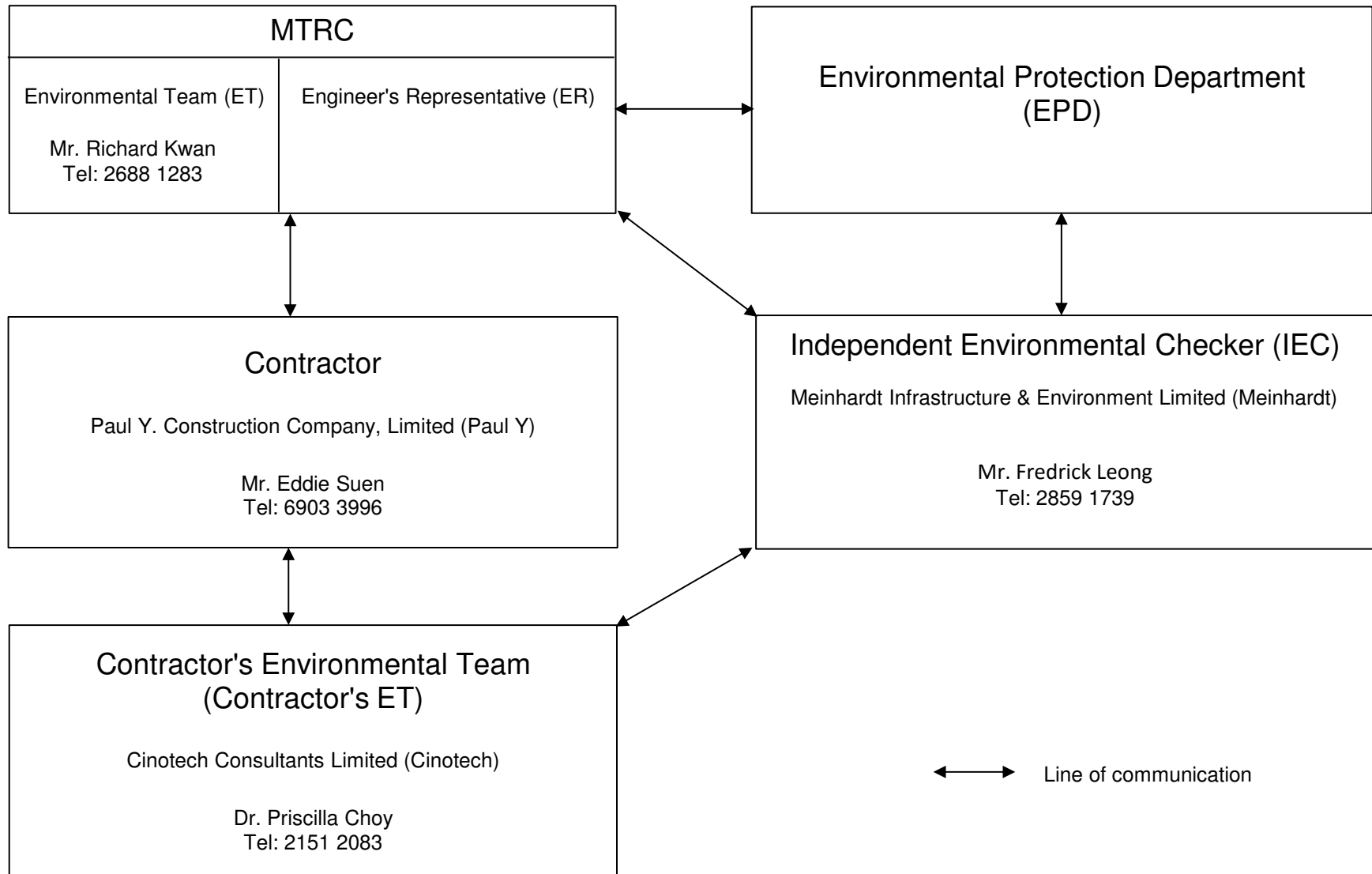
FIGURES



Title
 SCL Contract 1117
 Shatin to Central Link -
 Pat Heung Depot Modification Works
 Site Layout Plan

Scale	N.T.S	Proposal No.	MA13003
Date	Apr-13	Figure	1

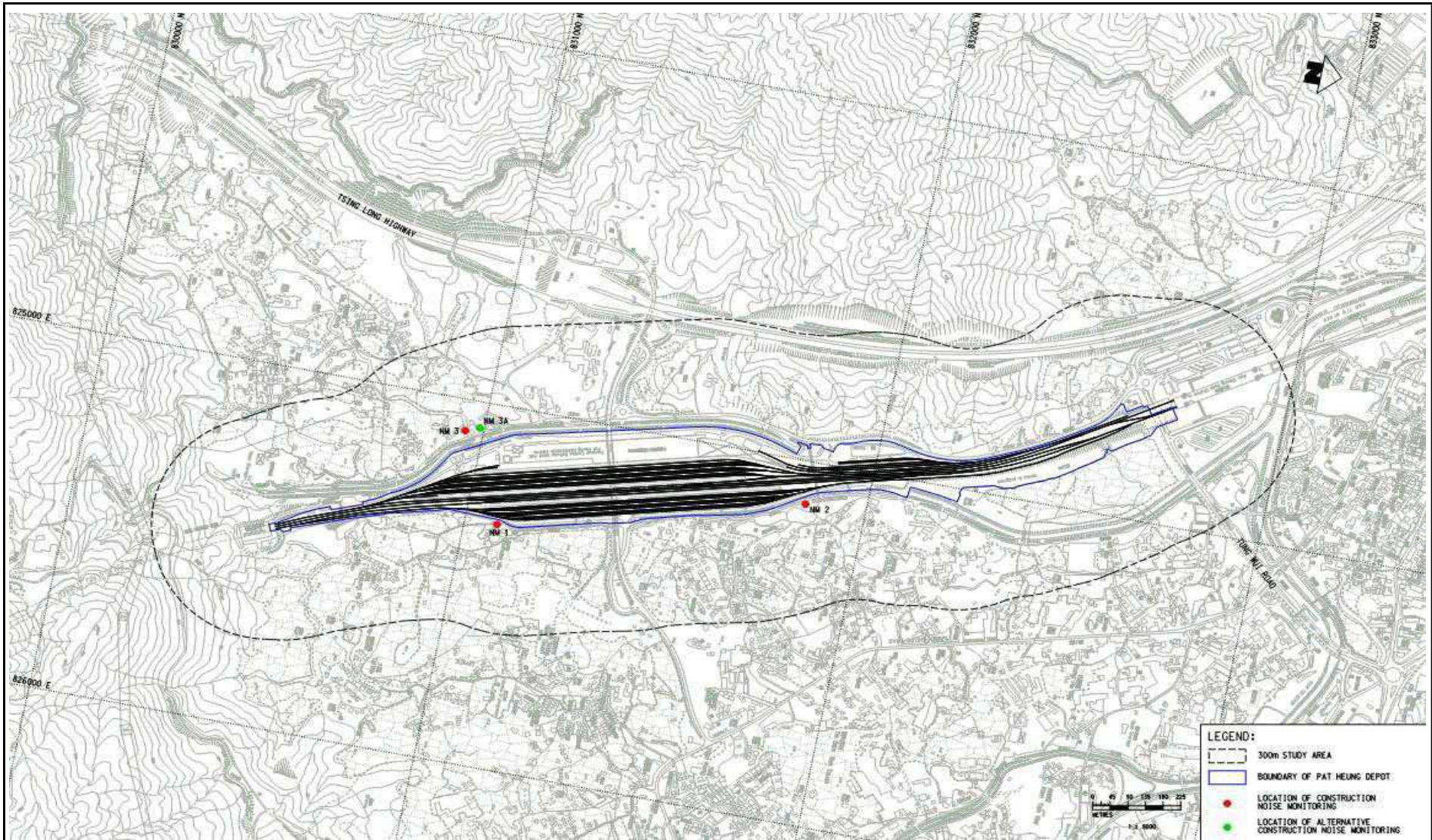




Title SCL Contract 1117
Shatin to Central Link -
Pat Heung Depot Modification Works
Project Organisation Chart for Environmental Works

