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

By Courier

13 November 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

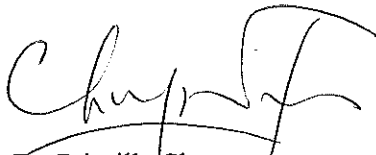
- Monthly Noise Monitoring Report (October 2015) for Pat Heung Depot Modification Works

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)

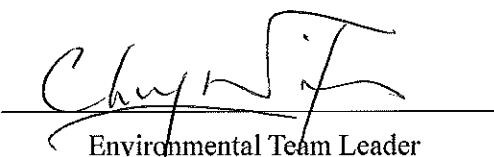
| | | |
|--------|--------------------------|-----------|
| EPD | (Attn: Mr. Wai CHAU) | w/encl. |
| MTRCL | (Attn: Mr. Richard KWAN) | w/o encl. |
| Paul Y | (Attn: Mr. Edmond Chan) | w/encl. |

Paul Y. Construction Company, Limited

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

**Monthly Noise Monitoring Report
for
October 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. 32
[Period from 1 to 31 October 2015]

(November 2015)

Verified by: Fredrick Leong 

Position: Independent Environmental Checker

Date: 12 November 2015

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EXECUTIVE SUMMARY

Introduction

1. This is the 32nd Monthly Noise Monitoring Report prepared by Cinotech Consultants Limited for MTR Works Contract 1117 - Pat Heung Depot (PHD) Modification Works. This report documents the findings of EM&A Works conducted from 1 October to 31 October 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 for EMU extension building, IMB building and P-Way Workshop
 - ABWF Works
 - Cross track ducts construction
 - Cable trough laying
 - Construction of permanent noise barrier at Location 5
 - 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 4 times
 - NM2 4 times
 - NM3A 4 times
 - Environmental Site Inspection 4 times

Noise

5. 4 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 1,834 m³ of inert C&D materials were generated during the reporting period. Non-inert C&D wastes include 220 kg of

paper/cardboard packaging materials and 27 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 32rd Monthly Noise Monitoring Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 October to 31 October 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 for EMU extension building, IMB building and P-Way Workshop
 - ABWF Works
 - Cross track ducts construction
 - Cable trough laying
 - Construction of permanent noise barrier at Location 5
 - 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 | 26/10/2012 | 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) | 2/7/2015 | 1/1/2016 | Valid |
| GW-RN0527-15 (Area D: Location 5 Noise Barrier and OHL Modification) | 27/8/2015 | 26/11/2015 | 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 | Pulsar Instruments Model 93 (Serial no. B22369); SVAN 955 (Serial no. 27455) | 2 |
| Calibrator | Pulsar Instruments Model 105 (Serial no. 60220 and 51342) | 2 |

Monitoring Parameters, Frequency and Duration

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

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

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

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

Monitoring Methodology and QA/QC Procedures

Field Monitoring

3.6 The monitoring procedures are as follows:

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

Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

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

Maintenance and Calibration

3.7 Maintenance and Calibration procedures were as follows:

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

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

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

Table 4.1 Status of Required Submissions under EP

| EP Condition | Submission | Submission Date |
|---------------------|--|-------------------------------|
| Condition 4.5 | Monthly Noise Monitoring Report (September 2015) | 12 th October 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. 220 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 |
| October 2015 | 1,834 m ³ | 27 m ³ | 0 kg | 220 kg | 0 kg | 0 kg |

Notes:

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

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

6 ENVIRONMENTAL SITE INSPECTION

Site Audits

- 6.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 6.2 Site audits were conducted on 6, 15, 19 and 27 October 2015 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 19 October 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> | N/A | N/A | N/A |
| <i>Noise</i> | N/A | N/A | N/A |
| <i>Tree Protection/ Landscape and Visual</i> | N/A | N/A | N/A |
| <i>Air Quality</i> | 15 October 2015 | <u>Reminder:</u> The contractor is reminded to cover the stockpile near the entrance of Area A with impervious material to avoid dust generation. | The stockpile near the entrance of Area A was removed by the contractor on 19 October 2015. |
| | 15 October 2015 | <u>Reminder:</u> The contractor is reminded to provide water spray to the haul road in Area D regularly to minimize dust generation. | Follow up status will be provided in the next reporting month. |
| | 19 October 2015 | The haul road in Area D is observed dusty and dry. The contractor is reminded to provide regular water spray for dust suppression. | Follow up status will be provided in the next reporting month. |
| | 27 October 2015 | Haul road in Area D is observed dry and dusty. The Contractor is reminded to provide regular water | Follow up status will be provided in the next reporting month. |

| Parameters | Date | Observations | Follow-up |
|---|----------------|---|--|
| | | spray to the haul road in Area D to suppress dust generation. | |
| <i>Waste / Chemical Management</i> | 6 October 2015 | The contractor is reminded to provide drip tray to the chemical container to avoid chemical leakage. (Area A) | The chemical container was removed by the contractor on 15 October 2015. |
| <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 for EMU extension building, IMB building and P-Way Workshop
- ABWF Works
- Cross track ducts construction
- Cable trough laying
- Construction of permanent noise barrier at Location 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 October to 31 October 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;
- Bunding should be provided to confine the runoff in site area, particularly along the drainage channel;
- U-channels are to be maintained by regularly remove trapped mud and provide coverage and sediment baffles to the channel wherever possible;
- The discharge quality must meet the requirements specified in the discharge licence.

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.
- To provide adequate rubbish bins/skips for waste collection and check for any accumulation of wasted construction materials or general refuse on site.

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.

