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

By Courier

10 December 2015

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

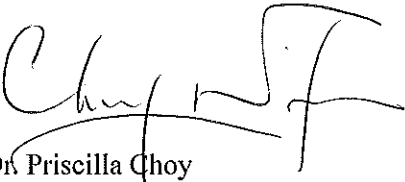
- Monthly Noise Monitoring Report (November 2015) for Pat Heung Depot Modification Works

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
November 2015**

(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. 33

[Period from 1 to 30 November 2015]

(December 2015)

Verified by: _____ Fredrick Leong



Position: Independent Environmental Checker

Date: 16 Dec. 2015

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EXECUTIVE SUMMARY

Introduction

1. This is the 33rd 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 November to 30 November 2015 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
 - Sheet-piling
 - Embankment works, drainage works, manholes excavation
 - Waterproofing work P-Way Workshop
 - ABWF Works
 - Cross track ducts construction
 - Cable trough laying
 - Hydroseeding
 - Construction 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 1,159 m³ of inert C&D materials were generated during the reporting period. Non-inert C&D wastes include 7,740 kg of metals, 250 kg of paper/cardboard packaging materials and 17 m³ of general refuse were generated during the reporting period. The inert C&D materials generated from the

Project were disposed of at TM 38 Area Fill Bank, while all non-inert waste was disposed of at NENT.

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. Major site activities for the coming reporting month will include:
- Site clearance and formation, site surveying
 - Sheet-piling
 - Embankment works, drainage works, manholes excavation
 - Waterproofing work P-Way Workshop
 - ABWF Works
 - Cross track ducts construction
 - Cable trough laying
 - Strengthening works for OHL Mast at Location 2 & 5
 - Hydroseeding
 - Construction of FAO Fencing

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 33rd Monthly Noise Monitoring Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 November to 30 November 2015 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 tentative construction programme is presented in **Appendix A**.
- Site clearance and formation, site surveying
 - Sheet-piling
 - Embankment works, drainage works, manholes excavation
 - Waterproofing work P-Way Workshop
 - ABWF Works
 - Cross track ducts construction
 - Cable trough laying
 - Hydroseeding
 - Construction 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-RN0385-15 (Area D: Location 2 OHL Footing and Noise Barrier Modification near to Kam Sheung Road Station) – 1 st renewal	25/6/2015	1/1/2016	Valid
GW-RN0527-15 (Area D: Location 5 Noise Barrier and OHL Modification)	27/8/2015	26/11/2015	Expired
GW-RN0739-15 (Area D: Location 5 Noise Barrier and OHL Modification) - 2 nd Renewal	27/11/2015	26/02/2016	Valid

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 (October 2015)	13 th November 2015

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 and non-inert waste generated from the Project were disposed of at TM 38 Area Fill Bank and NENT respectively. 250 kg of 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
November 2015	1,159 m ³	17 m ³	0 kg	250 kg	0 kg	7,740 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 3, 11, 16 and 24 November 2015 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 16 November 2015. 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>	11 November 2015	<u>Reminder:</u> Water in sedimentation tank in Area B was observed muddy. The Contractor was reminded to remove the sediment from the tank regularly.	The accumulated sediment was removed by the Contractor. Closing Date: 24 November 2015
<i>Noise</i>	N/A	N/A	N/A
<i>Tree Protection/ Landscape and Visual</i>	16 November 2015	<u>Observation:</u> Construction material was observed accumulated in the tree protection zone located near the entrance in the Area A. The Contractor was reminded to remove the construction waste from the tree protection zone.	Follow up status will be provided in the next reporting month.
<i>Air Quality</i>	27 October 2015	<u>Observation:</u> Haul road in Area D is observed dry and dusty. The Contractor is reminded to provide regular water spray to the haul road in Area D to suppress dust generation.	The haul road is observed wet and the dust generation is suppressed. Closing Date: 3 November 2015
	11 November 2015	<u>Reminder:</u> The Contractor was reminded to cover the stockpile in the Area A to suppress dust generation.	The stockpile was covered properly. Closing Date: 16 November 2015
	11 November 2015	<u>Reminder:</u> The Contractor was reminded to provide water spray to the haul road in Area C & D to suppress dust generation.	Water spray was provided to the haul road regularly by the Contractor and the dust generation was minimized. Closing Date: 16 November 2015
	16 November 2015	<u>Reminder:</u> Frequent water spray should be provided to the haul road in Area C to increase the efficiency of dust suppression.	The haul road in Area C was observed wet and it is believed that sufficient water spray was provided for dust suppression. Closing Date: 24 November 2015
<i>Waste / Chemical Management</i>	N/A	N/A	N/A
<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 Key issues to be considered in the coming month include:
- Handling of waste water arising from drilling works and surface run-off;
 - Dust control during loading of materials and excavation;
 - Oil leakage from equipment;
 - Noise nuisance generated by on-site construction and demolition works; and
 - Protection of retained trees within construction site.
 - Maintaining the sand bags and bunding at the u-channel to prevent muddy run-off from directly accessing the main drainage channels.

Monitoring Schedule for the Next Month

- 8.2 The tentative construction noise monitoring schedule for the next month is shown in **Appendix E**.

Construction Programme for the Next Month

- 8.3 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:
- Site clearance and formation, site surveying
 - Sheet-piling
 - Embankment works, drainage works, manholes excavation
 - Waterproofing work P-Way Workshop
 - ABWF Works

- Cross track ducts construction
- Cable trough laying
- Strengthening works for OHL Mast at Location 2 & 5.
- Hydroseeding
- Construction of FAO Fencing

9 CONCLUSIONS

Conclusions

- 9.1 This Monthly Noise Monitoring Report presents the EM&A works undertaken during the period from 1 November to 30 November 2015 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.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

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

Water Quality

- Sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all time;

Waste and Chemical Management

- Good site practice of providing drip trays for temporary use of chemicals is recommended to sustain; Drip trays should be properly maintained;
- Proper maintenance should be provided to equipment in site to prevent oil leakage;
- Oil stains on the floor are to be treated as chemical waste and cleaned off immediately.