Scale	N.T.S	Propose No.	MA13003
Date	Jun-16	Figure	2





Title	MTR Works Contract 1117 Pat Heung Depot Modification Works		Scale	N.T.S	Proposal No.	MA13003	
	Location of Constrction Noise Monitoring Stations		Date	Apr-13	Figure	3	

**APPENDIX A
TENTATIVE CONSTRUCTION
PROGRAMME**

SCL 1117 Pat Heung Depot Modification Works

30-Sep-16

Activity ID	Activity Name	Act % Comp	Orig Dur	Rem Dur	Start	Finish	BL Early Start (PLP-000580B)	BL Early Finish (PLP-000580B)	Total Float	2013				2014				2015				2016								
										J	F	J	J	J	J	J	J	J	J	J	A	J	F	J	J	J	J	J	J	
Preliminaries and General Requirements																														
	Preliminaries and General Requirements		1764	394	22-Oct-12 A	29-Oct-17	31-Jul-13	29-Oct-17	0	◆																				
Area A - EMU Bldg Ext/Extg EMU Bldg/Noise Barrier 1/E&M Ancil Bldg																														
	Preliminary Works Submission (Area A)		664	0	22-Nov-12 A	23-Jul-15 A	31-Jul-13	06-Jan-14		◆																				
	Materials Procurement (Area A)		333	0	29-Jan-13 A	31-Jan-15 A	31-Jul-13	15-Jul-14		◆																				
	Materials Submission (Area A)		120	0	31-Dec-12 A	30-May-14 A	31-Jul-13	13-Aug-13		◆																				
	Site Construction Works (Area A)		1158	0	22-Oct-12 A	07-Sep-16 A	31-Jul-13	15-Jul-15		◆																				
EMU Building Extension																														
	E0 - Geotechnical Instrumentation and Monitoring		25	0	16-Mar-13 A	19-Apr-13 A	31-Jul-13	31-Jul-13		◆																				
	E0 - General Site Clearance		345	0	22-Oct-12 A	28-Feb-14 A	31-Jul-13	03-Mar-14		◆																				
	E1 - Excavation and Foundation		649	0	10-Apr-13 A	31-Jul-15 A	31-Jul-13	28-Aug-14		◆																				
	E2 - Civil & Structures Works		300	0	11-Apr-14 A	29-Jan-15 A	22-Feb-14	19-Aug-14		◆																				
	E3 - ABWF Works		193	0	17-Oct-14 A	29-Aug-15 A	21-Jul-14	14-Feb-15		◆																				
	E4 - BS Installation Works		413	0	25-Aug-14 A	30-Oct-15 A	21-Jul-14	05-Jun-15		◆																				
Ancillary E&M Plant Building																														
	E1 - Excavation and Foundation		253	0	15-Apr-13 A	09-Jun-14 A	31-Jul-13	16-Dec-13		◆																				
	E2 - Civil & Structures Works		209	0	11-Jun-14 A	21-Nov-14 A	17-Dec-13	13-May-14		◆																				
	E3 - ABWF Works		356	0	27-Oct-14 A	30-Jun-15 A	14-May-14	15-Jul-15		◆																				
	E4 - BS Installation Works		500	0	22-May-14 A	23-Jul-15 A	14-May-14	14-Mar-15		◆																				
Existing EMU Building																														
	Underground Drainage		30	0	20-Dec-13 A	27-Jan-14 A	20-Dec-13	27-Jan-14		◆																				
	E1 - Excavation and Foundation		18	0	28-Jan-14 A	20-Feb-14 A	28-Jan-14	20-Feb-14		◆																				
	E2 - Civil & Structures Works		12	0	21-Feb-14 A	06-Mar-14 A	21-Feb-14	06-Mar-14		◆																				
	BS Works (Existing EMU Building) Phase A		589	0	20-Jun-13 A	24-Oct-15 A	31-Jul-13	21-Jul-14		◆																				
	BS Works (Existing EMU Building) Phase B)		213	0	11-Dec-13 A	30-Jun-16 A	28-Jul-14	11-Dec-14		◆																				
Option 1 - MTR Cable Diversion Works																														
	Cable Containment (Area A)		1003	0	20-May-13 A	07-Sep-16 A	31-Jul-13	23-Jun-14		◆																				
	Demolition		18	0	22-Feb-13 A	14-Mar-13 A	31-Jul-13	31-Jul-13		◆																				
	General Site Clearance		59	0	22-Apr-13 A	29-Jul-13 A	31-Jul-13	02-Aug-13		◆																				
	Cable Diversion - Area A (A3 & A5 Drawpit Cable Diversion)		616	0	16-Mar-13 A	20-May-15 A	31-Jul-13	26-Jun-15		◆																				
	Area A Storm Drain Diversion for A3/A5 Systemwide Cable Diversion		665	0	01-Aug-13 A	20-Apr-15 A	31-Jul-13	11-Oct-13		◆																				
Miscellaneous and External Works (Overhead Line)																														
	Overhead Line Construction		744	0	11-Apr-13 A	01-Apr-15 A	31-Jul-13	15-Oct-14		◆																				
Miscellaneous and External Works (Noise Barrier)																														
	External Works near Noise Barrier (Area A)		412	0	30-Apr-14 A	06-Jul-15 A	12-Nov-13	20-Jun-14		◆																				
Miscellaneous and External Works (Roadworks)																														
	Road Works & External Works		107	0	10-Feb-15 A	11-Apr-15 A	03-Feb-14	14-Jun-14		◆																				
Area B - New Fuel Station/Extg Fuel Station/New Loco Shed/New Training Track/IMB/P-Way Workshop																														
	Preliminary Works Submission (Area B)		464	0	21-Nov-12 A	19-Mar-16 A	31-Jul-13	08-May-14		◆																				
	Materials Procurement (Area B)		650	0	22-Oct-12 A	21-May-15 A	31-Jul-13	02-Jan-15		◆																				
	Site Construction Works (Area B)		1021	2	03-Dec-12 A	04-Oct-16	31-Jul-13	27-Oct-15	316	◆																				
Site Preparation Works																														
	Works Areas W6, W6A, W6B, W6C & W6D		757	0	03-Dec-12 A	09-Feb-15 A	31-Jul-13	30-Aug-14		◆																				
Option 1 - MTR Cable Diversion Works																														
	Systemwide Cable Diversion (Red) (Area B)		153	0	26-Apr-13 A	19-Oct-13 A	31-Jul-13	19-Oct-13		◆																				