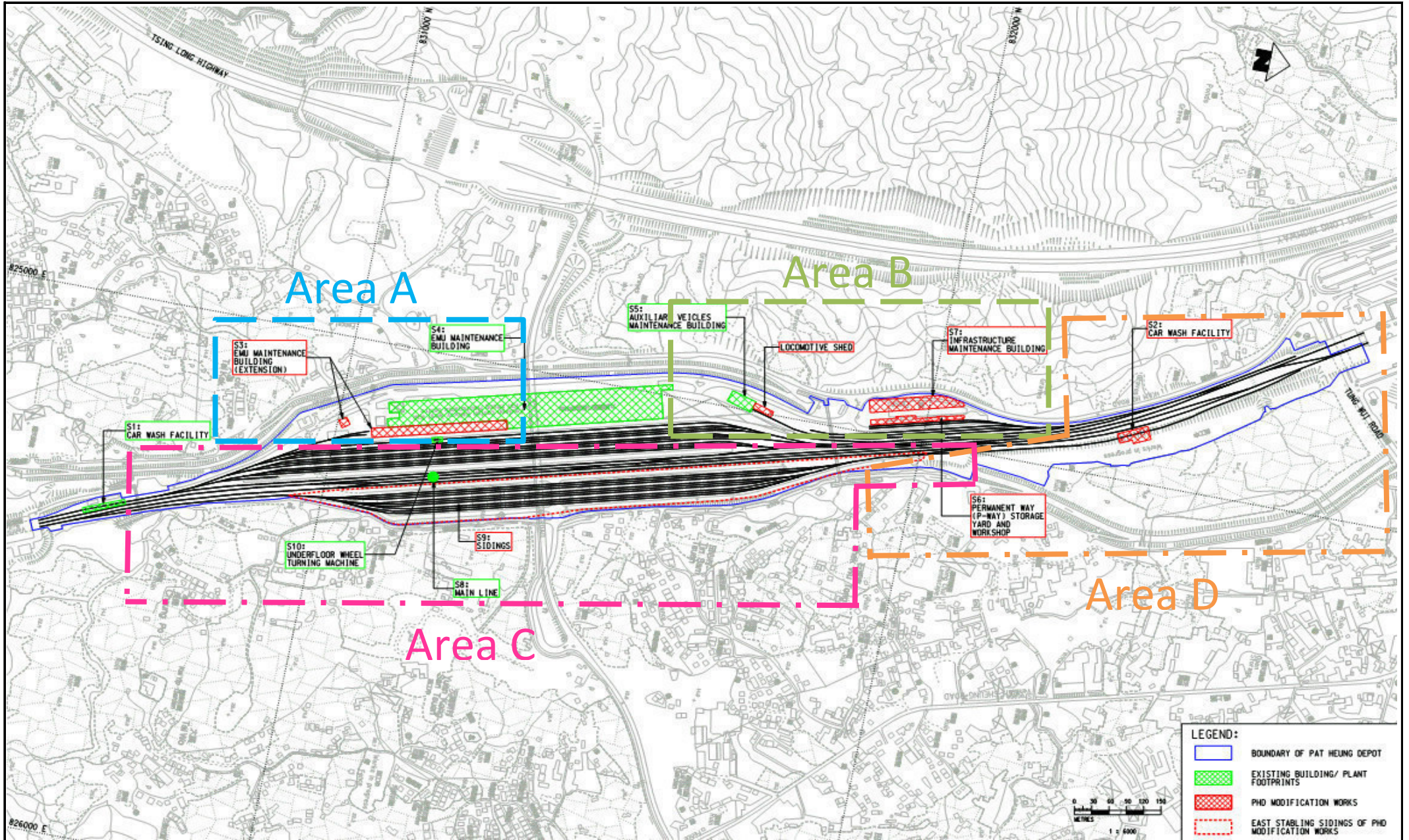
Tree Protection / Landscape and Visual

- 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.