Air Quality

- Proper covering of stockpile, especially cement, should be provided to reduce dust generation;
- Adequate water spraying should be applied on the haul roads and site entrances to reduce dust emission generated by traffic movement.

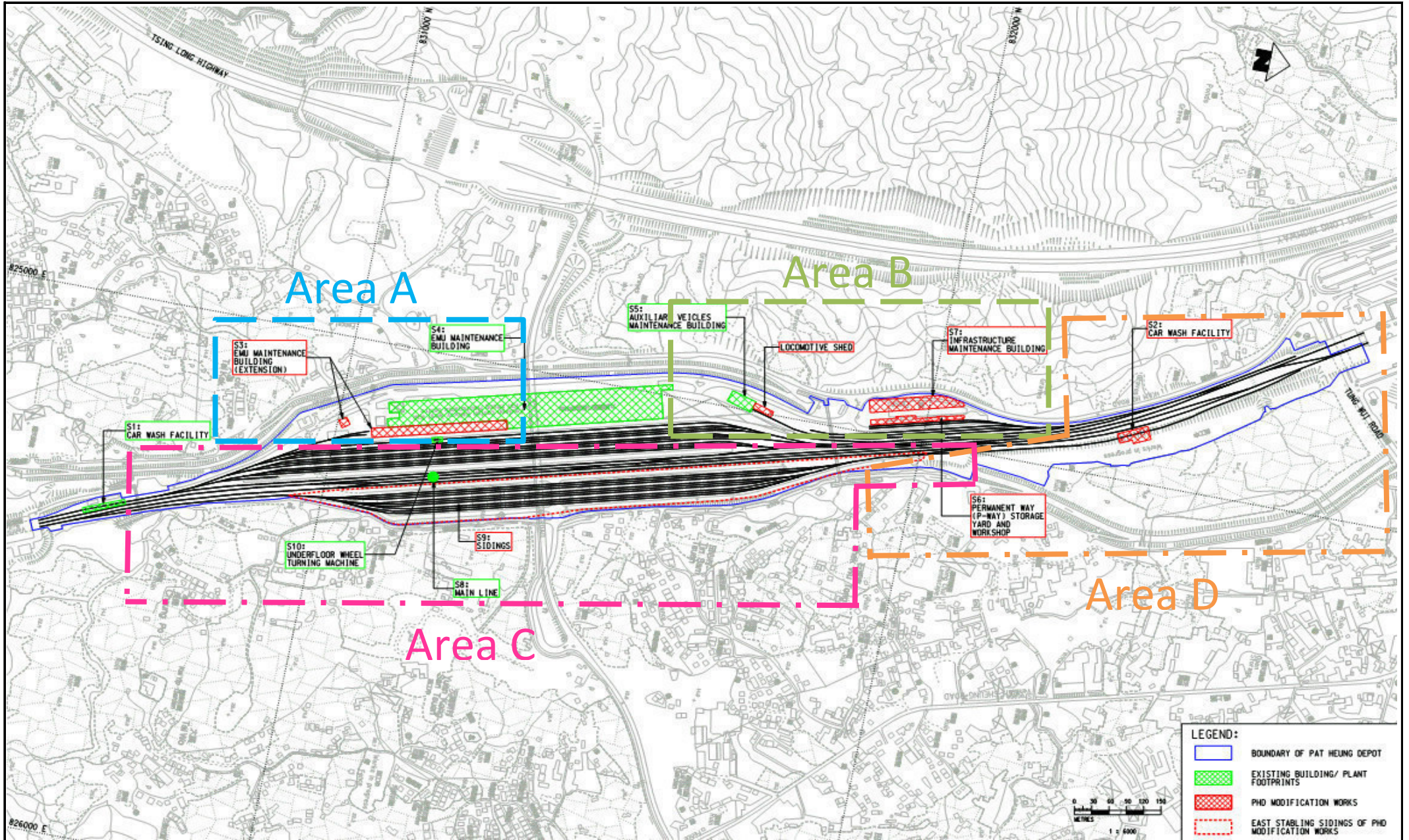
Tree Protection / Landscape and Visual

- To erect and maintain the protection fence around the retained trees;
- Avoid any construction materials being stored inside the tree protection zone.

Construction Noise Impact

- Maintain the mechanical equipment to reduce noise nuisance.
- Provide temporary noise barriers for operations of mechanical equipment near noise sensitive receivers in an appropriate location.