- Remaining Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- Baseline (PLP-000580B)
- ◆ Milestone
- ◇ Baseline Milestone

Revised Construction Programme (CP04Frev1) Sep 2016

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04-Jan-16

SCL 1117 Pat Heung Depot Modification Works

Date	Revision	Checked	Approved
04-Dec-13	CP04Frev1 (updated version)		
30-Sep-16	CP04Frev1 (RMP-1609)		

SCL 1117 Pat Heung Depot Modification Works

30-Sep-16

Activity ID	Activity Name	Act % Comp	Orig Dur	Rem Dur	Start	Finish	BL Early Start (PLP-000580B)	BL Early Finish (PLP-000580B)	Total Float	2013				2014				2015				2016				
										J	F	J	J	J	J	J	J	J	J	J	A	J	F	J	J	
Area B - New Fuel Station - Works Area W5A																										
	Demolition	6	0	0	01-Mar-13 A	13-Aug-13 A	31-Jul-13	13-Aug-13																		
	Hoarding Erection (Stage 1)	6	0	0	12-Mar-13 A	28-Mar-13 A	31-Jul-13	31-Jul-13																		
	E0 - Geotechnical Instrumentation and Monitoring	12	0	0	01-Mar-13 A	14-Mar-13 A	31-Jul-13	31-Jul-13																		
	E1 - Excavation and Foundation	9	0	0	06-Apr-13 A	23-Apr-13 A	31-Jul-13	31-Jul-13																		
	E2 - Civil & Structures Works	43	0	0	24-Apr-13 A	31-Jul-13 A	31-Jul-13	31-Jul-13																		
	E4 - BS Installation Works	40	0	0	01-Jun-13 A	11-Jul-13 A	31-Jul-13	31-Jul-13																		
	Interfacing Coordination (Area B)	14	0	0	31-Jul-13 A	13-Aug-13 A	31-Jul-13	13-Aug-13																		
Area B - AVM Building - Works Area W5B																										
	ABWF Works (AVMB Building) (Area B)	92	0	0	08-Nov-13 A	31-Mar-14 A	17-Aug-13	15-Oct-13																		
	BS Installation Works (AVMB Building) (Area B)	40	0	0	12-Feb-14 A	31-Mar-14 A	28-Jan-14	13-Mar-14																		
Area B - Infrastructure Maintenance Building (IMB)																										
	E1 - Excavation and Foundation	348	0	0	22-Apr-13 A	30-Aug-14 A	31-Jul-13	16-May-14																		
	E2 - Civil & Structures Works	217	0	0	27-May-14 A	03-Dec-14 A	17-May-14	27-Nov-14																		
	E3 - ABWF Works	298	0	0	01-Dec-14 A	30-Jun-16 A	28-Nov-14	27-Aug-15																		
	E4 - BS Installation Works	521	2	0	30-Oct-14 A	04-Oct-16	28-Nov-14	27-Aug-15	22																	
	Transformer Room at IMB	424	0	0	21-Oct-14 A	30-Sep-15 A	20-Jun-14	25-Apr-15																		
	Lift Shaft at IMB	524	0	0	24-Jun-14 A	28-Oct-15 A	17-Sep-14	27-Oct-15																		
Area B - Permanent Way (P-Way) Workshop																										
	E1 - Excavation and Foundation	508	0	0	06-Mar-14 A	09-May-15 A	04-Aug-14	14-Jan-15																		
	E2 - Civil & Structures Works	35	0	0	11-May-15 A	17-Aug-15 A	14-Jan-15	21-Mar-15																		
	E3 - ABWF Works	173	0	0	16-Sep-15 A	15-Apr-16 A	21-Mar-15	11-Jul-15																		
	E4 - BS Installation Works	217	0	0	15-Jul-15 A	16-Apr-16 A	21-Mar-15	20-Oct-15																		
	E5 - Associated Works	920	0	0	15-Jul-13 A	05-Sep-16 A	31-Jul-13	02-Aug-14																		
Area B - New Loco Shed - Works Area W5C																										
	E1 - Excavation and Foundation	130	0	0	25-Jul-13 A	17-Jan-14 A	31-Jul-13	09-Dec-13																		
	E2 - Civil & Structures Works	18	0	0	21-Sep-13 A	13-Dec-13 A	19-Oct-13	13-Dec-13																		
	E3 - ABWF Works	86	0	0	14-Dec-13 A	22-Apr-14 A	14-Dec-13	26-Mar-14																		
	E4 - BS Installation Works	164	0	0	11-Mar-14 A	30-Jul-14 A	20-Jan-14	01-Aug-14																		
	Interfacing Coordination (Loco Shed)	2	0	0	24-Jan-14 A	27-Jan-14 A	18-Jan-14	18-Jan-14																		
New Training Track																										
	New Training Track - Works Area W6A (Area B)	187	0	0	17-Jun-13 A	28-Jan-14 A	31-Jul-13	21-Oct-13																		
Miscellaneous and External Works (Overhead Crane)																										
	Overhead Crane - Works Area W6/W6B/W6D	362	0	0	13-Nov-14 A	26-Aug-16 A	18-Dec-13	30-May-15																		
Area C - East Stabling/Extg Loco Shed/Noise Barrier 3 & 4/Extg A100 Road																										
	Preliminary Works Submission (Area C)	371	0	0	03-Dec-12 A	31-Jul-14 A	31-Jul-13	23-May-14																		
	Materials Procurement (Area C)	35	0	0	22-Oct-12 A	31-Dec-12 A	31-Jul-13	31-Jul-13																		
	Materials Submission (Area C)	24	0	0	17-Jun-13 A	25-Feb-14 A	31-Jul-13	05-Aug-13																		
	Site Construction Works (Area C)	904	0	0	21-Nov-12 A	30-Jan-16 A	31-Jul-13	27-Apr-15																		
Site Preparation Works (Works Areas W11, W12, W13, W3a & W3b)																										
	Demolition	373	0	0	21-Nov-12 A	25-Jul-14 A	31-Jul-13	18-Jul-14																		
	General Site Clearance	48	0	0	28-Dec-12 A	27-Feb-13 A	31-Jul-13	31-Jul-13																		
Area C - Existing Loco Shed																										
	Demolition	24	0	0	01-Aug-14 A	22-Aug-14 A	02-Aug-14	29-Aug-14																		
Miscellaneous and External Works (Pipe Jacking Works)																										
	Miscellaneous and External Works (Pipe Jacking Works)	546	0	0	17-Jun-13 A	19-Dec-13 A	31-Jul-13	27-Jun-14																		

Date	Revision	Checked	Approved
04-Dec-13	CP04Frev1 (updated version)		
30-Sep-16	CP04Frev1 (RMP-1609)		