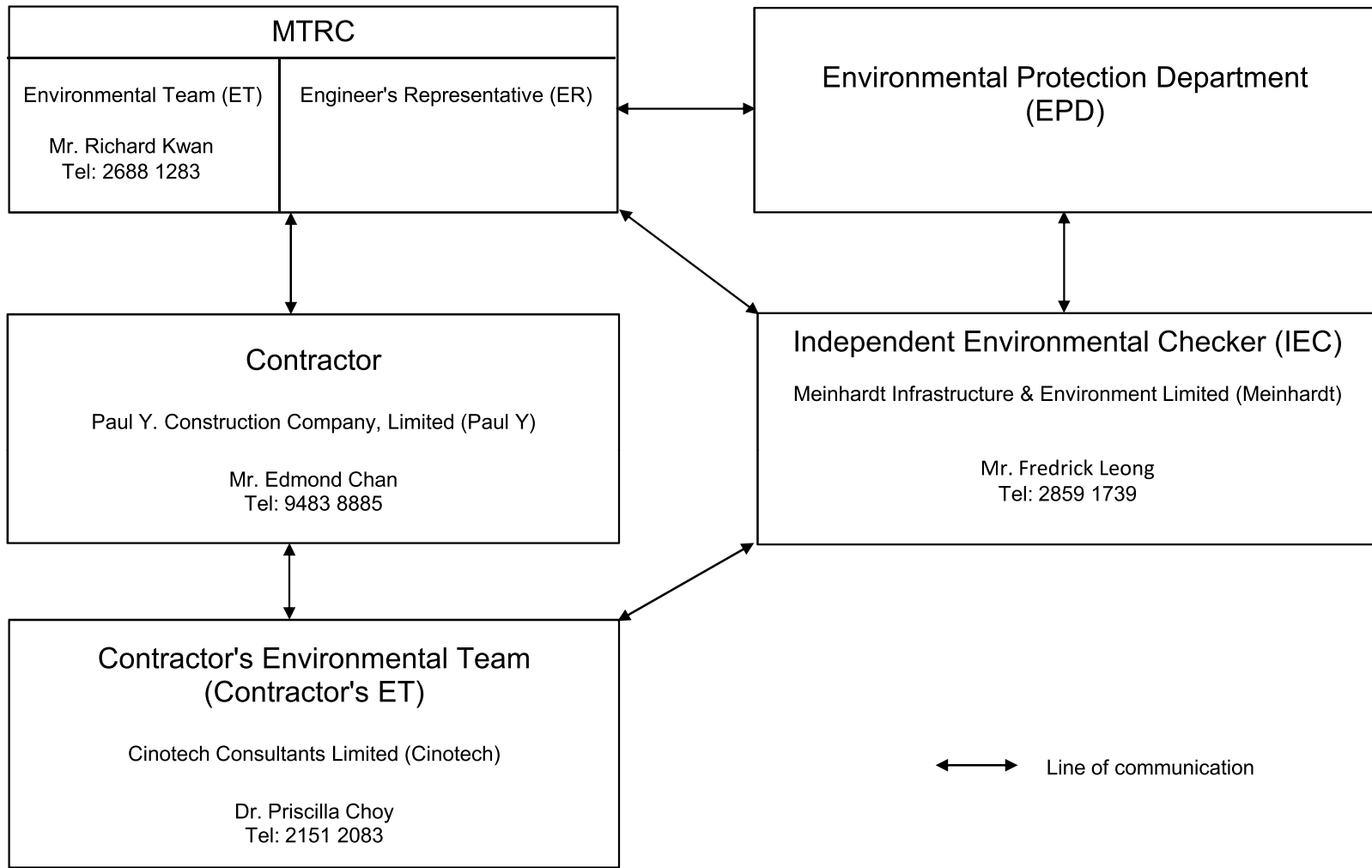
FIGURES



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

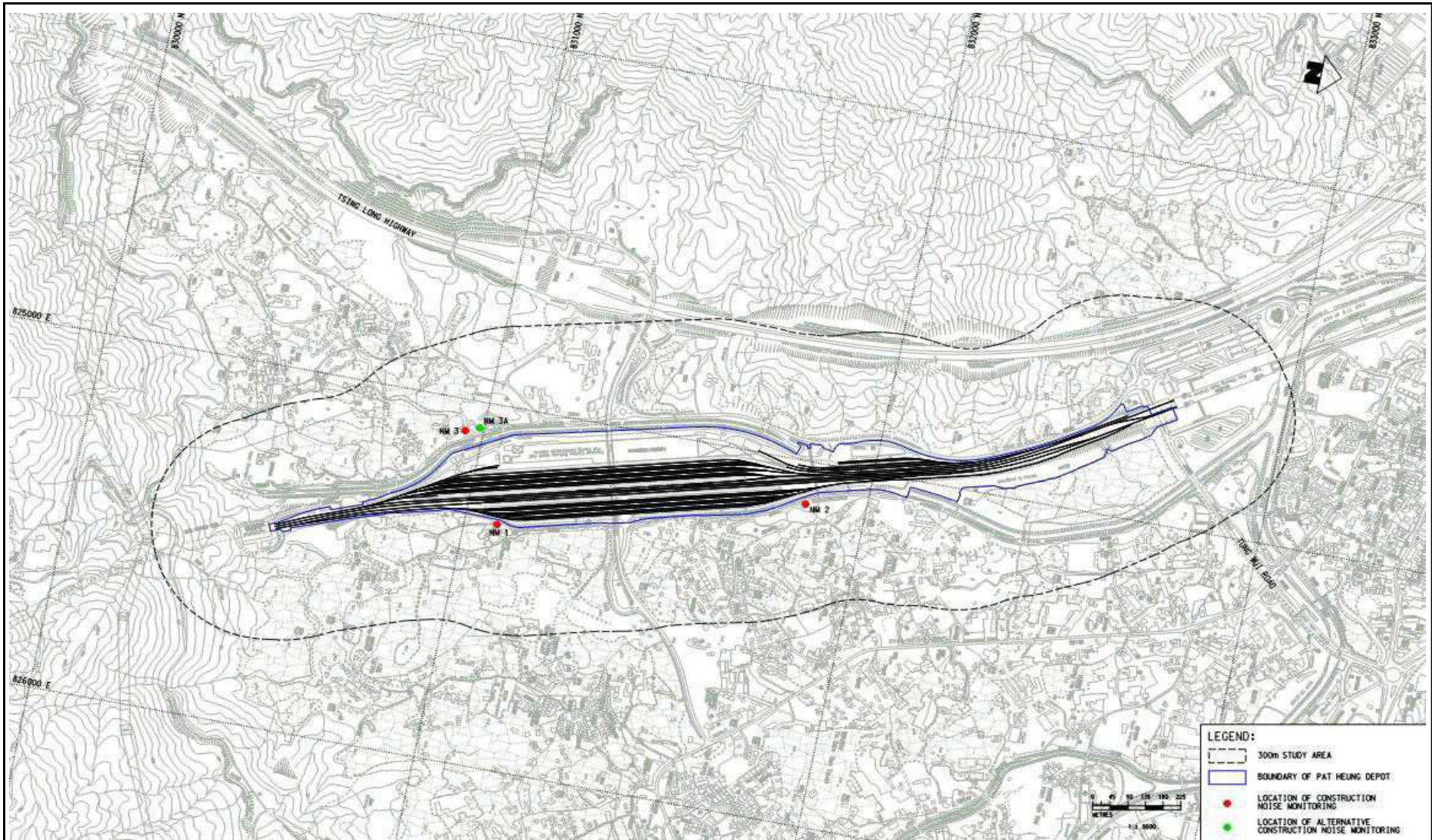
No.

MA13003

Figure

2

CINOTECH




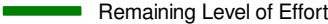



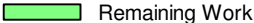
| | | | | | | | |
|-------|---|--|-------|--------|--------------|---------|--|
| Title | MTR Works Contract 1117 Pat Heung Depot Modification Works | | Scale | N.T.S | Proposal No. | MA13003 | |
| | Location of Constrction Noise Monitoring Stations | | Date | Apr-13 | Figure | 3 | |

**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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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



华南国家计量测试中心
广东省计量科学研究院

SOUTH CHINA NATIONAL CENTER OF METROLOGY
GUANGDONG INSTITUTE OF METROLOGY



校准证书

CALIBRATION CERTIFICATE

证书编号 SSD201406950
Certificate No.

第 1 页, 共 6 页
Page of

委托方 Paul Y Construction Co. Ltd
Client

委托方地址
Add. of Client

计量器具名称 Sound Level Meter
Description

型号规格 93
Model/Type

制造厂 Pulsar
Manufacturer

出厂编号 B22369
Serial No.

设备编号
Equipment No.

接收日期 2014 年 12 月 15 日
Date of Receipt Y M D

结论 符合JJG 188-2002中1级技术要求
Conclusion

校准日期 2014 年 12 月 17 日
Date of Calibration Y M D

批准人
Approved Signatory

核 验
Inspected by

校 准
Calibrated by

证书专用章
Stamp



本中心地址: 中国广州市广园中路松柏东街30号 邮政编码: 510405
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Post Code: 510405 Tel: (8620)86594172 Fax: (8620)86590743 Complaint Tel: (8620)26296063
证书真伪查询: www.scm.com.cn; www.mtsp.com Certificate AuthenticityIdentify: www.scm.com.cn; www.mtsp.com



说 明

证书编号 SSD201406950
Certificate No.