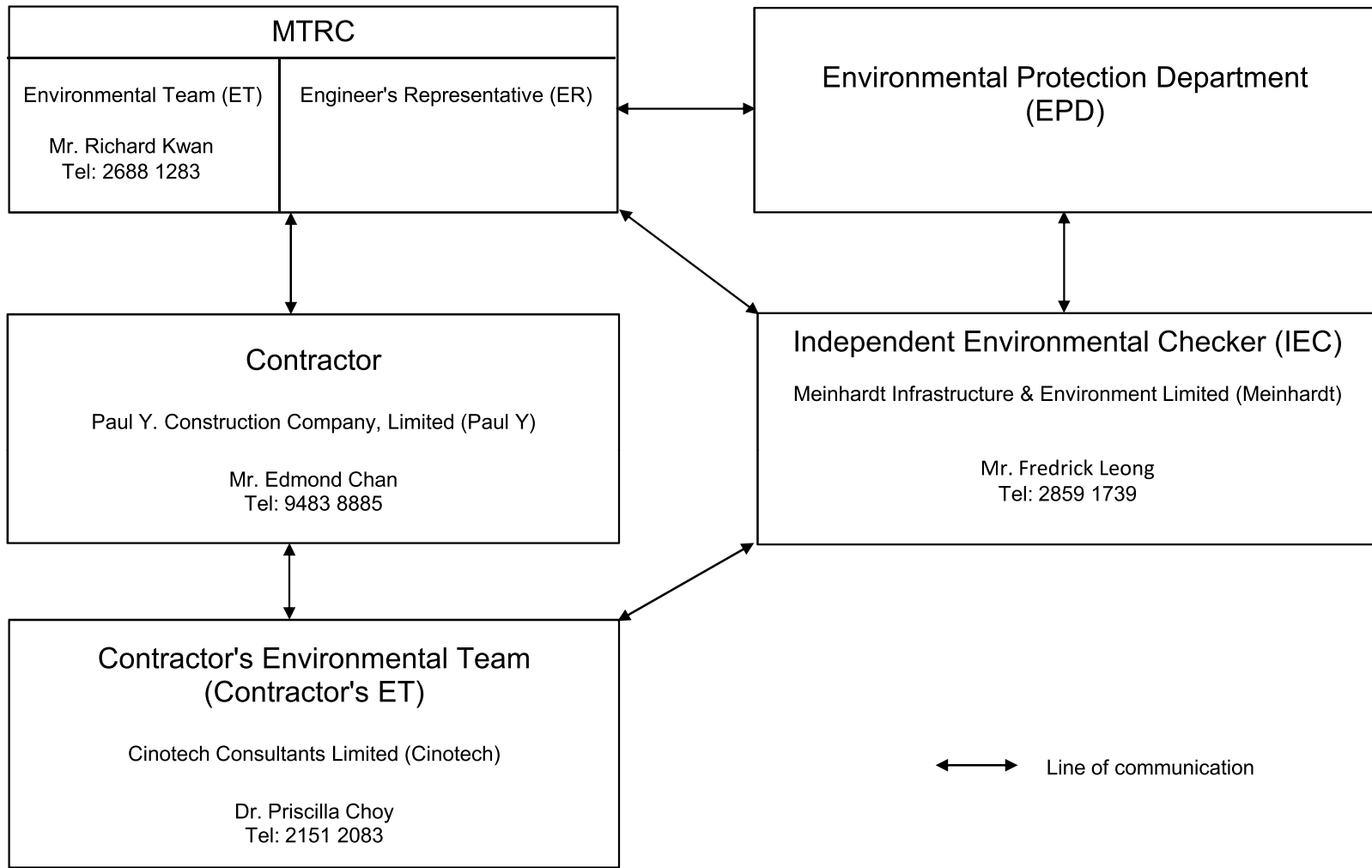
FIGURES



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

Date

Aug-13

Propose

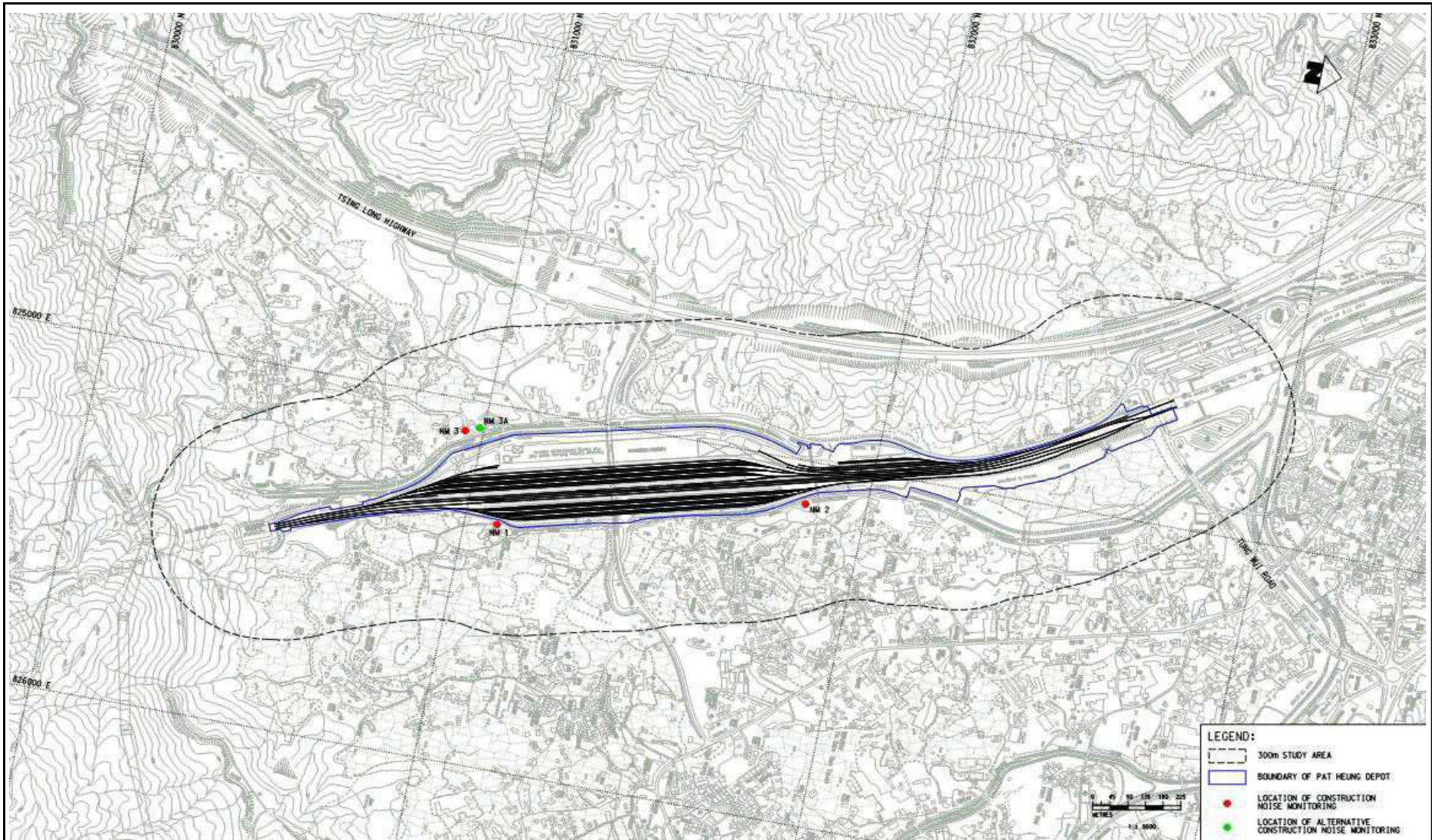
No.

