



AUES PROJECT NO. TCS/00704/14

CONTRACT NO. MTRC6593-13C –
WAN CHAI STATION LEE TUNG STREET SUBWAY

3RD ENVIRONMENTAL MONITORING AND AUDIT
(EM&A) MONTHLY REPORT – NOVEMBER 2014

PREPARED FOR
KADEN CONSTRUCTION LIMITED

Quality Index

Date	Reference No.	Prepared By	Approved By
9 December 2014	TCS00704/14/600/R0028v2	 Nicola Hon Environmental Consultant	 T.W. Tam Environmental Team Leader

Version	Date	Description
1	8 December 2014	First Submission
2	9 December 2014	Amended according to the IEC's comments on 8 December 2014



10 December 2014

By Email And Post

MTR Corporation Limited
Fo Tan Railway House
No. 9, Lok King Street, Fo Tan
Shatin, N.T., Hong Kong

Your reference:

Our reference: 40032976/436123

Attention: Mr. Kenneth Chow
Environmental Engineer II

Dear Sir

Consultancy Agreement A130-13
Independent Environmental Checker for CRS and LTS
LTS - Verification for Third Monthly Environmental Monitoring and Audit (EM&A) Report
(November 2014) (Report No.: TCS00704/14/600/R0028v2)

We refer to the Third Monthly EM&A Report (November 2014) received under cover of the email from the Environmental Team, AUES, dated on 8 December 2014.

Further to our comments provided on 8 December 2014 and subsequent revision of the Report by AUES on 9 December 2014, we have no comment and have verified the captioned report (Report No.: TCS00704/14/600/R0028v2).

Should you have any queries, please feel free to contact the undersigned at 2410 3750.

Yours faithfully
URS Hong Kong Ltd

Rodney Ip
Independent Environmental Checker, URS

TWKW/lykl

cc

Kaden Construction Limited	(Attn.: Mr. Ronald Fung)	via email
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EXECUTIVE SUMMARY

ES01 This is the 3rd monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 30 November 2014** (hereinafter ‘the Reporting Period’).

SUMMARY OF ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES02 The monitoring and audit activities during the Reporting Period are summarized in below:-

Environmental Aspect	Environmental Monitoring Parameters / Inspection	Reporting Period	
		Number of Monitoring Location	Total Occasions
Air Quality	24-hour TSP	1	5
Construction Noise	L _{eq(30min)} Daytime	2	8
Site Inspection / Audit	Joint with ET, the Contractor and RE	--	4
	Joint with IEC, ET, the Contractor and RE	--	1

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES03 In the Reporting Period, no air quality and noise monitoring exceedance were registered. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	24-hour TSP	0	0	0	0	0
Construction Noise	L _{eq(30min)} Daytime	0	0	0	0	0

ENVIRONMENTAL COMPLAINT

ES04 No public complaints were received by either the EPD or MTRCL or the Main Contractor in the Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES05 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES06 No reporting changes were made in the Reporting Period.

SITE INSPECTION

ES07 In the Reporting Period, weekly site inspection by the MTRC and ET and Main Contractor has been carried out on **6, 11, 20** and **27 November 2014** and the IEC was joined the site inspection **20 November 2014**. No non-compliance observed during the site inspection. Furthermore, no site inspection was undertaken by external parties i.e. EPD and AFCD in this Reporting Month.

FUTURE KEY ISSUES

ES08 Construction noise is the key environmental issue during construction work of the Project. Noise mitigation measures should be fully implemented in accordance with the EM&A requirement.

ES09 Moreover, special attention should be paid on the potential construction dust impact since the construction site is located in urban area. The Contractor should fully implement the construction dust mitigation measures properly.

ES010 The Contractor should also prevent muddy water and other water pollutants via site surface water runoff get into public areas, water quality mitigation measures should be properly implemented.

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1 INTRODUCTION

PROJECT BACKGROUND

- 1.01 **KADEN CONSTRUCTION LIMITED** (hereinafter ‘KCL’) has been awarded by the MTR Corporation Limited (MTRCL) of the Contract No. *MTRC6593-13C – Wan Chai Station Lee Tung Street Subway* (hereinafter “the Project”), which is a Designated Project to be implemented under Environmental Permit EP-444/2012 (hereinafter referred as “the EP-444/2012” or “the EP”).
- 1.02 The Project includes redevelopment of the Lee Tung Street area to improve pedestrian networking by enhancing the accessibility, connectivity and circulation of human traffic north-south from Queen’s Road East area to Wan Chai MTR Station, and providing a safe and attractive means for pedestrian crossing of Johnston Road. The Project site layout plan is shown in [Appendix A](#) and works under the Project comprise:
- (i) Construction of a pedestrian subway link between Urban Renewal Authority’s Redevelopment at Site H15 (the Development) and Wan Chai Station (WAC);
 - (ii) Construction of two ventilation shafts; and
 - (iii) Modification works of some of the station concourse.
- 1.03 The Project is expected to take about 36 months. In order to effectively implement the environmental protection measures as stipulated in the Particular Specification (PS) of Project, an Environmental Monitoring and Audit Plan (EMAP) which enclosed in the Project Profile (PP) was prepared to guide the setup of the environmental monitoring and audit (EM&A) programme of the Project.
- 1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by KCL as the independent environmental team (ET) to implement the relevant EM&A programme of the Project.
- 1.05 The baseline monitoring program was carried out during the period between **3 June 2014** and **19 June 2014** at the proposed monitoring locations by the ET according to the approved EMAP. The “Baseline Monitoring Report (R0010 Version 4)” which has verified by IEC, was submitted to EPD on **15 July 2014** before commencement of major construction works. As notified by KCL, the construction of the Project was commenced on 28 August 2014. Therefore, EM&A programme was started on 28 August 2014.
- 1.06 This is 3rd monthly EM&A report presenting the monitoring results and inspection findings in The Reporting Period from **1 to 30 November 2014**.

REPORT STRUCTURE

- 1.07 This Report is structured into the following sections:-
- Section 1 Introduction*
 - Section 2 Project Organization*
 - Section 3 Environmental Impact Monitoring Requirement*
 - Section 4 Monitoring Results*
 - Section 5 Waste Management*
 - Section 6 Site Inspections*
 - Section 7 Environmental Complaint and Non-Compliance*
 - Section 8 Implementation Status of Mitigation Measures*
 - Section 9 Conclusions and Recommendations*

2 PROJECT ORGANIZATION AND SUBMISSION

PROJECT ORGANIZATION

2.01 The project organization is shown in [Appendix B](#). The responsibilities of respective parties are:

MTR Corporation Limited (MTRCL)

2.02 MTRCL is the Project Proponent and the Permit Holder of the EP of the development of the Project and will assume overall responsibility for the project. Also, an Independent Environmental Checker (IEC) should be employed by MTRCL to audit the results of the EM&A work conducted by Environmental Team.

Environmental Protection Department (EPD)

2.03 EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

Resident Engineer (RE)

2.04 The RE is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

- Monitor the Contractor's compliance with Contract Specifications, including the effective implementation and operation of the environmental mitigation measures;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- Participate in site inspections undertaken by the ET; and
- Co-operate with the ET in providing all the necessary information and assistance for completion of the complaint investigation works.