DIRECTIONS

第 2 页, 共 6 页
Page of

1. 本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构, 计量授权证书号是: (国) 法计 (2012) 01043号、(国) 法计 (2012) 01032号。本中心质量管理体系符合 ISO/IEC 17025:2005 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) under authorization certificates No.(2012)01043 & (2012)01032. The quality system is in accordance with ISO/IEC 17025:2005.

2. 本中心所出具的数据均可溯源至国家计量基准和国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and International System of Units (SI).

3. 本次校准的技术依据:

Reference documents for the calibration:

JJG 188-2002 声级计检定规程 V. R. of Sound Level Meters

4. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

| 设备名称/型号 Name of Equipment /Model | 编号 Serial No. | 证书号/有效期 Certificate No. /Due Date | 计量特性 Metrological Characteristic |
|--|------------------|---|--|
| 标准传声器 Standard Microphones /4180 | 2488312 | LSae2014-1017 /2015-04-13 | 声压灵敏度 级: 0.05dB~0.12dB (k=2) Sound pressure sensitivity level: 0.05dB~0.12dB (k=2) |
| 消音箱 Sound Reducing Enclosure /2.0 m×1.4 m×1.4 m | 1 | SSD201402646 /2015-05-26 | 允差: ±1.5 dB MPE: ±1.5 dB |
| PULSE分析系统 Pulse analyzer System /3560C (3110模块) | 2392397 | SSD201402188 /2015-04-24 | 电平: $U_{rel}=0.1\%$, 频 率: $U_{rel}=0.001\%$ (k=2) Voltage: $U_{rel}=0.1\%$, Frequency : $U_{rel}=0.001\%$ (k=2) |

5. 校准地点、环境条件:

Place and environmental conditions of the calibration:

| | | | | | |
|-------|--------------------------|-------------|-----------|------|-----------|
| 地点 | 声学/振动实验室 | 温度 | (23±3) °C | 相对湿度 | (40~50) % |
| Place | Acoustics/Vibration Lab. | Temperature | | R.H. | |

6. 被校准仪器限制使用条件:

Limiting condition of the instrument calibrated:

注: 1. 本证书校准结果只与受校准仪器有关。

2. 未经本机构书面批准, 不得部分复制此证书。

Note: 1. The results relate only to the items calibrated.

2. This certificate shall not be reproduced except in full, without the written approval of our laboratory.



校准结果

RESULTS OF CALIBRATION

证书编号: SSD201406950
Certification No.

原始记录编号: 2201406950
Record No.

第 3 页, 共 6 页
Page of

1 外观: 合格

Apparent inspection: Pass

2 声级计指示声级调整:

Level Calibration

(声校准器型号: 4231

标准声压级: 94.0 dB)

Sound Level Calibrator Type

Standard level

校准前示值: 93.7 dB

校准后示值: 94.0 dB

传声器型号/编号: UK224/20042221

Indication before Calibrated

Indication after Adjusted

Microphone type/serial number

3 频率计权: 见表1、表2、表3

Frequency weightings: Showed in table 1、table2、table 3

表1 Table 1

| 标称频率 (Hz) | 实测值A计权 (dB) | 允许范围 (dB) | 结论 |
|-------------------|----------------------------|----------------------|------------|
| Nominal frequency | Measured Value A-weighting | Tolerance | Conclusion |
| 10 | -67.5 | $-\infty \sim -66.9$ | 合格(Pass) |
| 20 | -50.2 | $-53.0 \sim -48.0$ | 合格(Pass) |
| 31.5 | -39.6 | $-41.4 \sim -37.4$ | 合格(Pass) |
| 63 | -26.4 | $-27.7 \sim -24.7$ | 合格(Pass) |
| 125 | -15.9 | $-17.6 \sim -14.6$ | 合格(Pass) |
| 250 | -8.5 | $-10.0 \sim -7.2$ | 合格(Pass) |
| 500 | -3.2 | $-4.6 \sim -1.8$ | 合格(Pass) |
| 1000(ref.) | 0.0 | $-1.1 \sim +1.1$ | 合格(Pass) |
| 2000 | +1.2 | $-0.4 \sim +2.8$ | 合格(Pass) |
| 4000 | +0.9 | $-0.6 \sim +2.6$ | 合格(Pass) |
| 8000 | -1.2 | $-4.2 \sim +1.0$ | 合格(Pass) |
| 16000 | -6.1 | $-23.6 \sim -3.1$ | 合格(Pass) |
| 20000 | -8.5 | $-\infty \sim -5.3$ | 合格(Pass) |



校准结果

RESULTS OF CALIBRATION

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表2 Table 2

| 标称频率 (Hz) | 实测值C计权 (dB) | 允许范围 (dB) | 结论 |
|-------------------|----------------------------|----------------------|------------|
| Nominal frequency | Measured Value C-weighting | Tolerance | Conclusion |
| 10 | -14.5 | $-\infty \sim -10.8$ | 合格(Pass) |
| 20 | -6.3 | $-8.7 \sim -3.7$ | 合格(Pass) |
| 31.5 | -3.1 | $-5.0 \sim -1.0$ | 合格(Pass) |
| 63 | -0.9 | $-2.3 \sim +0.7$ | 合格(Pass) |
| 125 | -0.2 | $-1.7 \sim +1.3$ | 合格(Pass) |
| 250 | 0.0 | $-1.4 \sim +1.4$ | 合格(Pass) |
| 500 | 0.0 | $-1.4 \sim +1.4$ | 合格(Pass) |
| 1000(ref.) | 0.0 | $-1.1 \sim +1.1$ | 合格(Pass) |
| 2000 | -0.2 | $-1.8 \sim +1.4$ | 合格(Pass) |
| 4000 | -1.0 | $-2.4 \sim +0.8$ | 合格(Pass) |
| 8000 | -3.2 | $-6.1 \sim -0.9$ | 合格(Pass) |
| 16000 | -8.3 | $-25.5 \sim -5.0$ | 合格(Pass) |
| 20000 | -10.7 | $-\infty \sim -7.2$ | 合格(Pass) |