MA13003

Figure

2

CINOTECH




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

04-Dec-13

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Late Start	Late Finish	Total Float	2013												2014												2015												2016											
									D	J	F	A	J	J	A	S	O	N	D	J	F	A	J	J	A	S	O	D	J	F	A	J	J	A	S	O	N	D	J	F	A	J	J	A	S	O	D	J	F	A						
Area B - New Fuel Station - Works Area W5A		95	12	01-Mar-13 A	13-Aug-13	27-Jul-13	25-Sep-13	36																																																
Demolition		6	0	30-Mar-13 A	06-Apr-13 A	27-Jul-13	27-Jul-13																																																	
Hoarding Erection (Stage 1)		6	0	12-Mar-13 A	28-Mar-13 A	27-Jul-13	27-Jul-13																																																	
E0 - Geotechnical Instrumentation and Monitoring		12	0	01-Mar-13 A	14-Mar-13 A	27-Jul-13	27-Jul-13																																																	
E1 - Excavation and Foundation		9	0	06-Apr-13 A	23-Apr-13 A	27-Jul-13	27-Jul-13																																																	
E2 - Civil & Structures Works		43	0	24-Apr-13 A	31-Jul-13 A	27-Jul-13	27-Jul-13																																																	
E4 - BS Installation Works		40	0	01-Jun-13 A	11-Jul-13 A	27-Jul-13	27-Jul-13																																																	
Interfacing Coordination (Area B)		14	14	31-Jul-13	13-Aug-13	12-Sep-13	25-Sep-13	43																																																
Area B - AVM Building - Works Area W5B		170	170	17-Aug-13	13-Mar-14	16-Dec-13	30-Mar-14	14																																																
ABWF Works (AVMB Building) (Area B)		48	48	17-Aug-13	15-Oct-13	16-Dec-13	15-Feb-14	100																																																
BS Installation Works (AVMB Building) (Area B)		36	36	28-Jan-14	13-Mar-14	17-Feb-14	30-Mar-14	14																																																
Area B - Infrastructure Maintenance Building (IMB)		699	665	22-Apr-13 A	27-Oct-15	17-Sep-13	28-Nov-15	28																																																
E1 - Excavation and Foundation		268	234	22-Apr-13 A	16-May-14	17-Sep-13	05-Jul-14	41																																																
E2 - Civil & Structures Works		162	162	17-May-14	27-Nov-14	07-Jul-14	17-Jan-15	41																																																
E3 - ABWF Works		220	220	28-Nov-14	27-Aug-15	02-Feb-15	31-Oct-15	53																																																
E4 - BS Installation Works		220	220	28-Nov-14	27-Aug-15	19-Jan-15	31-Oct-15	53																																																
Transformer Room at IMB		252	252	20-Jun-14	25-Apr-15	17-Oct-14	26-Apr-15	0																																																
Lift Shaft at IMB		329	329	17-Sep-14	27-Oct-15	30-Apr-15	28-Nov-15	28																																																
Area B - Permanent Way (P-Way) Workshop		659	659	15-Jul-13 A	20-Oct-15	14-Aug-13	31-Oct-15	10																																																
E1 - Excavation and Foundation		134	134	04-Aug-14	14-Jan-15	14-Aug-14	24-Jan-15	10																																																
E2 - Civil & Structures Works		54	54	14-Jan-15	21-Mar-15	26-Jan-15	01-Apr-15	10																																																
E3 - ABWF Works		88	88	21-Mar-15	11-Jul-15	02-Apr-15	31-Oct-15	94																																																
E4 - BS Installation Works		172	172	21-Mar-15	20-Oct-15	16-Apr-15	31-Oct-15	10																																																
E5 - Associated Works		299	299	15-Jul-13 A	02-Aug-14	14-Aug-13	14-Aug-14	10																																																
Area B - New Loco Shed - Works Area W5C		298	298	25-Jul-13 A	01-Aug-14	17-Sep-13	27-Sep-14	48																																																
E1 - Excavation and Foundation		110	110	25-Jul-13 A	09-Dec-13	17-Sep-13	20-Dec-13	10																																																
E2 - Civil & Structures Works		48	48	19-Oct-13	13-Dec-13	26-Oct-13	20-Dec-13	6																																																
E3 - ABWF Works		82	82	14-Dec-13	26-Mar-14	21-Dec-13	09-Jun-14	57																																																
E4 - BS Installation Works		156	156	20-Jan-14	01-Aug-14	03-Feb-14	27-Sep-14	48																																																
Interfacing Coordination (Loco Shed)		0	0	18-Jan-14	18-Jan-14	25-Jan-14	25-Jan-14	6																																																
New Training Track		104	67	17-Jun-13 A	21-Oct-13	31-Jul-13	21-Oct-13	0																																																
New Training Track - Works Area W6A (Area B)		104	67	17-Jun-13 A	21-Oct-13	31-Jul-13	21-Oct-13	0																																																
Miscellaneous and External Works (Overhead Crane)		424	424	18-Dec-13	30-May-15	23-Dec-13	25-Jul-15	47																																																
Overhead Crane - Works Area W6/W6B/W6D		424	424	18-Dec-13	30-May-15	23-Dec-13	25-Jul-15	47																																																
Area C - East Stabling/Extg Loco Shed/Noise Barrier 3 & 4/Extg A100 Road		588	514	22-Oct-12 A	27-Apr-15	31-Jul-13	25-Sep-15	126																																																
Preliminary Works Submission (Area C)		314	240	03-Dec-12 A	23-May-14	31-Jul-13	29-Aug-14	82																																																
Materials Procurement (Area C)		35	0	22-Oct-12 A	31-Dec-12 A	31-Jul-13	02-Aug-13																																																	
Materials Submission (Area C)		24	5	17-Jun-13 A	05-Aug-13	28-Aug-13	02-Sep-13	24																																																
Site Construction Works (Area C)		588	514	21-Nov-12 A	27-Apr-15	31-Jul-13	25-Sep-15	126																																																
Site Preparation Works (Works Areas W11, W12, W13, W3a & W3b)		360	286	21-Nov-12 A	18-Jul-14	31-Jul-13	05-Aug-14	15																																																
Demolition		360	286	21-Nov-12 A	18-Jul-14	31-Jul-13	05-Aug-14	15																																																
General Site Clearance		48	0	28-Dec-12 A	27-Feb-13 A	31-Jul-13	31-Jul-13																																																	
Area C - Existing Loco Shed		24	24	02-Aug-14	29-Aug-14	30-Aug-14	27-Sep-14	24																																																
Demolition		24	24	02-Aug-14	29-Aug-14	30-Aug-14	27-Sep-14	24																																																
Miscellaneous and External Works (Pipe Jacking Works)		269	268	17-Jun-13 A	27-Jun-14	02-Aug-13	29-Jun-14	1																																																