SCL 1117 Pat Heung Depot Modification Works

30-Sep-16

Activity ID	Activity Name	Act % Comp	Orig Dur	Rem Dur	Start	Finish	BL Early Start (PLP-000580B)	BL Early Finish (PLP-000580B)	Total Float	2013				2014				2015				2016														
										J	F	J	J	J	J	J	J	J	J	A		J	F	J	J											
	Pipe Jacking (South) (Area C)		546	0	17-Jun-13 A	19-Dec-13 A	31-Jul-13	27-Jun-14																												
	Miscellaneous and External Works (Noise Barrier)		708	0	12-Apr-13 A	01-Aug-15 A	28-Oct-13	27-Apr-15																												
	Noise Barrier Location 3 (Area C)		708	0	12-Apr-13 A	01-Aug-15 A	28-Dec-13	09-Aug-14																												
	Noise Barrier Location 4 (Area C)		537	0	28-Oct-13 A	17-May-15 A	28-Oct-13	27-Apr-15																												
	Miscellaneous and External Works (Roadworks)		851	0	06-May-13 A	30-Jan-16 A	31-Jul-13	11-Dec-14																												
	Road Works at Works Area W3a (CH E1350-E1450) (Area C)		514	0	03-Jun-13 A	19-Sep-14 A	31-Jul-13	24-Feb-14																												
	Road Works at Works Area W3a (CH E1450-E1550) (Area C)		708	0	06-May-13 A	28-Jan-16 A	31-Jul-13	26-Jun-14																												
	Road Works at Works Area W3a (CH E1550-E1650) (Area C)		263	0	10-Oct-13 A	03-Sep-14 A	21-Nov-13	25-Jun-14																												
	Road Works at Works Area W3a (CH E1650-E1750) (Area C)		69	0	17-Feb-14 A	30-Sep-14 A	26-Oct-13	24-Apr-14																												
	Road Works at Works Area W3a (CH E1750-E1850) (Area C)		786	0	02-Sep-13 A	30-Jan-16 A	02-Sep-13	26-Jun-14																												
	Road Works at Works Area W3a (CH E1850-E1900) (Area C)		178	0	02-Sep-13 A	28-Mar-14 A	02-Sep-13	24-Mar-14																												
	Road Works at Works Area W3c (CH E1900-E2100) (Area C - North Fan Area)		170	0	31-Aug-13 A	10-Apr-14 A	15-Aug-13	10-Feb-14																												
	Road Works at Works Area W3c (CH E2100-E2250) (Area C - North Fan Area)		474	0	01-Mar-14 A	11-Nov-15 A	13-Sep-13	21-Feb-14																												
	Road Works at Works Area W3b (CH E1150) (Area C)		204	0	01-Oct-14 A	06-Aug-15 A	21-Jul-14	11-Dec-14																												
	Road Works at Works Area W3b (CH E1150-E1250) (Area C)		198	0	01-Oct-14 A	01-Aug-15 A	19-Jul-14	06-Dec-14																												
	Road Works at Works Area W3b (CH E1250-E1350) (Area C)		154	0	01-Oct-14 A	11-Nov-15 A	26-Jul-14	11-Dec-14																												
	Area D - A100 Road Extension/Train Wash Plant & Building/Noise Barrier 2 & 5		1075	23	22-Oct-12 A	29-Oct-16	31-Jul-13	23-Sep-16	295																											
	Preliminary Works Submission (Area D)		772	0	09-Jan-13 A	02-Jul-15 A	31-Jul-13	26-Jul-14																												
	Materials Procurement (Area D)		76	0	22-Oct-12 A	14-Mar-14 A	31-Jul-13	20-Aug-13																												
	Materials Submission (Area D)		42	0	21-Jan-13 A	14-Mar-13 A	31-Jul-13	31-Jul-13																												
	Site Construction Works (Area D)		1038	23	21-Jan-13 A	29-Oct-16	31-Jul-13	23-Sep-16	295																											
	Option 1 - MTR Cable Diversion Works (A64 Drawpit)		303	0	03-Jun-13 A	15-May-14 A	31-Jul-13	16-Apr-14																												
	Systemwide Cable Diversion - A64 Drawpit		303	0	03-Jun-13 A	15-May-14 A	31-Jul-13	16-Apr-14																												
	Miscellaneous and External Works (Pipe Jacking Works)		501	0	14-Jun-13 A	31-Oct-14 A	31-Jul-13	14-Jun-14																												
	Pipe Jacking (North) (Area D)		501	0	14-Jun-13 A	31-Oct-14 A	31-Jul-13	14-Jun-14																												
	Miscellaneous and External Works (Overhead Line)		830	0	11-Nov-13 A	28-Jan-16 A	11-Nov-13	22-Jun-15																												
	OHL Reprovision adjacent to WRL Main Line (Area D)		830	0	11-Nov-13 A	28-Jan-16 A	11-Nov-13	22-Jun-15																												
	Miscellaneous and External Works (Train Wash Facility)		787	0	17-Feb-14 A	23-Sep-16 A	17-Feb-14	23-Sep-16																												
	E1 - Excavation and Foundation		157	0	17-Feb-14 A	19-Aug-14 A	17-Feb-14	02-May-14																												
	E2 - Civil & Structures Works		293	0	23-Jul-14 A	15-Apr-15 A	03-May-14	24-Jul-14																												
	E3 - ABWF Works		193	0	27-Dec-14 A	31-Oct-15 A	28-Jul-14	24-Apr-15																												
	E4 - BS Installation Works		415	0	07-Oct-14 A	23-Sep-16 A	30-Jul-14	23-Sep-16																												
	Miscellaneous and External Works (Noise Barrier)		824	0	22-Apr-13 A	09-Nov-15 A	31-Jul-13	22-Jun-15																												
	Noise Barrier (Area D)		824	0	22-Apr-13 A	09-Nov-15 A	31-Jul-13	22-Jun-15																												
	Miscellaneous and External Works (Tree Management)		114	0	21-Jan-13 A	23-Jul-13 A	31-Jul-13	31-Jul-13																												
	Tree Management (Area D)		114	0	21-Jan-13 A	23-Jul-13 A	31-Jul-13	31-Jul-13																												
	Miscellaneous and External Works (Fill Embankment)		308	0	01-Apr-13 A	09-Aug-14 A	31-Jul-13	09-Mar-14																												
	Fill Embankment Works		308	0	01-Apr-13 A	09-Aug-14 A	31-Jul-13	09-Mar-14																												
	Miscellaneous and External Works (Roadworks)		719	23	30-May-14 A	29-Oct-16	17-Feb-14	15-Oct-14	295																											
	A100 Access Road Extension (Area D)		719	23	30-May-14 A	29-Oct-16	17-Feb-14	15-Oct-14	295																											

Date	Revision	Checked	Approved
04-Dec-13	CP04Frev1 (updated version)		
30-Sep-16	CP04Frev1 (RMP-1609)		

APPENDIX B
EVENT AND ACTION PLAN

Event and Action Plan for Noise Monitoring during Construction Phase

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC, Contactor, and ER; 2. Discuss with the ER, IEC, and Contractor on remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by the contractor; and 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; and 4. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Investigate the complaint and propose remedial measures; 2. Report the results of investigation to the IEC, ET and ER; 3. Submit noise mitigation proposals to ER with copy to the IEC and ET within 3 working days of notification; and 4. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, EPD and Contractor; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER, EPD the causes and actions taken for the exceedances; and 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET, and Contractor on the potential remedial measures; and 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor, IEC and ET; 3. In consultation with the ER and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; and 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. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER with copy to IEC and ET within 3 working days; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