表3 Table 3

| 标称频率 (Hz) | 实测值Z计权 (dB) | 允许范围 (dB) | 结论 |
|-------------------|----------------------------|---------------------|------------|
| Nominal frequency | Measured Value Z-weighting | Tolerance | Conclusion |
| 10 | -1.4 | $-\infty \sim +3.5$ | 合格(Pass) |
| 20 | -0.4 | $-2.5 \sim +2.5$ | 合格(Pass) |
| 31.5 | -0.2 | $-1.5 \sim +1.5$ | 合格(Pass) |
| 63 | -0.1 | $-1.5 \sim +1.5$ | 合格(Pass) |
| 125 | 0.0 | $-1.5 \sim +1.5$ | 合格(Pass) |
| 250 | 0.0 | $-1.4 \sim +1.4$ | 合格(Pass) |
| 500 | 0.0 | $-1.4 \sim +1.4$ | 合格(Pass) |
| 1000(ref.) | 0.0 | $-1.1 \sim +1.1$ | 合格(Pass) |
| 2000 | 0.0 | $-1.6 \sim +1.6$ | 合格(Pass) |
| 4000 | 0.0 | $-1.6 \sim +1.6$ | 合格(Pass) |
| 8000 | 0.0 | $-3.1 \sim +2.1$ | 合格(Pass) |
| 16000 | +0.1 | $-17.0 \sim +3.5$ | 合格(Pass) |
| 20000 | 0.0 | $-\infty \sim +4.0$ | 合格(Pass) |



校准结果

RESULTS OF CALIBRATION

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4 级线性 (参考频率 1 kHz)

Level linearity error (Reference frequency 1 kHz)

4.1 级程变化误差 (参考频率: 1000 Hz): 见表4

Level Change Error(Reference frequency: 1000 Hz): Showed in table 4

表4 Table 4

| 标准值 (dB) | 指示值 (dB) | 误差 (dB) | 允差 (dB) | 结论 |
|-----------------|------------------|---------|-----------|------------|
| Reference Value | Indication Value | Error | Tolerance | Conclusion |
| 20 | 19.4 | -0.6 | ±0.7 | 合格(Pass) |
| 30 | 30.2 | +0.2 | ±0.7 | 合格(Pass) |
| 40 | 40.4 | +0.4 | ±0.7 | 合格(Pass) |
| 50 | 50.2 | +0.2 | ±0.7 | 合格(Pass) |
| 60 | 60.1 | +0.1 | ±0.7 | 合格(Pass) |
| 70 | 70.1 | +0.1 | ±0.7 | 合格(Pass) |
| 80 | 80.1 | +0.1 | ±0.7 | 合格(Pass) |
| 90(ref.) | 90.0 | 0.0 | ---- | 合格(Pass) |
| 100 | 100.1 | +0.1 | ±0.7 | 合格(Pass) |
| 110 | 110.1 | +0.1 | ±0.7 | 合格(Pass) |
| 120 | 120.1 | +0.1 | ±0.7 | 合格(Pass) |
| 130 | 130.0 | 0.0 | ±0.7 | 合格(Pass) |

4.2 参考级量程

Reference range

起始点指示声级: 90 dB

Start point

起始点以上间隔 1 dB点的最大误差: 0.1 dB

Maximum Error for each 1 dB above start point

起始点以下间隔 1 dB点的最大误差: 0.1 dB

Maximum Error for each 1 dB below start point



校准结果 RESULTS OF CALIBRATION

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5 本机噪声:

Residual noise

A计权: <20 dB 结论: 合格(Pass)

A-weighting Conclusion

6 F和S时间计权:

Time weightings F/S

衰减速率: $F: >25 \text{ dB/s}$ (允许范围: $\geq 25 \text{ dB/s}$);

Attenuation rate Tolerance

$S: 4.5 \text{ dB/s}$ (允许范围: $3.4 \text{ dB/s} \sim 5.3 \text{ dB/s}$);

Tolerance

F和S差值: 0.0 dB

Dispersion F/S

7 过载指示:

Over loading indication

误差: 1.3 dB (允许范围: $\leq 1.8 \text{ dB}$) 结论: 合格(Pass)

Error Tolerance Conclusion

说明(Note):

1 声压级测量结果扩展不确定度:

Expanded uncertainty of measurement in Sound Pressure Level Calibration:

10 Hz~200 Hz, $U=0.5 \text{ dB}$, $k=2$

250 Hz~400 Hz, $U=0.4 \text{ dB}$, $k=2$

500 Hz~1.25 kHz, $U=0.4 \text{ dB}$, $k=2$

1.6 kHz~10 kHz, $U=0.6 \text{ dB}$, $k=2$

12.5 kHz~20 kHz, $U=1.0 \text{ dB}$, $k=2$

(依据JJF 1059.1-2012 测量不确定度评定与表示)

(According to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

2 参考IEC 61672-1-2002标准。

Reference standard: IEC 61672-1-2002.

3 建议校准周期不超过1年。

The period of calibration advised within one year.



华南国家计量测试中心
广东省计量科学研究院

SOUTH CHINA NATIONAL CENTER OF METROLOGY
GUANGDONG INSTITUTE OF METROLOGY



校准证书

CALIBRATION CERTIFICATE

证书编号 SSD201406951
Certificate No.

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委托方 Paul Y Construction Co. Ltd
Client

委托方地址
Add. of Client

计量器具名称 Sound Level Calibrator
Description

型号规格 105
Model/Type

制造厂 Pulsar
Manufacturer

出厂编号 60220
Serial No.

设备编号
Equipment No.

接收日期 2014 年 12 月 15 日
Date of Receipt Y M D

结论 符合JJG 176-2005中1级技术要求
Conclusion

校准日期 2014 年 12 月 17 日
Date of Calibration Y M D

批准人 Approved Signatory

核 验 Inspected by

校 准 Calibrated by

证书专用章
Stamp



本中心地址: 中国广州市广园中路松柏东街30号 邮政编码: 510405
电话: (8620)86594172 传真: (8620)86590743 投诉电话: (8620)26296063 E-mail: scm@scm.com.cn
Add: No.30, Songbaidong Street, Guangyuanzhong Road, Guangzhou, P. R. China
Post Code: 510405 Tel: (8620)86594172 Fax: (8620)86590743 Complaint Tel: (8620)26296063
证书真伪查询: www.scm.com.cn; www.mtsp.com Certificate AuthenticityIdentify: www.scm.com.cn; www.mtsp.com



说 明

证书编号 SSD201406951
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DIRECTIONS

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1. 本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构, 计量授权证书号是: (国) 法计 (2012) 01043号、(国) 法计 (2012) 01032号。本中心质量管理体系符合 ISO/IEC 17025:2005 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) under authorization certificates No.(2012)01043 & (2012)01032. The quality system is in accordance with ISO/IEC 17025:2005.