 保華建築有限公司 Paul Y. Construction Company, Limited	■ Remaining Level of Effort ■ Actual Work ■ Remaining Work	■ Critical Remaining Work ◆ Milestone	Revised Construction Programme (CP04Frev1) Page 2 of 3 06-Sep-14	SCL 1117 Pat Heung Depot Modification Works			
				Date	Revision	Che...	Ap...
					04-Dec-13	CP04Frev1 (updated ver...	

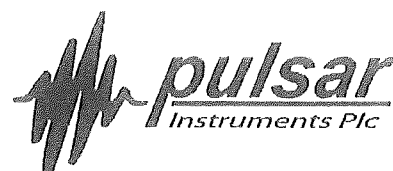
APPENDIX B
EVENT AND ACTION PLAN

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**

the sound investment



Model 105 & 106

Acoustic Calibrators

- Advanced performance ensures that both models meet or exceed IEC 60942 accuracy requirements
- Ergonomic and robust design
- Auto correction for temperature and barometric pressure
- Auto switch-off in normal mode and 'permanent-on' mode available
- Low battery indicator
- 94dB Sound Pressure Level
- Fits 1/2 inch international standard microphones
- 1/4 inch microphone adapter available



The Models 105 & 106 are part of the NEW generation of Pulsar Instruments acoustic calibrators that allow you to quickly check the accuracy of your sound level meter or dosimeter thus complying with International regulations and codes of practice.

Great care has been taken during the design process to ensure that the units are comfortable to hold, robust and easy to use, whilst performing accurately throughout a wide range of temperature, humidity and pressure conditions.

In use they fit over the microphone of the instrument and produce a stable 1kHz tone at 94dB, the frequency and sound level respectively, as mandated by the standard.

The Model 105 meets the precision of Class 1 of IEC 60942, while the lower cost Model 106 meets industrial Class 2.

The calibrators are powered by an easy to access single 9 volt battery giving many months or even years of operation. An automatic shut-off circuit ensures power conservation should you forget to switch the unit off after calibrating.



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SOILS & MATERIALS ENGINEERING CO., LTD.

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香港黃竹坑道37號利達中心地下·9樓·12樓·13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com

Tel : (852) 2873 6860
Fax : (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0518 02-02 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. General Contractors Limited
Address of Customer: -
Request No.: -
Date of receipt: 18-May-2015

Date of test: 20-May-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2743150	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

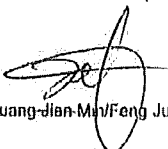
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using Insert voltage technique.
- The results 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.

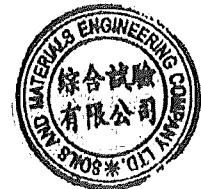
Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:


Huang Jian-Min/Feng Jun Qi

Date: 21-May-2015

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.



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Fax : (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

15CA0518 02-02

Page: 2 of 2

1, Measured Sound Pressure Level

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

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 µPa)
			Estimated Expanded Uncertainty dB
1000	94.00	93.77	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 = 0.003 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:

Date: 20-May-2015

Fung Chi Yip

Checked by:

Date: 21-May-2015

Lam Tzo Wai

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

SVAN

Head office. ✓



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E-mail: smec@cigsmecc.com Website: www.cigsmecc.com

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Fax : (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0518 02-01 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. General Contractors Limited
Address of Customer: -
Request No.: -
Date of receipt: 18-May-2015

Date of test: 20-May-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound callibrator	B&K 4226	2288444	20-Jun-2015	CIGSMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 20 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

- 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.
- 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%.
- 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.

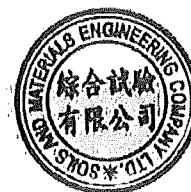
Actual Measurement data are documented on worksheets.

Approved Signatory:


Huang Jiarui/Feng Jun Qi

Date: 21-May-2015

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.