Independent Environmental Checker (IEC)

2.05 The IEC should advise the ET and RE on environmental issues related to the project. The IEC should audit from an independent viewpoint on the environmental performance during the construction of the project. The IEC should be a person who has relevant professional qualifications in environmental control and at least 7 years' experience in EM&A and environmental management. The duties and responsibilities of the IEC are:

- Review and audit in an independent, objective and professional manner in all aspects of the EM&A programme;
- Validate and confirm the accuracy of monitoring results, appropriateness of monitoring equipment, monitoring locations with reference to the locations of the nearby sensitive receivers, and monitoring procedures;
- Carry out random sample check and audit on monitoring data and sampling procedures, etc;
- Conduct random site inspection;
- Review the effectiveness of environmental mitigation measures and project environmental performance;
- On an as-need basis, verify and certify the environmental acceptability of the construction methodology (both temporary and permanent works), relevant design plans and submissions under the environmental permit. Where necessary, the IEC should agree in consultation with the ET and the Contractor least impact alternative;
- Check complaint cases and the effectiveness of corrective measures;
- Verify EM&A report certified by the ET Leader; and
- Feedback audit results to RE/ET according to the Event/Action Plan.

Environmental Team (ET)

2.06 The ET should conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance requirements during construction. The ET should plan, organize and manage the implementation of the EM&A programme and ensure that the EM&A works are undertaken to the required standard.

2.07 The ET should be led and managed by the ET Leader. The ET Leader should have relevant

professional qualifications in environmental control and possess at least 7 years' experience in EM&A. The ET Leader should be responsible for the implementation of the EM&A programmes in accordance with the EM&A requirements. The duties and responsibilities of the ET include:

- Sampling, analysis and statistical evaluation of monitoring parameters;
- Environmental site surveillance;
- Inspection and audit of compliance with environmental protection, and pollution prevention and control regulations;
- Assess the effectiveness of the environmental mitigation measures implemented;
- Monitor compliance with the environmental protection clauses/specifications in the Contract;
- Review construction programme and comment as necessary;
- Review work methodologies which may affect the extent of environmental impact during the construction phase and comment as necessary;
- Complaint investigation, evaluation and identification of corrective measures;
- Liaison with the IEC on all environmental performance matters, and timely submission of all relevant EM&A proforma for IEC's approval; and
- Advice to Contractor on environmental improvement, awareness and enhancement matters etc.

The Contractor

- 2.08 The Contractor should report to the RE. The duties and responsibilities of the Contractor are:
- Comply with the relevant contract conditions and specifications on environmental protection
 - Participate in the site inspections undertaken by the ET;
 - Provide assistance to ET to carry out monitoring;
 - Provide requested information to the ET in the event of any exceedance in the environmental criteria (Action/Limit levels);
 - Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event / Action Plans; and
 - Cooperate with the ET in providing all the necessary information and assistance for completion of the complaint investigation works. If mitigation measures are required following the investigation, the Contractor should promptly carry out these measures.

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

- 2.09 In according with the EP stipulation, the required documents submission status to EPD for retention as listed below:

Table 2-1 Submission/Set-up Status of the EP Requirements

EP Condition	Submission	Status
2.3	Management Organization of Main Construction Companies	Submitted
2.7	Landscape Plan	Submitted
3.3	Baseline Monitoring Report (TCS00704/14/600/R0010v4)	Submitted
4.2	Internet website	live

- 2.10 Summary of the relevant permits, licenses, and/or notifications on environmental protection for the Project are presented in **Table 2-2**.

Table 2-2 Status of Environmental Licenses and Permits of the Project

Item	Description	License/Permit Status
1	Air pollution Control (Construction Dust) Regulation	NA
2	Chemical Waste Producer Registration - Waste Producers Number	WPN:5213-131-K3099-01 Approved on 14/05/2014
3	Water Pollution Control Ordinance - Discharge License	License no.: WT00019539-2014 Approved on 16/07/2014 Valid to: 31/07/2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account no.: 7019837 Approved on 30/04/2014

CONSTRUCTION PROGRESS

2.11 In this Reporting Period, construction activities conducted are listed below. Moreover, the master construction program is enclosed in *Appendix B*.

- Sheet pile installation works (Stage 1)
- Installation of pump wells
- Toe grouting
- Pumping test
- Installation of walling and strut

3 ENVIRONMENTAL IMPACT MONITORING REQUIREMENT

3.01 The ET will implement the EM&A programme in accordance with the requirements in EMAP. Details of the EM&A programme are presented in the following sub-sections.

MONITORING PARAMETERS

3.02 The EM&A impact monitoring program covers the following environmental aspects:

- Air Quality; and
- Construction noise

3.03 A summary of the monitoring parameters is presented in *Table 3-1*:

Table 3-1 Summary of the monitoring parameters of EM&A Requirements

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> • 24-hour Total Suspended Particulate (hereinafter '24-hour TSP') • 1-hour TSP monitoring (*)
Construction Noise	<ul style="list-style-type: none"> • A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'L_{eq(30min)}' during the normal working hours)

Remarks:

(*) *In case 24-hour TSP exceed the air quality criteria to be carried out*

MONITORING LOCATIONS

3.04 According to Sections 2.3 and 3.4 of the EMAP attached to the Project Profile (Register No. PP-472/2012), construction noise and air quality monitoring location is required to be set up at Hennessy Building and Chiu Hin Mansion. In early May 2014, site visit was conducted to select suitable locations to carry out relevant noise and air monitoring for the EM&A Programme. It was noted that both Hennessy Building and Chiu Hin Mansion are residential buildings and only the 1/F to 2/F of the buildings could be accessed which are commercial premises. It is not possible to set up the monitoring station at upper floors inside the residential apartment which will cause nuisance to the residents. Finally, two locations at lower floor were selected which access were successfully granted by the premises occupiers. The monitoring stations proposed for the Project are summarized *Table 3-2* and illustrated in *Appendix C*.

Table 3-2 Air and Noise Monitoring Locations

Aspect	Monitoring Location	Location ID	Address	Description
Air Quality	Chiu Hin Mansion	A1	balcony at 1/F of Chiu Hin Mansion	ASR close to the Project site
Construction Noise	Hennessey Building	N1	2/F floor of Hennessey Building	NSR facing to the Project site
	Chiu Hin Mansion	N2	balcony at 1/F of Chiu Hin Mansion	NSR facing to the Project site

MONITORING FREQUENCY AND PERIOD

3.05 The requirements of impact monitoring are stipulated in the EMAP and presented as follows.

Air Quality

3.06 Frequency of impact air quality monitoring is as follows:

- 24-hour TSP Once every 6 days during course of works.

3.07 In case of non-compliance with the air quality criteria, a more frequent monitoring exercise adopting 1-hour TSP monitoring undertaken when the highest dust impact occurs, as specified in the Event and Action Plan, should be conducted within 24 hours after the result is obtained. This additional monitoring should be continued until excessive dust emission or the deterioration in air quality is rectified.