2. 本中心所出具的数据均可溯源至国家计量基准和国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and International System of Units (SI).

3. 本次校准的技术依据:

Reference documents for the calibration:

JJG 176-2005 声校准器检定规程 V. R. of Sound Calibrators

4. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

| 设备名称/型号 Name of Equipment /Model | 编号 Serial No. | 证书号/有效期 Certificate No. /Due Date | 计量特性 Metrological Characteristic |
|---|------------------|---|---|
| PULSE分析系统 Pulse analyzer System /3560C (3110模块) | 2392397 | SSD201402188 /2015-04-24 | 电平: $U_{rel}=0.1\%$, 频率: $U_{rel}=0.001\%$ ($k=2$) Voltage: $U_{rel}=0.1\%$, Frequency: $U_{rel}=0.001\%$ ($k=2$) |
| 声校准器 Sound Calibrator /4231 | 2713562 | SSD201402647 /2015-05-26 | 1 级 Grade 1 |

5. 校准地点、环境条件:

Place and environmental conditions of the calibration:

地点 声学/振动实验室 温度 $(23 \pm 3) ^\circ\text{C}$ 相对湿度 $(30 \sim 40) \%$
Place Acoustics/Vibration Lab. Temperature R.H.

6. 被校准仪器限制使用条件:

Limiting condition of the instrument calibrated:

注: 1. 本证书校准结果只与受校准仪器有关。

2. 未经本机构书面批准, 不得部分复制此证书。

Note: 1. The results relate only to the items calibrated.

2. This certificate shall not be reproduced except in full, without the written approval of our laboratory.



校准结果

RESULTS OF CALIBRATION

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1 外观: 合格

Apparent inspection: Pass

2 声压级 (dB): 见表1

Sound Pressure Level: Showed in table 1

表1 Table 1

| 标称值 (dB) Nominal Value | 实测值 (dB) Measured Value | 允差 (dB) Tolerance | 结论 Conclusion | 稳定度 (dB) Stabilization | 稳定度允差 (dB) Stabilization Tolerance | 结论 Conclusion |
|---------------------------|----------------------------|----------------------|------------------|---------------------------|---------------------------------------|------------------|
| 94 | 93.81 | ±0.40 | 合格(Pass) | 0.01 | ≤0.10 | 合格(Pass) |

3 频率: 见表2

Frequency: Showed in table 2

表2 Table 2

| 标称值 (Hz) Nominal Value | 实测值 (Hz) Measured Value | 允差 (%) Tolerance | 结论 Conclusion |
|---------------------------|----------------------------|---------------------|------------------|
| 1000 | 1000.30 | ±1.0 | 合格(Pass) |

4 总失真: 见表3

Total harmonic distortion: Showed in table 3

表3 Table 3

| 频率 (Hz) Frequency | 声压级 (dB) Sound Pressure Level | 总失真 (%) Total Harmonic Distortion | 允差 (%) Tolerance | 结论 Conclusion |
|----------------------|----------------------------------|--------------------------------------|---------------------|------------------|
| 1000 | 94 | 0.1 | ≤3 | 合格(Pass) |



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说明(Note):

1 测量结果扩展不确定度:

Expanded uncertainty of measurement:

声压级: $U=0.15$ dB, $k=2$

Sound Pressure Level Calibration

频率: $U_{rel}=0.1\%$, $k=2$

Frequency

失真度: $U_{rel}=1.4\%$, $k=2$

Harmonic distortion

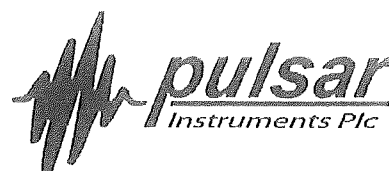
(依据JJF 1059.1-2012测量不确定度评定与表示)

(According to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

2 建议校准周期不超过1年。

The period of calibration advised within one year.

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.



綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.

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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.

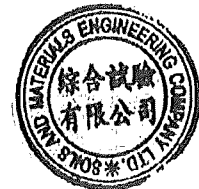
Details of the performed measurements are presented on page 2 of this certificate.

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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SOILS & MATERIALS ENGINEERING CO., LTD.

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CERTIFICATE OF CALIBRATION

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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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SOILS & MATERIALS ENGINEERING CO., LTD.

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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.

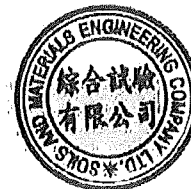
Actual Measurement data are documented on worksheets.

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.



綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.

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



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 | |
| | A | Pass | 0.3 | |
| Frequency weightings | C | Pass | 0.3 | |
| | Lin | Pass | 0.3 | |
| | Time weightings | 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 | |
| | Repeated at frequency of 100 Hz | Pass | 0.3 | |
| Time averaging | 1 ms burst duty factor 1/10 ³ at 4kHz | Pass | 0.3 | |
| | 1 ms burst duty factor 1/10 ⁴ at 4kHz | Pass | 0.3 | |
| Pulse range | Single burst 10 ms at 4 kHz | Pass | 0.4 | |
| 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.

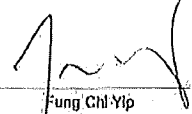
| Test: | Subtest | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz | Pass | 0.3 | |
| | Weighting A at 8000 Hz | Pass | 0.5 | |

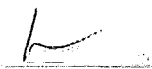
3, Response to associated sound calibrator

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: 
Date: 20-May-2015

Checked by: 
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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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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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:

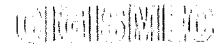
| Frequency Hz | Ref. level dB | Expected level dB | Actual level dB | Tolerance(dB) | | Deviation dB |
|-----------------|------------------|----------------------|--------------------|---------------|-----|-----------------|
| | | | | + | - | |
| 1000.0 | 94.0 | 94.0 | 94.0 | 0.0 | 0.0 | 0.0 |
| 31.6 | 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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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

| | | | | | | |
|---------|------|------|------|-----|-----|------|
| 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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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

| 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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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

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> |

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"> 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="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A⁽²⁾</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A⁽²⁾</p> <p style="text-align: center;">^</p> |