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E-mail: smec@clgismec.com Website: www.clgismec.com

Tel : (852) 2873 6860
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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0518 02-01 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	1.6	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	A	Pass	0.3
Time weightings	C	Pass	0.3	
	Lin	Pass	0.3	
	Single Burst Fast	Pass	0.3	
Peak response	Single Burst Slow	Pass	0.3	
	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
	Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3
Time averaging	Repeated at frequency of 100 Hz	Pass	0.3	
	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	
	Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4
Overload indication	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.

- End -

Calibrated by:

Fung Chi Yip
Date: 20-May-2015

Checked by:

Lam Tze Wal
Date: 21-May-2015

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.



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A CIGIS GROUP COMPANY

Test Data for Sound Level Meter

Page 1 of 5

Sound level meter type: 955 Serial No. 27455 Date 20-May-2015
Microphone type: 7052E Serial No. 50002 Report: 15CA0518 02-01

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 < 25.0 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	43.9	43.9	0.7	-0.1	-0.1



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A CIGIS GROUP COMPANY

Test Data for Sound Level Meter

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Sound level meter type: 955 Serial No. 27455 Date 20-May-2015
 Microphone type: 7052E Serial No. 50002

Report: 15CA0518 02-01

39.0	38.9	38.9	0.7	-0.1	-0.1
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	27.6	27.6	0.7	-0.4	-0.4
27.0	26.5	26.5	0.7	-0.5	-0.5
26.0	25.4	25.4	0.7	-0.6	-0.6

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	27.0	26.5	0.7	-0.5
	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	95.1	1.0	1.0	-0.1
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.6	3.0	6.0	-0.1

Frequency weighting C:

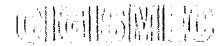
Frequency Hz	Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
				+	-	
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	91.0	1.5	1.5	0.0
63.1	94.0	93.2	93.1	1.5	1.5	-0.1



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125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	93.9	1.0	1.0	-0.1
501.2	94.0	94.0	94.0	1.0	1.0	0.0
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	91.0	1.5	3.0	0.0
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	93.9	1.5	1.5	-0.1
63.1	94.0	94.0	93.9	1.5	1.5	-0.1
125.9	94.0	94.0	93.9	1.0	1.0	-0.1
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	93.9	1.0	1.0	-0.1
1995.0	94.0	94.0	93.9	1.0	1.0	-0.1
3981.0	94.0	94.0	93.9	1.0	1.0	-0.1
7943.0	94.0	94.0	93.9	1.5	3.0	-0.1
12590.0	94.0	94.0	93.9	3.0	6.0	-0.1

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)



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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

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)

Time weighting	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
	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
	Expected (dB)	Actual (dB)		
131.0	122.2	122.2	2.0	0.0

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
	Expected (dB)	Actual (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



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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:

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
140.9	139.9	99.9	99.9	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)			dB
1000	94.0	94.0	0.0	0.0	0.0
125	77.9	77.9	1.0	1.0	0.0
8000	92.9	93.9	1.5	3.0	1.0

-----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. 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 	* ^ ^ ^

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

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<p>the vehicle;</p> <ul style="list-style-type: none"> • 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>N/A⁽²⁾</p> <p>^</p> <p>^</p>
<i>Construction Airborne Noise</i>			
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 acceptable level. 	<p>N/A⁽²⁾</p> <p>N/A⁽²⁾</p> <p>^</p>

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		<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. 	^
Water Quality (Construction Phase)			
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. 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 	<p style="margin-top: 0;">^</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> <p style="margin-top: 100px;">*</p>

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ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		<p>particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</p> <ul style="list-style-type: none"> • 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>N/A⁽²⁾</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p>N/A⁽²⁾</p> <p style="text-align: center;">^</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. 	<p style="text-align: center;">^</p>
S12.5.1.3	-	<p><u>Accidental Spillage</u></p> <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 	<p style="text-align: center;">^</p>

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		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. 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 	^ ^

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

ERR ⁽¹⁾ Ref.	ID No.	Recommended Mitigation Measures	Status
		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 area, whichever is greatest; 	^ N/A ⁽²⁾ ^ ^ ^

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"> • 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 November 2015

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

Contract No. SCL 1117
 Pat Heung Depot Modification Works
 Tentative Impact Noise Monitoring Schedule for December 2015