Construction Noise

- 3.08 One set of $L_{eq(30min)}$ as 6 consecutive $L_{eq(5min)}$ between 0700-1900 hours on normal weekdays and once every week during course of works. If construction work necessary to carry out at other time periods, i.e. restricted time period (19:00 to 07:00 the next morning and whole day on public holidays) (hereinafter referred as “the restricted hours”), 3 consecutive $L_{eq(5min)}$ measurement will depended CNP requirements to undertake. Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

MONITORING EQUIPMENT

Air Quality Monitoring

- 3.09 The 24-hour TSP shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. A direct reading dust meter is used to measure 1-hour TSP air quality in case of non-compliance with air quality criteria of the 24-Hour TSP measurement.
- 3.10 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory. All equipment to be used for air quality monitoring is listed in **Table 3-3**.

Table 3-3 Air Quality Monitoring Equipment

Equipment	Model
<i>24-hour TSP</i>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5028A
<i>1- hour TSP</i>	
Portable Dust Meter	TSI Model 8520 DustTrak Aerosol Monitor / Aerocet 531 Handheld Particle Mass Profiler & Counter / Sibata LD-3A Laser Dust Monitor

- 3.11 According to the EMAP, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:
- 1) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
 - 2) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
 - 3) The wind data monitoring equipment should be re-calibrated at least once every six months.
 - 4) Wind direction should be divided into 16 sectors of 22.5 degrees each.
- 3.12 Although ET was successful granted HVS installation premises, however, the owners rejected to provide premises for wind data monitoring equipment installation.
- 3.13 In this situation, the ET proposed alternative methods to obtain representative wind data. Meteorological information as extracted from “the Hong Kong Observatory King’s Park Station” is alternative method to obtain representative wind data. For King’s Park Station, it also can provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In Hong Kong of a lot development projects, weather information extracted from Hong Kong Observatory is common alternative method if weather station installation not allowed.
- 3.14 Although there are other closer weather stations, King’s Park Station was selected as it is the nearest weather station that measures all the relevant parameters mentioned above. Moreover, the ET has compared the data among the stations, and concluded that there is minimal difference between meteorological data collected at the King’s Park station and other stations.

Construction Noise Monitoring

- 3.15 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s⁻¹. Furthermore, an acoustic calibrator and sound level meter shall be calibrated yearly.
- 3.16 Noise monitoring equipment to be used for monitoring is listed in **Table 3-4**.

Table 3-4 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-14
Calibrator	Rion NC-73 / B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

MONITORING METHODOLOGY

24-hour TSP

- 3.17 The equipment used for 24-hour TSP measurement listed in Table 3-3, is a Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (HVS) consists of the following:
- a. An anodized aluminum shelter;
 - b. A 8"x10" stainless steel filter holder;
 - c. A blower motor assembly;
 - d. A continuous flow/pressure recorder;
 - e. A motor speed-voltage control/elapsed time indicator;
 - f. A 7-day mechanical timer, and
 - g. A power supply of 220v/50 hz
- 3.18 The HVS is calibrated in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5028A). The 24-hour TSP Monitoring using the HVS is also processed in accordance with the manufacturer's Operations Manual. A valid calibration certificate of the calibration kit with the certificate of HVS calibrated is attached in **Appendix D**.
- 3.19 24-hour TSP is collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keeps all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal. HOKLAS-accreditation certificate of ALS Technichem (HK) Pty Ltd (ALS) is provided in **Appendix E**.

Noise

- 3.20 Sound level meter listed in **Table 3-4** comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), which was used for baseline noise monitoring. A valid of calibration certificates including sound level meter and an acoustic were shown in **Appendix D**.
- 3.21 The noise measurement is performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) in six consecutive Leq(5 min) measurements were used as the monitoring parameter.
- 3.22 During monitoring, the sound level meter mounted at the monitoring locations and oriented such that the microphone pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for the measurement. For the monitoring, N1 and N2 are conducted 1 m from the exterior of the building façade.

- 3.23 Prior construction noise measurement, the accuracy of the sound level meter checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The calibration level from before and after the noise measurement agrees to within 1.0dB.

DERIVATION OF ACTION/LIMIT (A/L) LEVELS

- 3.24 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to EMAP, the air quality and construction noise criteria were set up, namely Action and Limit levels are listed in *Tables 3-5* and *3-6*.

Table 3-5 Action and Limit Levels for Air Quality Monitoring

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
A1	290	162	500	260

Table 3-6 Action and Limit Levels for Construction Noise

Monitoring Station	0700-1900 hours on normal weekdays	
	Action Level	Limit Level
N1 and N2	When one documented complaint is received	75 dB(A)

Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

- 3.25 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix F*.

DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.26 The all monitoring data were handled by the ET's in-house data recording and management system.
- 3.27 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory results were input directly into the computerized database and checked by personnel other than those who input the data.
- 3.28 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

4 MONITORING RESULTS

4.01 The impact air quality and construction noise monitoring schedule is presented in [Appendix G](#) and the monitoring results are summarized in the following sub-sections.

24-HOUR TSP AIR QUALITY MONITORING RESULTS

4.02 In the Reporting Period, **5** occasions of 24-hours TSP monitoring was carried out at the proposed location A1 and the monitoring results are summarized in [Table 4-1](#). The detailed 24-hour TSP monitoring data are presented in [Appendix H](#) and the relevant graphical plots are shown in [Appendix I](#).

Table 4-1 Summary of 24-hour TSP Monitoring Results – A1

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	Action Level	Limit Level
3-Nov-14	106	162	260
8-Nov-14	74		
14-Nov-14	93		
20-Nov-14	83		
25-Nov-14	99		
Average (Range)	91 (74 - 106)		

4.03 As shown in [Table 4-1](#), 24-hour TSP monitoring results are fluctuated below Action/ Limit Levels.

NOISE MONITORING RESULTS

4.04 In the Reporting Period, **8** occasions noise measurement was conducted at N1 and N2. The sound level meter was set in 1m from the exterior of the building façade at N1 and N2. Therefore, no façade correction (+3 dB(A)) is added according to acoustical principles and EPD guidelines. The noise measurement results at N1 and N2 are listed in [Tables 4-2](#) and [4-3](#). The relevant graphical plots are shown in [Appendix I](#).

Table 4-2 Noise Monitoring Results of N1 (2/F floor of Hennessey Building), dB(A)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30min
6-Nov-14	10:29	72.2	73.7	75.7	76.0	74.9	73.0	74
11-Nov-14	14:02	72.3	72.1	71.5	71.0	72.8	69.9	72
18-Nov-14	14:50	68.9	68.1	67.8	68.3	69.1	70.0	69
25-Nov-14	14:10	73.6	73.0	72.8	72.1	73.4	73.8	73
Limit Level of Construction Noise		75 dB(A)						

Table 4-3 Noise Monitoring Results of N2 (balcony at 1/F of Chiu Hin Mansion), dB(A)

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30min
6-Nov-14	14:11	70.3	72.4	72.0	72.4	72.9	73.0	72
11-Nov-14	13:24	66.7	69.0	72.0	67.0	68.0	66.7	69
18-Nov-14	14:09	74.2	72.6	74.9	74.3	73.9	72.4	74
25-Nov-14	13:40	65.9	66.4	66.5	65.5	66.7	65.2	66
Limit Level of Construction Noise		75 dB(A)						

4.05 Referred to above tables, no noise measurement exceedance was recorded at both N1 and N2.

4.06 Furthermore, there is no noise complaint (Action Level exceedance) received by the MTRC and Contractor or EPD in the Reporting Period.