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

| 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> |

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

| ERR ⁽¹⁾ Ref. | ID No. | Recommended Mitigation Measures | Status |
|--|-----------|--|--|
| | | 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 October 2015

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

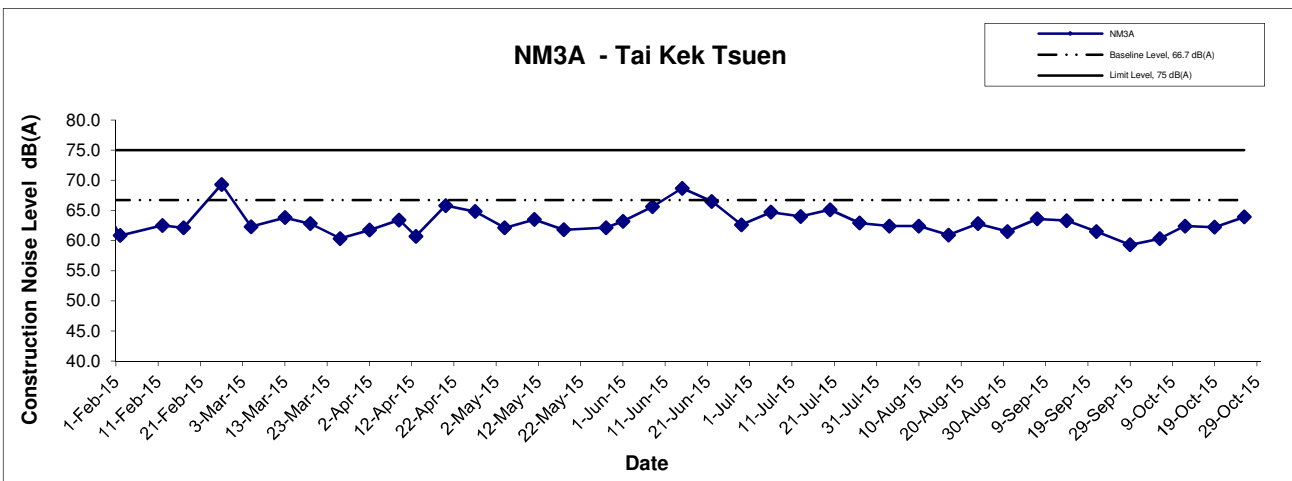
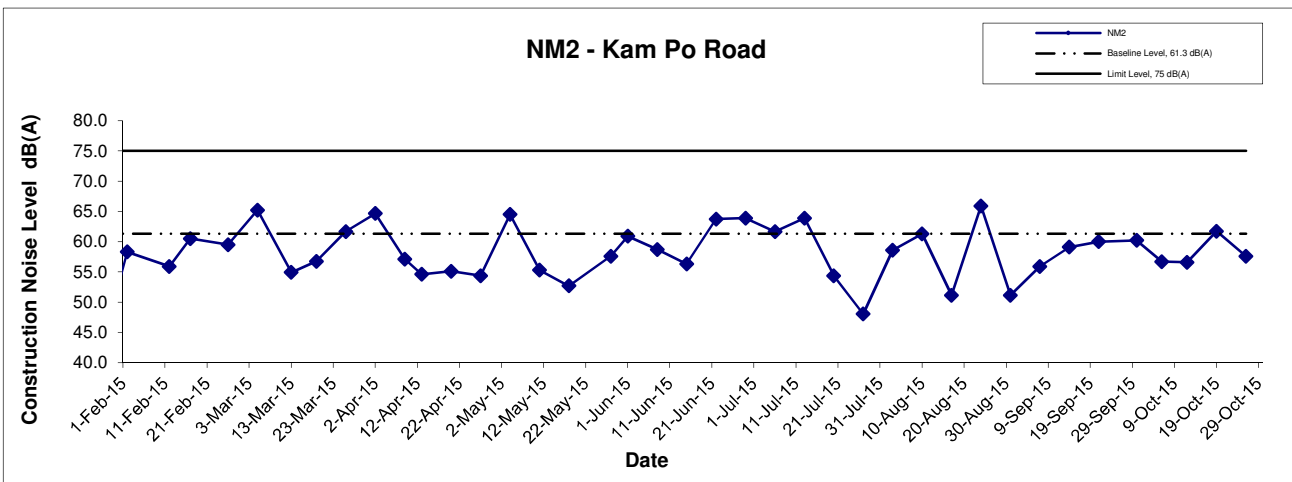
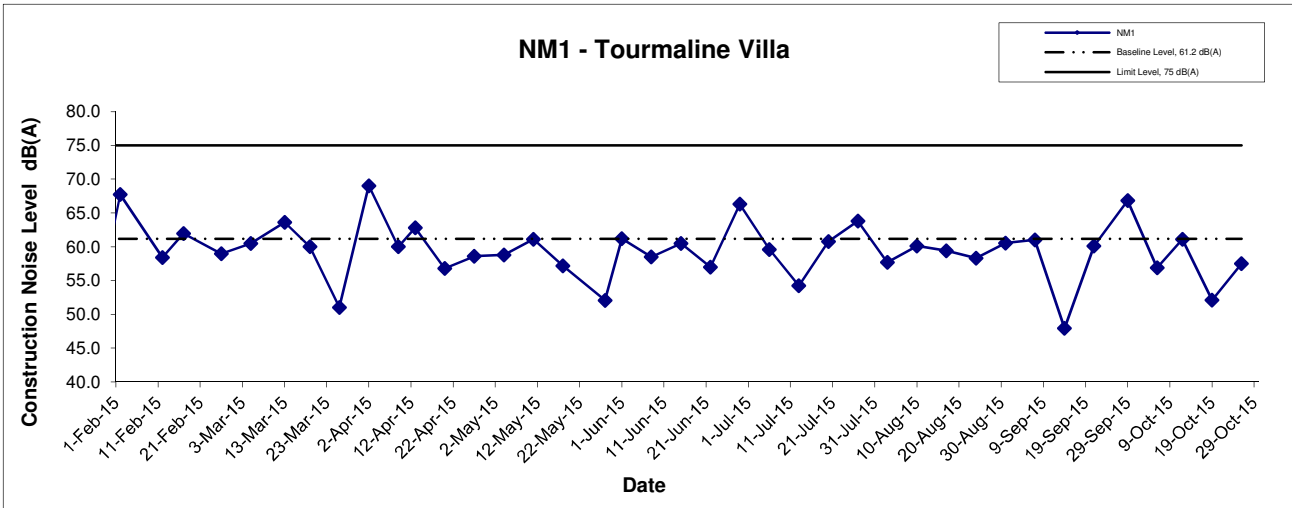
Appendix F - Noise Monitoring Results