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

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**

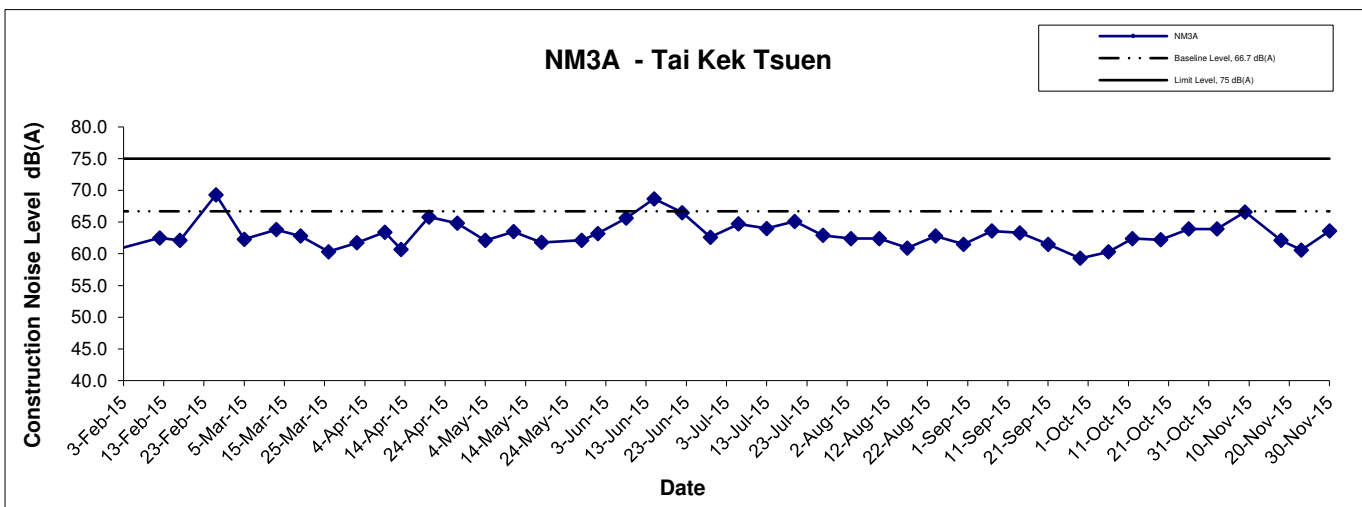
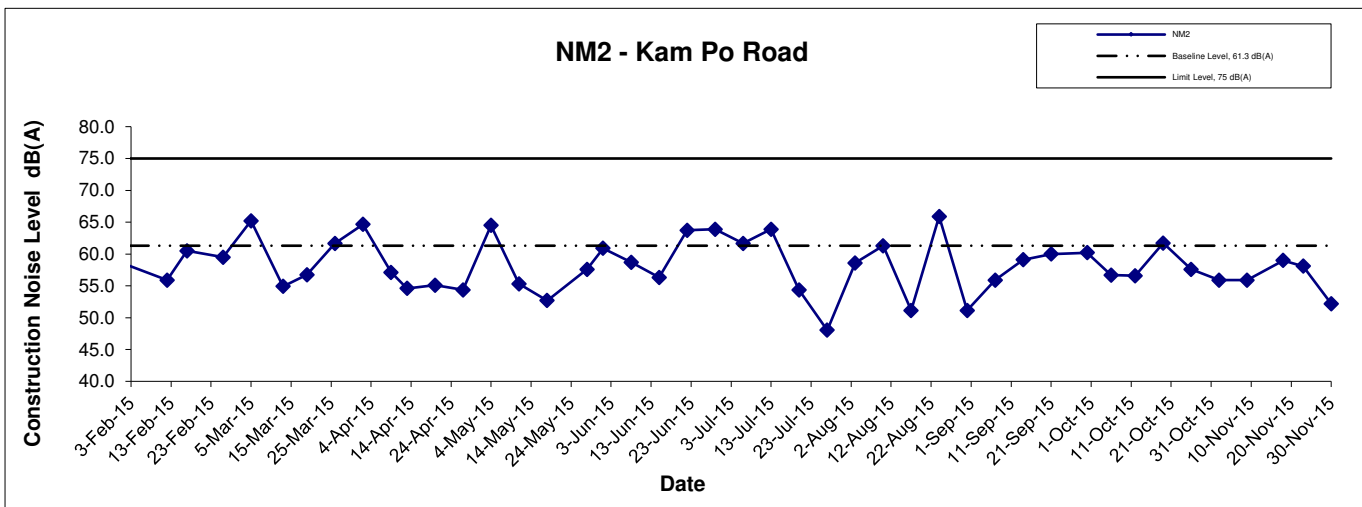
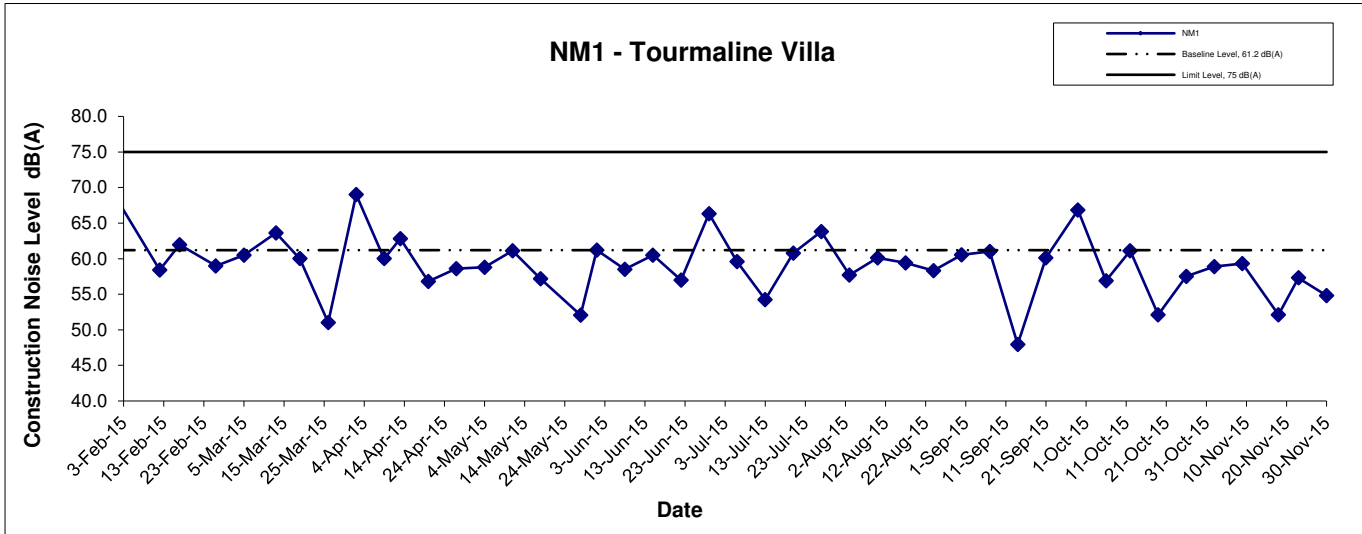
Appendix F - Noise Monitoring Results