4.07 The meteorological data during the impact monitoring days are shown in [Appendix J](#).

5 WASTE MANAGEMENT

GENERAL WASTE MANAGEMENT

5.01 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

RECORDS OF WASTE QUANTITIES

5.02 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

5.03 The quantities of waste for disposal in this Reporting Period are summarized in *Table 5-1* and *5-2* and the Monthly Summary Waste Flow Table is shown in *Appendix K*.

Table 5-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (ton)	162.42	-
Reused in this Contract (Inert) (ton)	0	-
Reused in other Projects (Inert) (ton)	0	-
Disposal as Public Fill (Inert) (ton)	154.99	Chai Wan Public Fill Barging Point

Table 5-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (ton)	7.43	-

5.04 In the Reporting Period, effluent generated from the Project was discharged in accordance with the Wastewater Discharge License.

5.05 Moreover, it is reminded that C&D materials would be reused on-site as far as practicable.

6 SITE INSPECTION

6.01 According to the EMAP, the environmental site inspection shall be formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

6.02 During the Reporting Period, **four (4)** occasions of weekly site inspections to evaluate site environmental performance was carried out by the RE, ET and the Contractor dated **6, 11, 20 and 27 November 2014** and the IEC was joined the site inspection **20 November 2014**.

6.03 No non-compliance was noted. However, three (3) observations were recorded by the ET. The findings / deficiencies observed during the weekly site inspections are listed in **Table 6-1**.

Table 6-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
6 November 2014	<ul style="list-style-type: none"> • Poor quality effluent was observed, the Contractor should improve the efficiency of the sedimentation facility. • Free standing chemical drum was observed, the Contractor should provide drip tray for al chemical container. 	<ul style="list-style-type: none"> • The water quality in the sedimentation tank has been improved and acceptable. • Drip tray has been provided for all chemical drums.
11 November 2014	No specific findings were observed.	NA
20 November 2014	<ul style="list-style-type: none"> • Garbage bucket should be cleared on regular basis 	<ul style="list-style-type: none"> • Garbage bucket has been cleared.
27 November 2014	No specific findings were observed.	NA

6.04 Overall, site housekeeping such as daily cleanliness and weekly tidiness should be maintain in accordance with the PS requirements.

6.05 No site inspection was undertaken by external parties i.e. EPD and AFCD in this Reporting Month.

7 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

7.01 For the Project, no environmental complaint, summons and prosecution was received in the Reporting Period. The statistical summary table of environmental complaint is presented in *Tables 7-1, 7-2 and 7-3.*

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics					
	Frequency	Cumulative	Complaint Nature			
			Air	Noise	Water	Others
28 Aug – 31 Oct 2014	0	0	NA	NA	NA	NA
1– 30 Nov 2014	0	0	NA	NA	NA	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics					
	Frequency	Cumulative	Complaint Nature			
			Air	Noise	Water	Others
28 Aug – 31 Oct 2014	0	0	NA	NA	NA	NA
1– 30 Nov 2014	0	0	NA	NA	NA	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics					
	Frequency	Cumulative	Complaint Nature			
			Air	Noise	Water	Others
28 Aug – 31 Oct 2014	0	0	NA	NA	NA	NA
1– 30 Nov 2014	0	0	NA	NA	NA	NA

8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

GENERAL REQUIREMENTS

- 8.01 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the EMAP covered the issues of dust, noise, water and waste and they are summarized presented in [Appendix L](#).
- 8.02 The Works under the Project shall be implementing the required environmental mitigation measures according to the EMAP as subject to the site condition. Environmental mitigation measures generally to be implemented by the Contractor is listed in [Table 8-1](#).

Table 8-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Air Quality	<ul style="list-style-type: none"> Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; Public areas around the site entrance/exit had been kept clean and free from dust; and Tarpaulin covering of any dusty materials on a vehicle leaving the site.
Noise	<ul style="list-style-type: none"> Good site practices to limit noise emissions at the sources; Use of quiet plant and working methods; Use of site hoarding or other mass materials as noise barrier to screen the working site; Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs; and Limiting as use one construction plant within worksite, where practicable.
Water Quality	<ul style="list-style-type: none"> Wastewater were appropriately treated by treatment facilities; Drainage channels were provided to convey run-off into the treatment facilities; and Drainage systems were regularly and adequately maintained.
Waste and Chemical Management	<ul style="list-style-type: none"> Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
Landscape and Visual	<ul style="list-style-type: none"> Clear demarcation of works area to prevent damages to existing trees in close proximity; Protection of all trees planned to be retained onsite; Preserving all affected trees by transplanting where practical. Tree transplanting application and tree removal application shall be submitted for approval in accordance with ETWB TCW 3/2006; and Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colours.
General	<ul style="list-style-type: none"> The site was generally kept tidy and clean.

TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 8.03 Construction activities as undertaken in the coming month for the Project lists below:

- Excavation and lateral support works of SBC and Play's Area
- Traffic Deck Construction
- Block work installation inside WAC
- ABWF works inside WAC
- Installation and diversion of E&M Service inside WAC
- UU detection and diversion works on Johnston Road WB footpath

KEY ISSUES FOR THE COMING MONTH

8.04 Key issues to be considered in the coming month of the Project include:

- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;
- Silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent and stockpiling or disposal of materials at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

8.05 In addition, mosquito control measures should be continued to prevent mosquito breeding on site.

9 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

- 9.01 This monthly EM&A report presenting the monitoring results and inspection findings in The Reporting Period from **1** to **30 November 2014**.
- 9.02 In the Reporting Period, **5** occasions of 24-hours TSP monitoring was conducted at A1. The monitoring results are all below the Action/ Limit Level. No Notifications of Exceedances (NOEs) or the associated corrective actions were therefore issued.
- 9.03 In the Reporting Period, total **8** occasions of noise measurement was conducted at N1 and N2 and no exceedance were recorded.
- 9.04 No environmental complaint, notification of summons or successful prosecution was received in the Reporting Period.
- 9.05 Four (4) occasions of weekly site inspections to evaluate site environmental performance was carried out by the RE, ET and the Contractor on **6, 11, 20** and **27 November 2014** and the IEC was joined the site inspection **20 November 2014**. No non-compliance was noted and three (3) observations reminders were recorded by the ET. The environmental performance of the Project was considered as satisfactory.
- 9.06 In the Reporting Period, no site inspection was undertaken by external parties i.e. EPD and AFCD.