**APPENDIX C
COPIES OF CALIBRATION
CERTIFICATES**



CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0419 01-02

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Pulsar Instruments Ltd.
Type/Model No.: Model 105
Serial/Equipment No.: 51342
Adaptors used: -

Item submitted by

Customer: Paul Y. Construction Co., Ltd.
Address of Customer: -
Request No.: -
Date of receipt: 19-Apr-2016

Date of test: 10-May-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	14-Apr-2017	SCL
Preamplifier	B&K 2673	2743150	28-Apr-2017	CEPREI
Measuring amplifier	B&K 2610	2346941	26-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI
Digital multi-meter	34401A	US36087050	18-Apr-2017	CEPREI
Audio analyzer	8903B	GB41300350	19-Apr-2017	CEPREI
Universal counter	53132A	MY40003662	19-Apr-2017	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 50 ± 10 %
Air pressure: 1005 ± 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-May-2016

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.: 16CA0419 01-02

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	(Output level in dB re 20 μ Pa)	
		Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.76	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 = 1000.1 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 = 0.6 %
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:

Fung Chi Yip

Date: 10-May-2016

Checked by:

Lam Tze Wai

Date: 11-May-2016

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.: 16CA0419 01-01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	SVANTEK, POLAND	,	ACO, JAPAN
Type/Model No.:	955	,	7052E
Serial/Equipment No.:	27455	,	50002
Adaptors used:	-	,	-

Item submitted by

Customer Name: Paul Y. Construction Co., Ltd.
Address of Customer: -
Request No.: -
Date of receipt: 19-Apr-2016

Date of test: 10-May-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

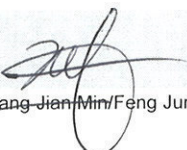
Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

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

Actual Measurement data are documented on worksheets.

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 11-May-2016

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.: 16CA0419 01-01 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	8.0	2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Frequency weightings			
Time weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Peak response	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
R.M.S. accuracy	Single 100µs rectangular pulse	Pass	0.3	
	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

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.

Calibrated by:

Date: 10-May-2016

Fung Chi Yip

- End -

Checked by:

Date: 11-May-2016

J.Q. Feng

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.



Test Data for Sound Level Meter

Page 1 of 5

Sound level meter type: 955 Serial No. 27455 Date 10-May-2016
Microphone type: 7052E Serial No. 50002
Report: 16CA0419 01-01

SELF GENERATED NOISE TEST

The noise test is performed in the most sensitive range of the SLM with the microphone replaced by an equivalent impedance.

Noise level in A weighting < 25.0 dB
Noise level in C weighting < 25.0 dB
Noise level in Lin 10.6 dB

LINEARITY TEST

The linearity is tested relative to the reference sound pressure level using a continuous sinusoidal signal of frequency 4 kHz. The measurement is made on the reference range for indications at 5 dB intervals starting from the 94 dB reference sound pressure level. And until within 5 dB of the upper and lower limits of the reference range, the measurements shall be made at 1 dB intervals. (SLM set to LEQ/SPL)

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
124.0	124.0	124.0	0.7	0.0	0.0
129.0	129.0	129.0	0.7	0.0	0.0
134.0	134.0	134.0	0.7	0.0	0.0
135.0	135.0	135.0	0.7	0.0	0.0
136.0	136.0	136.0	0.7	0.0	0.0
137.0	137.0	137.0	0.7	0.0	0.0
138.0	138.0	138.0	0.7	0.0	0.0
139.0	139.0	139.0	0.7	0.0	0.0
140.0	140.0	140.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	74.0	74.0	0.7	0.0	0.0
69.0	69.0	69.0	0.7	0.0	0.0
64.0	64.0	64.0	0.7	0.0	0.0
59.0	59.0	59.0	0.7	0.0	0.0
54.0	54.0	54.0	0.7	0.0	0.0
49.0	49.0	49.0	0.7	0.0	0.0
44.0	44.0	44.0	0.7	0.0	0.0
39.0	39.0	39.0	0.7	0.0	0.0



Test Data for Sound Level Meter

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Sound level meter type: 955 Serial No. 27455 Date 10-May-2016
Microphone type: 7052E Serial No. 50002
Report: 16CA0419 01-01

34.0	33.9	33.9	0.7	-0.1	-0.1
29.0	28.7	28.7	0.7	-0.3	-0.3
28.0	27.7	27.7	0.7	-0.3	-0.3
27.0	26.7	26.7	0.7	-0.3	-0.3
26.0	25.6	25.6	0.7	-0.4	-0.4
25.0	24.5	24.5	0.7	-0.5	-0.5

Measurements for an indication of the reference SPL on all other ranges which include it

Other ranges	Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
25-140	94.0	94.0	0.7	0.0

Measurements on all level ranges for indications 2 dB below the upper limit and 2 dB above the lower limit

Ranges	Reference/Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
25-140	42.0	42.0	0.7	0.0
	138.0	138.0	0.7	0.0

FREQUENCY WEIGHTING TEST

The frequency response of the weighting networks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency Hz	Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
				+	-	
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.6	1.5	1.5	0.0
63.1	94.0	67.8	67.8	1.5	1.5	0.0
125.9	94.0	77.9	77.9	1.0	1.0	0.0
251.2	94.0	85.4	85.3	1.0	1.0	-0.1
501.2	94.0	90.8	90.7	1.0	1.0	-0.1
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	93.0	1.5	3.0	0.1
12590.0	94.0	89.7	89.6	3.0	6.0	-0.1

Frequency weighting C:

Frequency Hz	Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
				+	-	
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	91.0	1.5	1.5	0.0
63.1	94.0	93.2	93.2	1.5	1.5	0.0
125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0



Test Data for Sound Level Meter

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Sound level meter type: 955 Serial No. 27455 Date 10-May-2016
Microphone type: 7052E Serial No. 50002
Report: 16CA0419 01-01

1995.0	94.0	93.8	93.8	1.0	1.0	0.0
3981.0	94.0	93.2	93.2	1.0	1.0	0.0
7943.0	94.0	91.0	91.1	1.5	3.0	0.1
12590.0	94.0	87.8	87.7	3.0	6.0	-0.1

Frequency weighting Lin:

Frequency Hz	Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
				+	-	
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	94.0	1.5	1.5	0.0
63.1	94.0	94.0	94.0	1.5	1.5	0.0
125.9	94.0	94.0	94.0	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	94.0	1.5	3.0	0.0
12590.0	94.0	94.0	94.0	3.0	6.0	0.0

TIME WEIGHTING FAST TEST

Time weighting F is tested on the reference range with a single sinusoidal burst of duration 200 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
			+	-	
127.0	126.0	126.0	1.0	1.0	0.0

TIME WEIGHTING SLOW TEST

Time weighting S is tested on the reference range with a single sinusoidal burst of duration 500 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
			+	-	
127.0	122.9	122.9	1.0	1.0	0.0

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range.