| 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} |
| 6-Oct-15 | 14:33 | Cloudy | 56.9 | 54.1 | 47.9 | 61.2 | 56.9 Measured ≤ Baseline |
| 12-Oct-15 | 9:54 | Sunny | 61.1 | 57.8 | 46.3 | | 61.1 Measured ≤ Baseline |
| 19-Oct-15 | 9:47 | Cloudy | 61.7 | 61.2 | 49 | | 52.1 |
| 26-Oct-15 | 9:47 | Sunny | 57.5 | 55.7 | 45.6 | | 57.5 Measured ≤ Baseline |

| 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} |
| 6-Oct-15 | 15:14 | Cloudy | 56.7 | 57.3 | 49.3 | 61.3 | 56.7 Measured ≤ Baseline |
| 12-Oct-15 | 10:38 | Sunny | 56.6 | 58.4 | 49 | | 56.6 Measured ≤ Baseline |
| 19-Oct-15 | 10:28 | Cloudy | 64.5 | 60 | 47.4 | | 61.7 |
| 26-Oct-15 | 9:09 | Sunny | 57.6 | 58.6 | 50.3 | | 57.6 Measured ≤ Baseline |

| Location NM3A - Tai Kek Tsuen | | | | | | | |
|-------------------------------|-------|---------|-----------------------|-----------------|-----------------|-----------------|--------------------------|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | L _{eq} | L ₁₀ | L ₉₀ | L _{eq} | L _{eq} |
| 6-Oct-15 | 13:49 | Cloudy | 60.3 | 60.1 | 56.1 | 66.7 | 60.3 Measured ≤ Baseline |
| 12-Oct-15 | 9:12 | Sunny | 62.4 | 64 | 52 | | 62.4 Measured ≤ Baseline |
| 19-Oct-15 | 9:07 | Cloudy | 62.2 | 61.8 | 53.5 | | 62.2 Measured ≤ Baseline |
| 26-Oct-15 | 13:53 | Sunny | 63.9 | 59.9 | 53.3 | | 63.9 Measured ≤ Baseline |

Noise Levels



| | | | |
|---|----------------|------------------------|--|
| Title MTR Works Contract 1117 Pat Heung Depot Modification Works Graphical Presentation of the Construction Noise Monitoring Results | Scale N.T.S | Project No. MA13003 | |
| | Date Oct-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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dec '15 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 21.869 | | | | 1.002 | 20.867 | | 248.590 | 2363.000 | | | 0.247 |

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**

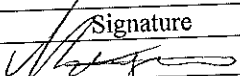

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|--------------------------|
| Checklist Reference Number | 151006 |
| Date | 6 October 2015 (Tuesday) |
| Time | 09:00 -11:00 |

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

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| 151006-R01 | <p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Tree Management Protection / Landscape & Visual Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> The contractor is reminded to provide drip tray to the chemical container to avoid chemical leakage. (Area A) <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Remark</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:150929), all environmental deficiencies were observed improved/rectified by the Contractor. | F 9 |

| | Name | Signature | Date |
|-------------|--------------------|--|----------------|
| Recorded by | Benjamin Wong |  | 6 October 2015 |
| Checked by | Dr. Priscilla Choy |  | 6 October 2015 |

Shatin to Central Link -

Contract 1117 Pat Heung Depot Modification Works

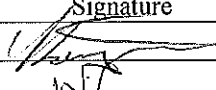

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|----------------------------|
| Checklist Reference Number | 151015 |
| Date | 15 October 2015 (Thursday) |
| Time | 09:00 -11:15 |

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

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| 151015-R01 | <p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. | D 7 |
| 151015-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. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> The contractor is reminded to cover the stockpile near the entrance of Area A with impervious material to avoid dust generation. The contractor is reminded to provide water spray to the haul road in Area D regularly to minimize dust generation. | D 6 |
| | <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.:151006), all environmental deficiencies were observed improved/rectified by the Contractor. | |

| | Name | Signature | Date |
|-------------|--------------------|--|-----------------|
| Recorded by | Benjamin Wong |  | 15 October 2015 |
| Checked by | Dr. Priscilla Choy |  | 15 October 2015 |

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

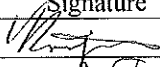

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|--------------------------|
| Checklist Reference Number | 151019 |
| Date | 19 October 2015 (Monday) |
| Time | 14:00 -16:00 |

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

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|--|------------------|
| 151019-001 | <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"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> The haul road in Area D is observed dusty and dry. The contractor is reminded to provide regular water spray for 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.:151015), the item 151015-R02 is remarked as 151019-001. | D 6 |

| | Name | Signature | Date |
|-------------|--------------------|--|-----------------|
| Recorded by | Benjamin Wong |  | 19 October 2015 |
| Checked by | Dr. Priscilla Choy |  | 19 October 2015 |

Shatin to Central Link -

Contract 1117 Pat Heung Depot Modification Works



Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|---------------------------|
| Checklist Reference Number | 151027 |
| Date | 27 October 2015 (Tuesday) |
| Time | 9:00 -11:30 |

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

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|--|------------------|
| 151027-001 | <p><i>Part B - Water Quality</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Part C - Tree Management Protection / Landscape & Visual Impact</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Part D – Air Quality</i></p> <ul style="list-style-type: none"> • 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. <p><i>Part E – Construction Noise Impact</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Part F – Waste/Chemical Management</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Part H – Remark</i></p> <ul style="list-style-type: none"> • Follow-up on previous audit section (Ref. No.:151019), the item 151019-001 is remarked as 151027-001. | D 6 |

| | Name | Signature | Date |
|-------------|--------------------|--|-----------------|
| Recorded by | Benjamin Wong |  | 27 October 2015 |
| Checked by | Dr. Priscilla Choy |  | 27 October 2015 |

**APPENDIX I
SUMMARY OF EXCEEDANCE**

APPENDIX I – SUMMARY OF EXCEEDANCE

Reporting Month: October 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 |
|----------|---------------|---------|--------|--|--|
| -- | -- | -- | -- | -- | -- |