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}
2-Nov-15	10:06	Cloudy	58.9	59.6	45.4	61.2	58.9 Measured ≤ Baseline
9-Nov-15	10:10	Sunny	59.3	58	46.1		59.3 Measured ≤ Baseline
18-Nov-15	9:42	Sunny	61.7	56.4	46.8		52.1
23-Nov-15	9:46	Sunny	57.3	55.9	45.9		57.3 Measured ≤ Baseline
30-Nov-15	9:44	Sunny	62.1	60.1	48		54.8

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}
2-Nov-15	10:43	Cloudy	55.9	54.5	45.5	61.3	55.9 Measured ≤ Baseline
9-Nov-15	10:55	Sunny	55.9	57.5	46.2		55.9 Measured ≤ Baseline
18-Nov-15	10:25	Sunny	63.3	60.5	49		59
23-Nov-15	10:30	Sunny	63	59.7	46.4		58.1
30-Nov-15	10:24	Sunny	61.8	55.9	44.4		52.2

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}
2-Nov-15	9:00	Cloudy	63.9	57.1	52	66.7	63.9 Measured ≤ Baseline
9-Nov-15	9:15	Sunny	66.6	67.1	54		66.6 Measured ≤ Baseline
18-Nov-15	8:56	Sunny	62.1	58.8	53.6		62.1 Measured ≤ Baseline
23-Nov-15	8:57	Sunny	60.5	59.7	53		60.5 Measured ≤ Baseline
30-Nov-15	9:00	Sunny	63.6	62.6	55.2		63.6 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 Nov-15	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 2015 (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 '15	2.781	-	-	-	0.114	2.667	-	104.95	175	-	-	0.006
Feb '15	1.690	-	-	-	0.074	1.617	-	1.49	315	-	-	0.058
Mar '15	2.934	-	-	-	0.088	2.846	-	44.75	213	-	-	0.013
Apr '15	2.060	-	-	-	0.064	1.997	-	33.48	207	-	-	0.023
May '15	2.691	-	-	-	0.099	2.592	-	18.18	252	-	-	0.010
Jun '15	1.547	-	-	-	0.136	1.411	-	45.74	217	-	-	0.049
Sub-total	13.704	-	-	-	0.574	13.129	-	248.590	1379	-	-	0.159
Jul '15	1.930	-	-	-	0.115	1.816	-	-	297	-	-	0.018
Aug '15	2.172	-	-	-	0.101	2.070	-	-	236	-	-	0.013
Sep '15	2.229	-	-	-	0.090	2.139	-	-	231	-	-	0.030
Oct '15	1.834	-	-	-	0.122	1.712	-	-	220	-	-	0.027
Nov '15	1.159	-	-	-	0.115	1.044	-	7.74	250	-	-	0.017
Dec '15	-	-	-	-	-	-	-	-	-	-	-	-
Total	23.028				1.117	21.911		256.330	2613.000			0.264

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**

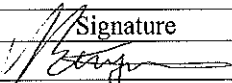

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	151103
Date	3 November 2015 (Tuesday)
Time	9:00 -11:30

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.:151027), all the environmental deficiency was improved/rectified by the Contractor. 	

	Name	Signature	Date
Recorded by	Benjamin Wong		3 November 2015
Checked by	Dr. Priscilla Choy		3 November 2015

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

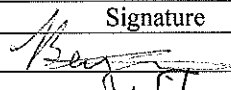

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	151111
Date	11 November 2015 (Wednesday)
Time	9:00 -11:30

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

Ref. No.	Remarks/Observations	Related Item No.
151111-001	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> Water in sedimentation tank in Area B was observed muddy. The Contractor was reminded to remove the sediment from the tank regularly. 	B 6iii
151111-R02	<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. 	D7
151111-R03	<p>Part D - Air Quality</p> <ul style="list-style-type: none"> The Contractor was reminded to cover the stockpile in the Area A to suppress dust generation. The Contractor was reminded to provide water spray to the haul road in Area C & D to suppress dust generation. 	D6
	<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.:151103), no major environmental deficiency was identified during the site inspection. 	

	Name	Signature	Date
Recorded by	Benjamin Wong		11 November 2015
Checked by	Dr. Priscilla Choy		11 November 2015

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


Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	151116
Date	16 November 2015 (Monday)
Time	13:30 – 16:00

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

Ref. No.	Remarks/Observations	Related Item No.
151116-R02	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> The Contractor was reminded to remove the accumulated sediment from the sedimentation tank in Area B. 	B 6iii
151116-O01	<p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> Construction material was observed accumulated in the tree protection zone located near the entrance in the Area A. The Contractor was reminded to remove the construction material from the tree protection zone. 	C 1
151116-R03	<p>Part D – Air Quality</p> <ul style="list-style-type: none"> Frequent water spray should be provided to the haul road in Area C to increase the efficiency of dust suppression. <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.:151111), the item 151111-O01 was remarked as 151116-R02. 	D6

	Name	Signature	Date
Recorded by	Benjamin Wong		16 November 2015
Checked by	Dr. Priscilla Choy		16 November 2015

Shatin to Central Link -

Contract 1117 Pat Heung Depot Modification Works



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	151124
Date	24 November 2015 (Tuesday)
Time	9:00 – 11:30

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

Ref. No.	Remarks/Observations	Related Item No.
151124-001	<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"> The Contractor was reminded to remove the construction materials from the tree protection zone for carefully protecting the tree. <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.:151116), the item 151116-001 was remarked as 151124-001. 	C 1

	Name	Signature	Date
Recorded by	Benjamin Wong		24 November 2015
Checked by	Dr. Priscilla Choy		24 November 2015

**APPENDIX I
SUMMARY OF EXCEEDANCE**

APPENDIX I – SUMMARY OF EXCEEDANCE

Reporting Month: November 2015

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
--	--	--	--	--	--