Positive polarities: (Weighting C, set the generator signal to single, Lcpmax)

Ref. level dB	Response to 10 ms dB	Response to 100 us dB	Tolerance +/- dB	Deviation dB
130.0	130.0	129.8	2.0	-0.2



Test Data for Sound Level Meter

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Sound level meter type: 955 Serial No. 27455 Date 10-May-2016
Microphone type: 7052E Serial No. 50002 Report: 16CA0419 01-01

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
130.0	130.0	129.8	2.0	-0.2

RMS ACCURACY TEST

The RMS detector accuracy is tested on the reference range for a crest factor of 3.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz. (Set to INT)

	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
Time weighting	dB	dB	indication(dB)	+/- dB	dB
Slow	129.0+6.6	129.0	129.0	0.5	0.0

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)

Test frequency: 2000 Hz
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

Ref. Level	Single burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
131.0	122.2	122.1	2.0	-0.1

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
131.0	128.3	128.2	1.0	-0.1

TIME AVERAGING TEST

This test compares the SLM reading for continuous sine signals with readings obtained from a sine tone burst sequence having the same RMS level. The test level is 30 dB below the upper limit of the linearity range and repeated for Type 1 SLM with 40 dB below the upper limit of the linearity.

Frequency of tone burst: 4000 Hz
Duration of tone burst: 1 ms

Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks
msec	dB	dB	dB	+/- dB	dB	
1000	108.0	108.0	107.9	1.0	-0.1	60s integ.
10000	98.0	98.0	97.9	1.0	-0.1	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz
Integration time: 10 sec

The integrating sound level meter set to Leq:



Test Data for Sound Level Meter

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Sound level meter type: 955 Serial No. 27455 Date 10-May-2016
Microphone type: 7052E Serial No. 50002
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Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	85.0	55.0	55.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	85.0	65.0	65.0	1.7	0.0

OVERLOAD INDICATION TEST

For SLM capable of operating in a non-integrating mode.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz.

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
135.0	134.0	131.0	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as follow
The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range
Test frequency: 4000 Hz
Integration time: 10 sec
Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
140.8	139.8	99.8	99.8	2.2	0.0

ACOUSTIC TEST

The acoustic test of the complete SLM is tested at the frequency 125 Hz and 8000 Hz using a B&K type 4226 Multifunction Acoustic Calibrator. The test is performed in A weighting.

Frequency	Expected level	Actual level		Tolerance (dB)		Deviation	
		Hz	dB	Measured (dB)	+		-
1000	94.0		94.0	94.0	0.0	0.0	0.0
125	77.9		77.9	77.9	1.0	1.0	0.0
8000	92.9		94.0	94.0	1.5	3.0	1.1

-----END-----

**APPENDIX D
UPDATED ENVIRONMENTAL
MITIGATION IMPLEMENTATION
SCHEDULE**

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
<i>Ecology (Construction Phase)</i>			
S7.6.2	-	<p><u>Tree Felling and Vegetation Clearance</u></p> <p>Tree felling and compensatory planting will be implemented in accordance with the requirements of ETWB TCW No. 3/2006 as far as practicable.</p> <p><u>Water Quality</u></p> <p>Good construction site practices as required in ProPECC PN1/94 will be followed as appropriate. Implementation of some good construction practices are presented as follows:</p> <ul style="list-style-type: none"> • Containment of silt runoff within the site boundary; • Appropriate storage and disposal of chemicals and chemical waste and the provision of sanitary facilities for on-site workers; • Erection of temporary geo-textile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses; • Avoidance of soil storage against trees or close to water bodies; • No on-site burning of waste; and; • Waste and refuse in appropriate receptacles. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>*</p>
<i>Landscape & Visual (Construction Phase)</i>			
S9.11	-	<p>The following good site practices and measures have been recommended:</p> <ul style="list-style-type: none"> • Re-use of Existing topsoil and fill generated from site • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. • To maximise protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate “No-intrusion Zone” to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should closely monitor and restrict the site working staff from entering the “no-intrusion zone”, even for indirect construction activities and storage of equipment. • All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed for and included in the Contract Specification, which specifies the tree protection requirement, submission and approval system, and the tree monitoring system, 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<ul style="list-style-type: none"> In addition, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites. 	^
Table 9.7	CM1	<u>Site Hoarding</u> Erection of solid screen during construction stage to prevent undesirable views of the construction site from visually sensitive areas.	^
Table 9.7	CM2	<u>Management of facilities on work sites</u> To provide proper site management of the facilities on the sites, give control on the height and disposition/ arrangement of all welfare facilities and construction plant on site to minimise landscape and visual impacts to adjacent VSRs and existing/retained site features.	^
Table 9.7	CM3	<u>Construction programme</u> Employ construction techniques which assist in streamlining construction programme, minimise the duration of plant operations. Consider prefabrication of building elements offsite to minimise on site works and construction period.	^
<i>Air Quality</i>			
-	-	<u>Emission from Vehicles and Plants</u> <ul style="list-style-type: none"> All vehicles shall be shut down in intermittent use. Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD) 	^ ^ ^
<i>Construction Dust Impact</i>			
S6.3.3	-	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation potential dust impacts. 8-time watering per day on exposed worksites is recommended during construction phase to further alleviate the potential construction dust impacts.	^
S6.3.3	-	<ul style="list-style-type: none"> Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones. 	^ ^ ^

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<ul style="list-style-type: none"> • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A⁽²⁾</p> <p>^</p> <p>^</p>
Construction Airborne Noise			
S5.5.6	-	<p>Implement the following good site practices:</p> <ul style="list-style-type: none"> • Louvres should be orientated away from adjacent NSRs, preferably onto the main line of WRL which are less sensitive. • Direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosures should be allowed for in the design for the maintenance buildings, plant buildings and workshops. • The façade and doors for these plant / workshops would have adequate sound insulation properties to minimise the noise emanating through the building fabric to 	<p>N/A⁽²⁾</p> <p>N/A⁽²⁾</p> <p>^</p>

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<p>acceptable level.</p> <ul style="list-style-type: none"> Acoustic treatments such as silencer, acoustic louvers, noise barriers and acoustic enclosures should be installed for the existing equipment where necessary to minimise the cumulative noise impacts on the NSRs. 	^
<i>Water Quality (Construction Phase)</i>			
S12.5	-	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1m³/s a sedimentation basin of 30m³ would be required and for a flow rate of 0.5 m³/s the basin would be 150 m³. The detailed design of the sand/silt traps shall be undertaken by the Contractor prior to the commencement of construction. All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. 	<p style="margin-top: 100px;">^</p> <p style="margin-top: 100px;">^</p> <p style="margin-top: 100px;">N/A⁽²⁾</p> <p style="margin-top: 100px;">^</p> <p style="margin-top: 100px;">N/A⁽²⁾</p>

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<ul style="list-style-type: none"> • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A⁽²⁾</p> <p>^</p> <p>N/A⁽²⁾</p>
S12.5.1.2	-	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. 	^
S12.5.1.3	-	<p><u>Accidental Spillage</u></p>	

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<ul style="list-style-type: none"> In order to prevent accidental spillage of chemicals, proper storage and handling facilities should be provided. All the tanks, containers, storage area should be banded and the locations should be locked as far as possible from the sensitive watercourse and storm water drains. The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation. 	^
Waste Management (Construction Waste)			
S11.5.1	-	<ul style="list-style-type: none"> A trip-ticket system should be established and will comply with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation to monitor the disposal of public fill and solid wastes at public filling facilities and landfills, and to control fly-tipping. 	^
S11.5.1	-	<p><u>C & D Material</u></p> <ul style="list-style-type: none"> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt “Selective Demolition” technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and Implement an enhanced Waste Management Plan, which become a part of the Environmental Management Plan in accordance with “ETWBTC (Works) No. 19/2005 – Waste Management on Construction Site”, to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation. 	^ ^ ^ N/A ⁽²⁾ ^ ^ ^
S11.5.1	-	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. 	^