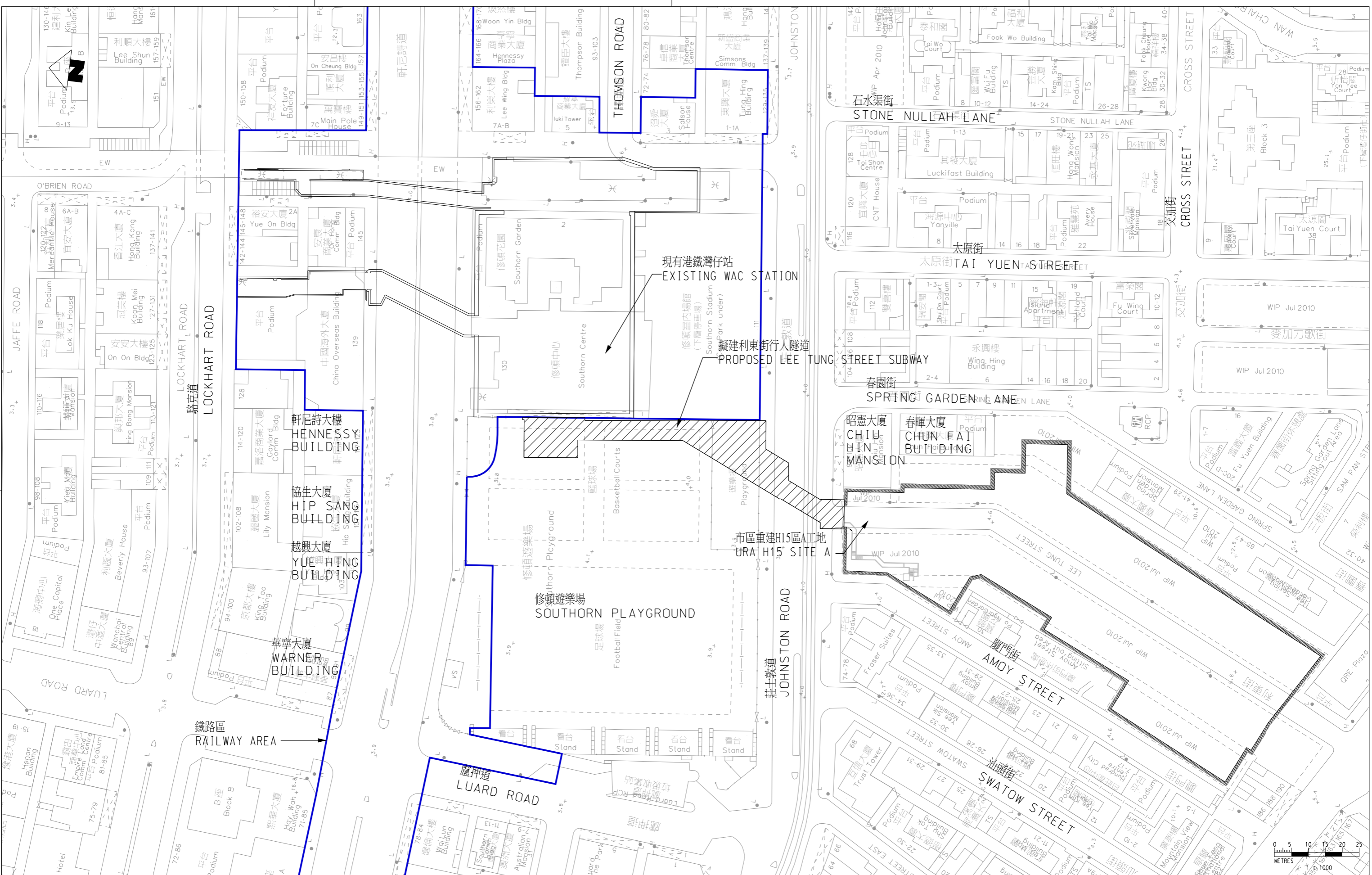
RECOMMENDATIONS

- 9.07 During dry season, special pay attention should be the potential construction dust impact since the Project site is located at urban areas. The Contractor should fully implement the construction dust mitigation measures properly.
- 9.08 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EMAP requirement.
- 9.09 Moreover, muddy water and other water quality pollutants via site surface water runoff get into to public areas should be avoided. Mitigation measures for water quality should be properly implemented.
- 9.10 As remind that the Contractor shall be properly performed and maintained a daily cleaning and weekly tidiness. In addition, mosquito control should be kept to prevent mosquito breeding on site.

Appendix A

Project Site Layout Plan

C:\ProgramData\Bentley\MicroStation\B1\SELECTseries\WorkSpace\System\p1c1g\MTR_PDF_BW_COL_300DP.dgn
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REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
D	GENERAL REVISION		16MAY12	AFK					
C	GENERAL REVISION		12AUG11	AFK					
B	GENERAL REVISION		18JUL11	AFK					
A	PROJECT PROFILE		04MAY11	AFK					

DRAWN	HO
DESIGNED	BW
CHECKED	BL
APPROVED	AFK
DATE	04MAY2011

MTR

WAC STATION LEE TUNG STREET SUBWAY

ORIGINATOR

Mott MacDonald

20/F Two Landmark East
 100 Hoi Hong Street
 Kowloon, Hong Kong
 Tel: +852 2808 8257
 Fax: +852 2807 1893
 www.mottmacdonald.com.hk