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<ul style="list-style-type: none"> The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 	^
S11.5.1	-	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided. 	* ^ ^
S11.5.1	-	<p><u>Chemical Waste</u></p> <p>Chemical waste producers should be registered with EPD. For those processes which generate chemical waste, the Contractor shall identify any alternatives that generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.</p> <p>Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows.</p> <p>Containers used for storage of chemical wastes should:</p> <ul style="list-style-type: none"> Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; Have a capacity of less than 450 L unless the specification have been approved by EPD; and Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. <p>The storage area for chemical wastes should:</p> <ul style="list-style-type: none"> Be clearly labelled and used solely for the storage of chemical wastes; Be enclosed on at least 3 sides; Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the 	^ N/A ⁽²⁾ ^ ^ ^

Appendix D - MTR Works Contract 1117–Summary of Environmental Mitigation Implementation Schedule

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<p>area, whichever is greatest;</p> <ul style="list-style-type: none"> • Have adequate ventilation; • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste, if necessary); and • Be arranged so that incompatible materials are adequately separated. <p>Disposal of chemical waste should:</p> <ul style="list-style-type: none"> • Be via a licensed waste collector; and • Be to a facility licensed to receive chemical waste, such as the CWTC which also offers a chemical waste collection service and can supply the necessary storage containers; or • Be to a re-user of the waste, under approval from EPD. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A⁽²⁾</p>

Remarks:

(1) The latest Environmental Review Report (ERR) for Pat Heung Depot Modification Works is referred in preparation of this summary.

^ Compliance of mitigation measure X Non-compliance of mitigation measure

- Non-compliance but rectified by the contractor

- * Recommendation was made during site audit but improved/rectified by the contractor.

- # Recommendation was made during site audit but not yet improved/rectified by the contractor.

N/A⁽¹⁾ Not Applicable

N/A⁽²⁾ Not Applicable at this stage

**APPENDIX E
ENVIRONMENTAL MONITORING
SCHEDULE**

Contract No. SCL 1117
 Pat Heung Depot Modification Works
 Impact Noise Monitoring Schedule for Oct 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Oct
2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
		Noise (1) at NM1, NM2 & NM3A				
9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
				Noise (1) at NM1, NM2 & NM3A		
16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
				Noise (1) at NM1, NM2 & NM3A		
23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
		Noise (1) at NM1, NM2 & NM3A				
30-Oct	31-Oct					
	Noise (1) at NM1, NM2 & NM3A					

Noise Monitoring Station:

NM1 - Tourmaline Villa
 NM2 - Kam Po Road
 NM3A - Tai Kek Tsuen

Category	Time Period
(1)	0700-1900 hrs on normal weekdays

**APPENDIX F
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

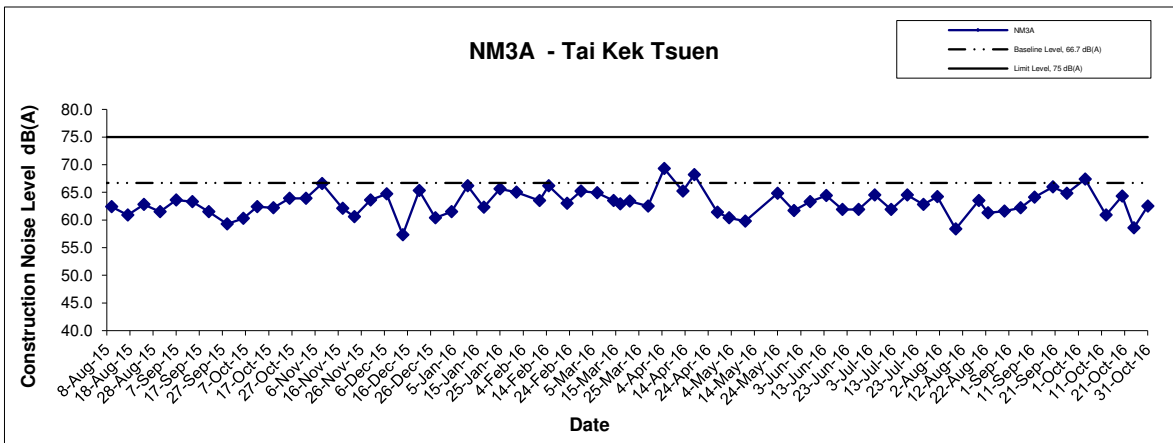
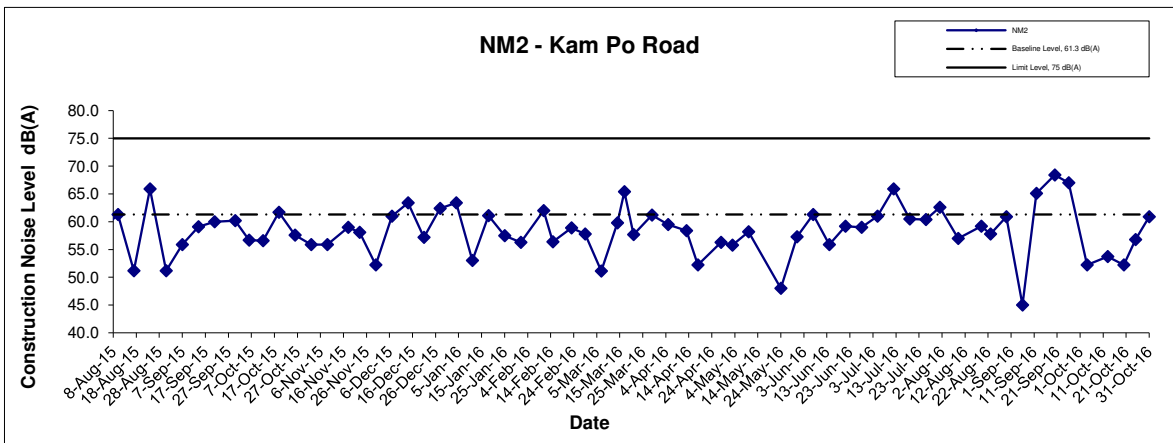
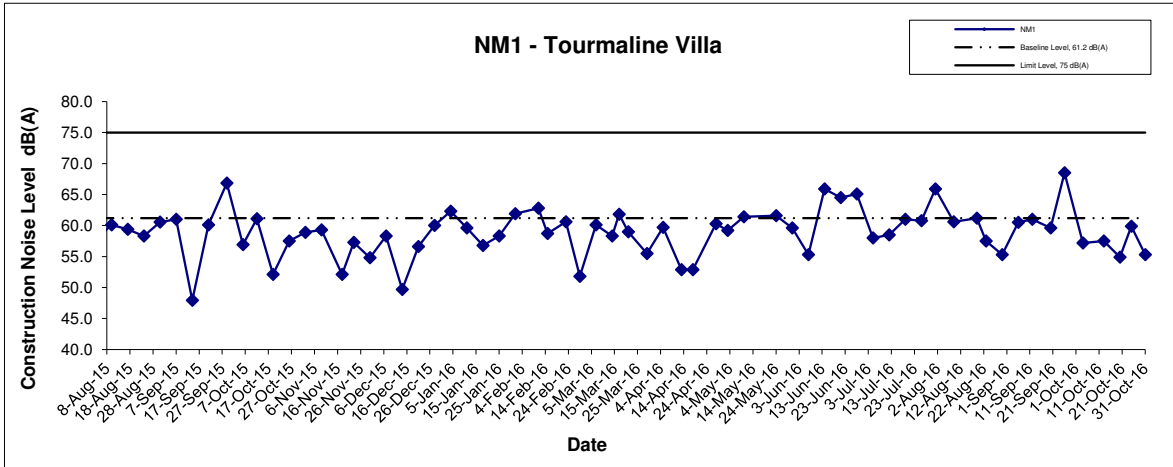
Appendix F - Noise Monitoring Results

Location NM1 - Tourmaline Villa							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
4-Oct-16	9:55	Sunny	57.2	54.1	52.2	61.2	57.2 Measured ≤ Baseline
13-Oct-16	9:57	Sunny	57.5	57	50.2		57.5 Measured ≤ Baseline
20-Oct-16	14:22	Sunny	54.9	53.6	48.2		54.9 Measured ≤ Baseline
25-Oct-16	14:13	Sunny	59.9	60.7	53.4		59.9 Measured ≤ Baseline
31-Oct-16	9:40	Cloudy	62.2	64.6	45.9		55.3

Location NM2 - Kam Po Road							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
4-Oct-16	9:13	Sunny	61.8	61.3	48.1	61.3	52.2
13-Oct-16	9:17	Sunny	53.7	55.8	49.7		53.7 Measured ≤ Baseline
20-Oct-16	15:02	Sunny	61.8	58.4	47.1		52.2
25-Oct-16	14:55	Sunny	56.8	57.6	53.2		56.8 Measured ≤ Baseline
31-Oct-16	9:00	Cloudy	60.9	60.7	45.7		60.9 Measured ≤ Baseline

Location NM3A - Tai Kek Tsuen							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
4-Oct-16	11:15	Sunny	70.1	74.1	53	66.7	67.4
13-Oct-16	10:44	Sunny	60.9	63.7	50.8		60.9 Measured ≤ Baseline
20-Oct-16	13:36	Sunny	64.3	66.3	55		64.3 Measured ≤ Baseline
25-Oct-16	15:40	Sunny	58.6	57.8	53		58.6 Measured ≤ Baseline
31-Oct-16	10:25	Cloudy	62.5	60.8	52.3		62.5 Measured ≤ Baseline

Noise Levels



Title MTR Works Contract 1117 Pat Heung Depot Modification Works Graphical Presentation of the Construction Noise Monitoring Results	Scale N.T.S	Project No. MA13003	
	Date Oct-16	Appendix F	

**APPENDIX G
WASTE GENERATION IN THE
REPORTING MONTH**

Paul Y. Construction Company, Limited
MTR Contract 1117
Pat Heung Depot Modification Works

Monthly Summary Waste Flow Table for 2016 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed to Sorting Facilities	Disposed to Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	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 '000m ³)	(in '000 kg)	(in kg)	(in kg)	(in kg)	(in '000m ³)
Jan '16	0.162	-	-	-	0.000	0.162	-	-	340	-	-	0.020
Feb '16	0.398	-	-	-	0.010	0.388	-	3.3	274	-	-	0.000
Mar '16	0.606	-	-	-	0.003	0.603	-	-	221	-	-	0.007
Apr '16	0.302	-	-	-	0.048	0.254	-	-	242	-	-	0.080
May '16	0.592	-	-	-	0.014	0.578	-	-	500	-	-	0.023
Jun '16	0.987	-	-	-	0.036	0.951	-	19.06	183	-	-	0.004
Sub-total	3.047				0.111	2.936		22.360	1760			0.135
Jul '16	0.629	-	-	-	0.016	0.613	-	3.25	230	-	-	0.024
Aug '16	0.147	-	-	-	0.046	0.101	-	4.7	200	-	-	0.048
Sep '16	0.660	-	-	-	0.000	0.660	-	2.090	155	-	-	0.020
Oct '16	0.004	-	-	-	0.000	0.004	-	0.000	0	-	-	0.000
Nov '16												
Dec '16												
Total	4.487				0.174	4.314		32.400	2345.000			0.228

Note:

Assume the densities of Rock, Soil, Mix Rock and Soil are Regular Spoil to be 2.0 tonnes/m³. Assumption the densities of general refuse is 1.0 tonnes/m³

APPENDIX H
SITE AUDIT SUMMARY

***Shatin to Central Link -
Contract 1117 Pat Heung Depot Modification Works***

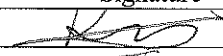

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161005
Date	5 October 2016 (Wednesday)
Time	0900-1030

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
161005-R01	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> The Contractor was reminded to properly remove the general refuse observed in Area A. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Remark</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:160927), all the environmental deficiencies were rectified by the Contractor. 	F ii

	Name	Signature	Date
Recorded by	Kelvin Koo		5 October 2016
Checked by	Dr. Priscilla Choy		5 October 2016

**Shatin to Central Link -
Contract 1117 Pat Heung Depot Modification Works**



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161012
Date	12 October 2016 (Wednesday)
Time	0900-1030

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Remark</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:161005), all the environmental deficiencies were rectified by the Contractor. 	

	Name	Signature	Date
Recorded by	Benjamin Wong		12 October 2016
Checked by	Dr. Priscilla Choy		12 October 2016

**Shatin to Central Link -
Contract 1117 Pat Heung Depot Modification Works**

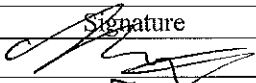

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161018
Date	18 October 2016 (Tuesday)
Time	0900-1030

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
161018-R01	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> To remove the C&D waste found on the road in Area D. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Remark</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:161012), no major environmental deficiency was identified during the site inspection. 	F 4ii

	Name	Signature	Date
Recorded by	Benjamin Wong		18 October 2016
Checked by	Dr. Priscilla Choy		18 October 2016

*Shatin to Central Link -
Contract 1117 Pat Heung Depot Modification Works*

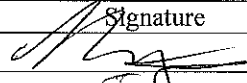

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161027
Date	27 October 2016 (Thursday)
Time	0900-1030

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Remark</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:161018), all the environmental deficiency was rectified/ improved by the Contractor. 	

	Name	Signature	Date
Recorded by	Benjamin Wong		27 October 2016
Checked by	Dr. Priscilla Choy		27 October 2016

**APPENDIX I
SUMMARY OF EXCEEDANCE**

APPENDIX I – SUMMARY OF EXCEEDANCE

Reporting Month: October 2016

a) Exceedance Report for Noise Monitoring (NIL)

**APPENDIX J
CUMULATIVE LOG FOR COMPLAINTS,
NOTIFICATIONS OF SUMMONS AND
SUCCESSFUL PROSECUTIONS**

Appendix J - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed
--	--	--	--	--	--

Cumulative Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
--	--	--	--	--	--