CADD REF. NEX1050_2.7A_0010.dgn

TITLE

CONSULTANCY AGREEMENT NO. NEX/1050
 DETAILED DESIGN FOR LEE TUNG STREET SUBWAY
 SITE LOCATION PLAN
 施工位置圖

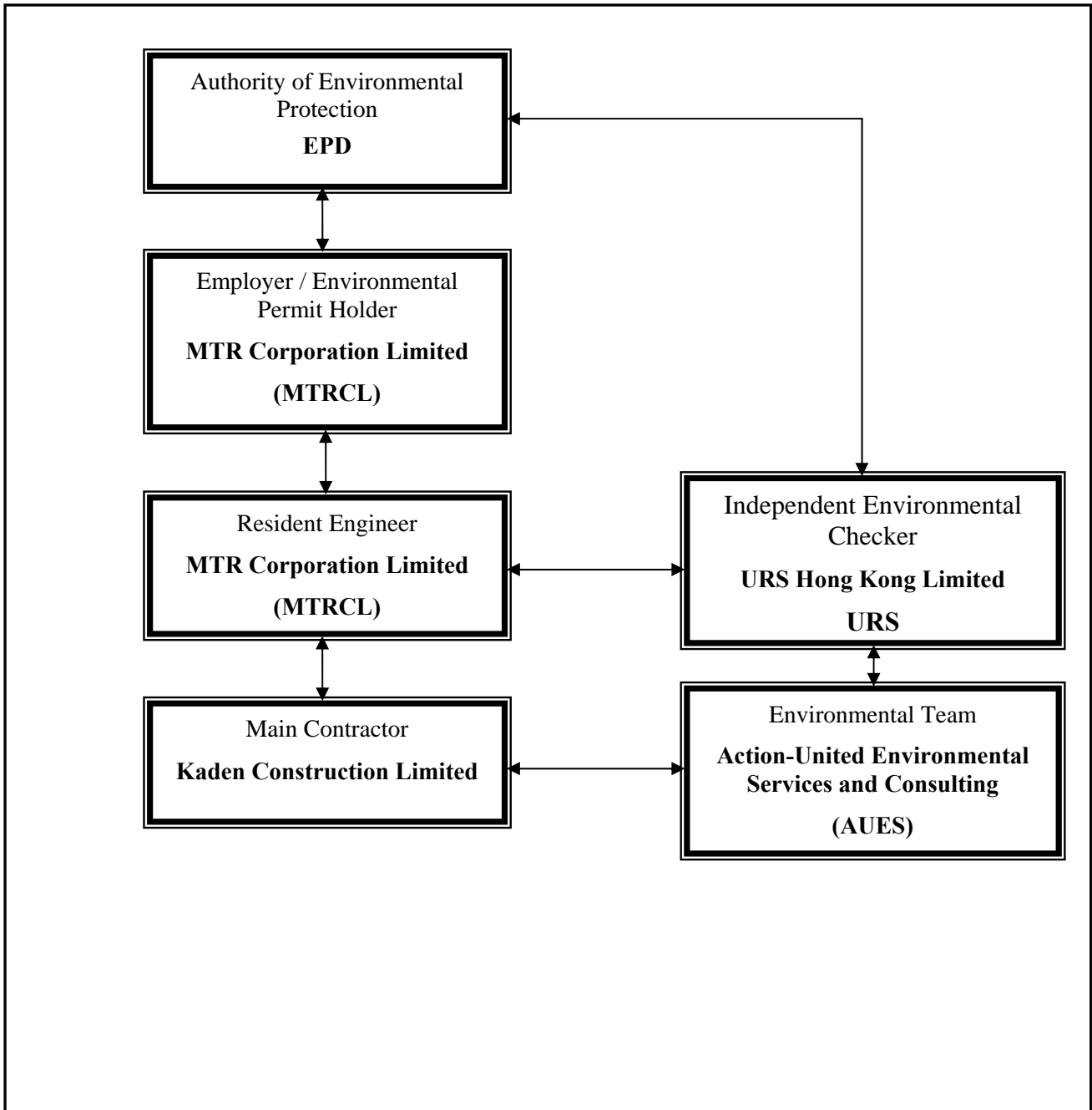
SCALE 1:1000 (A3)

DRAWING NO. NEX1050/2.7A/001

REV. D

Appendix B

**Organization of the Project
and
Master Construction Programme**



Contact Details of Key Personnel for the Project

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
MTRCL	Resident Engineer	Mr. Raymond Lee	3547 0002	3547 0090
URS	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
KCL	Project Manager	Mr. Vincent, Kwan Chun Yin	9833 1313	2770 4278
KCL	Site Agent	Mr. Chan Kam Chuen	6462 8910	2770 4278
KCL	Environmental Officer	Ms. Ricci Poon Wai Tin	9533 1115	2770 4278
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079

Legend:

MTRCL (Employer) – MTR Corporation Limited

MTRCL (Resident Engineer) – MTR Corporation Limited

KCL (Main Contractor) – Kaden Construction Limited

URS (IEC) – URS Hong Kong Limited

AUES (ET) – Action-United Environmental Services & Consulting

C6593-13C WAC Station Lee Tung Street Subway Rev.B (30-Sep'14)		Original Duration	Planned Start	Planned Finish	Total Float	2014					2015					2016					2017																			
Activity ID	Activity Name					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
C6593-13C WAC Station Lee Tung Street Subway Rev.B (30-Sep'14)																																								
Key Dates																																								
Commencement and Completion																																								
KDCOMM	Commencement of the Works (14-Apr'14)	0.00	14-Apr-14 08:00		0.00																																			
KDCOMP	Completion of the Whole of the Works, No.Cal.Wk. 150 (26-Feb'17)	0.00		26-Feb-17 18:00	0.00																																			
Specified Parts of the Works																																								
KD2A	2A - SBC Complete backfill, resurfacing, fencing, utilities, lighting and return to LCSD (28-Jun'15)	0.00		28-Jun-15 18:00	0.00																																			
KD2B	2B - Complete all works at the 2 new Shop Kiosks and hand over to the Employer (1-May'16)	0.00		01-May-16 18:00	0.00																																			
Programme Data / Interface Key Dates																																								
INF.AFC	Interface Access for AFC, C&C DC in new AFC Audit Room inside WAC, Concourse Level (27-Apr'15)	0.00	27-Apr-15 08:00		0.00																																			
INF.H15	Interface Access for Contract H15, All Levels, No.Cal.Wk. 120 (25-Jul'16)	0.00	25-Jul-16 08:00		0.00																																			
INF.SAMS	Interface Access for SAMS, Comms, MCS to All Areas, All Levels and Locations (10-Oct'16)	0.00	10-Oct-16 08:00		0.00																																			
Site Area Possession and Return Dates																																								
Site Area Possession Date																																								
WAPW1	Works Area 6593.W1, Within 3 months from commencement of works (14-Jul'14)	0.00	14-Jul-14 08:00		0.00																																			
WAPW2	Works Area 6593.W2, Within 9 months from commencement of works (14-Jan'15)	0.00	14-Jan-15 08:00		0.00																																			
WAPW3	Works Area 6593.W3, No later than 1 month after completion of reinstatement works at Works Area 6593.W1	0.00	08-Dec-16 08:00		1.00																																			
Site Area Return Date																																								
WARW1	Works Area 6593.W1, Within 36 months from commencement of works (14-Apr'17)	0.00		07-Dec-16 18:00	1.00																																			
WARW2	Works Area 6593.W2, Within 36 months from commencement of works (14-Apr'17)	0.00		07-Dec-16 18:00	81.00																																			
WARW3	Works Area 6593.W3, Within 2 months after possession date of Works Area 6593.W3	0.00		24-Feb-17 18:00	2.00																																			
Milestone Schedule																																								
Milestones A																																								
MSA01	A1 Approval of Preliminary Master Program, ICE, TTA, ELS & Temporary decking (3-Aug'14)	0.00		02-Aug-14 18:00	939.00																																			
MSA02	A2 Approval of Design of Mined Tunnel ESS; Hoarding phase/plan; TW under TramTrack; QP, SAP, PMP, H&SP, EMP (2-Nov'14)	0.00		01-Nov-14 18:00	848.00																																			
MSA03	A3 Satisfactory Implementation of Specified Plans (25-Jan'15)	0.00		24-Jan-15 18:00	764.00																																			
MSA04	A4 Approval of excavation method under Tram Track; Satisfactory Implementation of PMS (3-May'15)	0.00		02-May-15 18:00	666.00																																			
MSA05	A5 Approval of WAC D-wall demolition; Satisfactory Implementation of Specified Plans (2-Aug'15)	0.00		01-Aug-15 18:00	575.00																																			
MSA06	A6 Satisfactory Implementation of PMS (1-Nov'15)	0.00		31-Oct-15 18:00	484.00																																			
MSA07	A7 Satisfactory Implementation of Specified Plans (31-Jan'16)	0.00		30-Jan-16 18:00	393.00																																			
MSA08	A8 AIP for T&C of BS and ABWF works; Satisfactory Implementation of PMS (1-May'16)	0.00		30-Apr-16 18:00	302.00																																			
MSA09	A9 Satisfactory Implementation of Specified Plans (31-Jul'16)	0.00		30-Jul-16 18:00	211.00																																			
MSA10	A10 AIP of Draft O&M manual and Draft As-built Drawings; Satisfactory Implementation of PMS (30-Oct'16)	0.00		29-Oct-16 18:00	120.00																																			
MSA11	A11 Approval of O&M manual and As-built drawings for the Works (26-Feb'17)	0.00		06-Jan-17 18:00	51.00																																			
Milestones B																																								
MSB01	B1 Excavate to +2.5 of Southern Basketball Court & Jonhston Road Westbound utilities support/diversions (2-Nov'14)	0.00		01-Nov-14 18:00	848.00																																			
MSB02	B2 SBC RC base slab, JR NFP & EB carriageway works (33%), underpinning of tram track completed (25-Jan'15)	0.00		31-Dec-14 18:00	788.00																																			
MSB03	B3 SBC RC roof slab, JR North footpath and EB carriageway works completed (3-May'15)	0.00		14-Apr-15 18:00	684.00																																			
MSB04	B4 SBC return to LCSD, North Basket ball court takeover, JR footpath & EB Carriageway formation level reached (2-Aug'15)	0.00		15-Jul-15 18:00	592.00																																			
MSB05	B5 NBC cofferdam, base slab under JR footpath and EB carriageway completed (1-Nov'15)	0.00		09-Oct-15 18:00	506.00																																			
MSB06	B6 NBC Formation excavation, TramTrack Mined tunnel; JR WB Car'way&SFP Formation & H15 Opening completed (31-Jan'16)	0.00		19-Jan-16 18:00	404.00																																			
MSB07	B7 NBC Roof slab; JR NFP & EB Carriageway; Under Tram Track; JR WB and SFP RC completed (1-May'16)	0.00		30-Apr-16 18:00	302.00																																			
MSB08	B8 ABWF degree 1; NBC- Resurfacing & reinstatement works completed (31-Jul'16)	0.00		03-May-16 18:00	299.00																																			
MSB09	B9 ABWF degree 3; Road reinstatement in JR & Hennessy Road completed (30-Oct'16)	0.00		17-Oct-16 18:00	132.00																																			
MSB10	B10 All works in Cost Centre B satisfactorily completed (26-Feb'17)	0.00		07-Dec-16 18:00	81.00																																			
Milestones C																																								
MSC01	C1 AIP BS detail design (2-Nov'14)	0.00		08-Sep-14 18:00	902.00																																			
MSC02	C2 AIP BS shop drawings (25-Jan'15)	0.00		20-Nov-14 18:00	829.00																																			
MSC03	C3 Order all BS equipment and materials (3-May'15)	0.00		09-Jan-15 18:00	779.00																																			
MSC04	C4 Complete all factory acceptance testings (29-Nov'15)	0.00		27-May-15 18:00	641.00																																			
MSC05	C5 Complete all delivery to site for ECS plant room (31-Jul'16)	0.00		22-Mar-16 18:00	341.00																																			
MSC06	C6 Complete all installation, T&C for New Subway (4-Dec'16)	0.00		07-Oct-16 18:00	142.00																																			
MSC07	C7 Complete and pass all statutory inspections, Operations Team (26-Feb'17)	0.00		07-Dec-16 18:00	81.00																																			
Milestones D																																								
MSD01	D1 New AFC Audit Room construction completed (3-May'15)	0.00		24-Nov-14 18:00	825.00																																			
MSD02	D2 Old AFC Audit Room and Maxim's/ Circle K kiosks demolished (31-Jan'16)	0.00		18-Nov-15 18:00	466.00																																			
MSD03	D3 Breakthrough into WAC (29-May'16)	0.00		15-Mar-16 18:00	348.00																																			
MSD04	D4 All works in Cost Centre D satisfactorily completed (31-Jul'16)	0.00		21-Apr-16 18:00	311.00																																			
Milestones E																																								
MSE01	E1- AFC gates and barrier relocation works completed (3-Jan'16)	0.00		22-Dec-15 18:00	432.00																																			
MSE02	E2- All structural A&A works for TIM completed (30-Oct'16)	0.00		29-Oct-16 18:00	120.00																																			

- Actual Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Preliminary Master Programme (Rev.B)



Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Total Float	2014												2015												2016												2017												
						A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	J	F													
MSE03	E3- All works in milestone E completed (26-Feb'17)	0.00		29-Oct-16 18:00	120.00																																																	◆
A. Preliminaries and General Items																																																						
Design, ICE, Submission and Approval																																																						
Design, ICE, BD Submission and Approval																																																						
A01.ELS10	A1 - ELS & Temporary Decking - Design, ICE, Submission to BD for Approval	19.00	14-Apr-14 08:00	10-May-14 18:00	3.00																																																	
A01.ELS11	A1 - ELS & Temporary Decking - Review the submission	28.00	12-May-14 08:00	13-Jun-14 18:00	3.00																																																	
A01.ELS12	A1 - ELS & Temporary Decking - Preparation of re-submission (If Require)	14.00	14-Jun-14 08:00	30-Jun-14 18:00	3.00																																																	
A01.ELS13	A1 - ELS & Temporary Decking - BD Review, Resubmission if required, and Approval	28.00	02-Jul-14 08:00	02-Aug-14 18:00	3.00																																																	
A01.ELS20	A1 - ELS - Verification (based on 4 additional SI. AD-01 to AD-04), ICE	20.00	25-Jul-14 08:00	16-Aug-14 18:00	18.00																																																	
A01.ELS21	A1 - ELS - Verification (based on 4 additional SI. AD-01 to AD-04), ICE, Submission & Approval	28.00	18-Aug-14 08:00	19-Sep-14 18:00	18.00																																																	
A04.MIT10	A4 - Excavation method under tram track and TW design - Prepare, ICE and submission to BD/ GEO for Approval	39.00	14-Apr-14 08:00	04-Jun-14 18:00	28.00																																																	
A04.MIT20	A4 - Excavation method under tram track and TW design - Review submission	60.00	05-Jun-14 08:00	14-Aug-14 18:00	28.00																																																	
A04.MIT30	A4 - Excavation method under tram track and TW design - Address comments, ICE & Resubmission (if required)	24.00	15-Aug-14 08:00	12-Sep-14 18:00	28.00																																																	
A04.MIT40	A4 - Excavation method under tram track and TW design - Review & Approval (if required)	30.00	13-Sep-14 08:00	20-Oct-14 18:00	28.00																																																	
Design, ITC, TMLG Submission and Approval																																																						
A01.TTM10	TTMS - Submission to Members of TMLG for Approval, ref. ITT 6.2	4.00	14-Apr-14 08:00	17-Apr-14 18:00	13.00																																																	
A01.TTM20	TTMS - TMLG Meetings and Approval, Resubmission if required, RMO Applications	55.00	22-Apr-14 08:00	27-Jun-14 18:00	13.00																																																	
Contractor Submission and Approval																																																						
Programming, Specified Plans and Hoarding Plan																																																						
A01.PMP080	Submission schedule - Preparation & submission	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.PMP081	Submission schedule - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.PMP082	Submission schedule - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.PMP083	Submission schedule - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A01.PMP090	Initial Three Month Rolling Program - Preparation & submission	10.00	14-Apr-14 08:00	28-Apr-14 18:00	792.00																																																	
A01.PMP091	Initial Three Month Rolling Program - Review & Approval	24.00	29-Apr-14 08:00	28-May-14 18:00	792.00																																																	
A01.PMP092	Initial Three Month Rolling Program - Preparation for Re-submission (If Require)	12.00	29-May-14 08:00	12-Jun-14 18:00	792.00																																																	
A01.PMP093	Initial Three Month Rolling Program - Review and Approval (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	792.00																																																	
A01.PMP10	A1 Preliminary Master Program - Preparation & submission	47.00	14-Apr-14 08:00	13-Jun-14 18:00	75.00																																																	
A01.PMP11	A1 Preliminary Master Program - Review & Approval	14.00	14-Jun-14 08:00	30-Jun-14 18:00	75.00																																																	
A01.PMP12	A1 Preliminary Master Program - Preparation for Re-submission (If Require)	14.00	02-Jul-14 08:00	17-Jul-14 18:00	75.00																																																	
A01.PMP13	A1 Preliminary Master Program - Review and Approval (If Require)	14.00	18-Jul-14 08:00	02-Aug-14 18:00	75.00																																																	
A01.SPP10	A1 Specified Plans (QP, SAP, PMS, H&SP, EP) - Submission and Approval	27.00	14-Apr-14 08:00	20-May-14 18:00	107.00																																																	
A01.SPP20	A1 Specified Plans - Review, Resubmission if required, and Approval	30.00	21-May-14 08:00	25-Jun-14 18:00	107.00																																																	
A01.SPP210	Environmental management plan - Preparation & submission	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.SPP211	Environmental management plan - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.SPP212	Environmental management plan - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.SPP213	Environmental management plan - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A01.SPP220	Appoint Environmental team- submit for engineer approval	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.SPP221	Appoint Environmental team - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.SPP222	Appoint Environmental team - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.SPP223	Appoint Environmental team - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A01.SPP230	Quality Plan - Preparation & submission	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.SPP231	Quality Plan - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.SPP232	Quality Plan - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.SPP233	Quality Plan - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A01.SPP240	Health and Safety Plan - Preparation & submission	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.SPP241	Health and Safety Plan - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.SPP242	Health and Safety Plan - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.SPP243	Health and Safety Plan - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A01.SPP250	System Assurance Plan - Preparation & submission	22.00	14-Apr-14 08:00	14-May-14 18:00	780.00																																																	
A01.SPP251	System Assurance Plan - Review & Approval	24.00	15-May-14 08:00	12-Jun-14 18:00	780.00																																																	
A01.SPP252	System Assurance Plan - Preparation for Re-submission (If Require)	12.00	13-Jun-14 08:00	26-Jun-14 18:00	780.00																																																	
A01.SPP253	System Assurance Plan - Review and Approval (If Require)	12.00	27-Jun-14 08:00	11-Jul-14 18:00	780.00																																																	
A02.HRD100	A2 Hoarding phase - Preparation & submission	12.00	14-Apr-14 08:00	30-Apr-14 18:00	14.00																																																	
A02.HRD101	A2 Hoarding phase - Review & Approval	24.00	02-May-14 08:00	30-May-14 18:00	14.00																																																	
A02.HRD102	A2 Hoarding phase - Preparation for Re-submission (If Require)	12.00	31-May-14 08:00	14-Jun-14 18:00	14.00																																																	
A02.HRD103	A2 Hoarding phase - Review and Approval (If Require)	12.00	16-Jun-14 08:00	28-Jun-14 18:00	14.00																																																	
Implementation of Specified Plans																																																						
A02.SPP11	A2 Satisfactory Implementation of Quality Plan	0.00		01-Nov-14 18:00	0.00																																																	
A02.SPP12	A2 Satisfactory Implementation of Quality Plan	0.00		01-Nov-14 18:00	0.00																																																	
A02.SPP13	A2 Satisfactory Implementation of Quality Plan	0.00		01-Nov-14 18:00	0.00																																																	

- Actual Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone

Preliminary Master Programme (Rev.B)



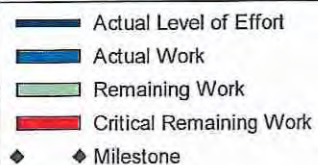
Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Total Float	2014					2015					2016					2017	
						A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
At Playground																						
B03.0200	Sheet pile at Playground, 42 x 16m, 23 x 24m, total no 65, 1224m, 93t, (prebored allowed); king post, 4 nr <i>(About 80%)</i>	20.00	14-Nov-14 08:00	06-Dec-14 18:00	1.00																	
B03.0270	Temporary decking at Play Area	28.00	27-Nov-14 08:00	31-Dec-14 18:00	1.00																	
At JnR Carriageway Kerb Lane																						
B03.0206	Sheet pile at JnR Carriageway EB Kerb Lane, 10 x 24m, total 240m, 18t	3.00	08-Dec-14 08:00	10-Dec-14 18:00	45.00																	
B03.0245	Pipe pile at JnR EB Carriageway EB Kerb Lane, 6 x 21m, total 126m	11.00	17-Nov-14 08:00	28-Nov-14 18:00	18.00																	
B03.0265	Grouting of pipe pile at JnR EB Carriageway Kerb Lane	11.00	20-Nov-14 08:00	02-Dec-14 18:00	18.00																	
B03.07285	Temporary decking at JnR EB Carriageway Kerb Lane	6.00	03-Dec-14 08:00	09-Dec-14 18:00	18.00																	
B5.0030	TTM3 JnR EB Carriageway Kerb Lane - Diversion of existing utilities and misc. works	24.00	20-Oct-14 08:00	15-Nov-14 18:00	63.00																	
B5.0035	TTM3 JnR South Footpath - Diversion of existing utilities and misc. works	24.00	20-Oct-14 08:00	15-Nov-14 18:00	38.00																	
Pump Test, Excavation, ELS																						
B03.0280	Pumping test 2	16.00	15-Apr-15 08:00	04-May-15 18:00	1.00																	
B03.0300	Play Area - Excavation & ELS, 3700 m3	14.00	05-May-15 08:00	20-May-15 18:00	1.00																	
B03.0310	Play Area - Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	14.00	21-May-15 08:00	06-Jun-15 18:00	14.00																	
RC Structures																						
B03.0400	RC Slab - Blinding layer concrete 75tk, waterproof membrane, cast slab, 610m ³ Concrete, ReBar 32.9T	33.00	05-Jun-15 08:00	15-Jul-15 18:00	14.00																	
B03.0500	RC Wall - Smoothing concrete 250tk, waterproof membrane, cast wall, 275m ³ Concrete, ReBar 87.2T	38.00	19-Jun-15 08:00	04-Aug-15 18:00	14.00																	
B03.0600	RC Top Slab - Cast top concrete slab, 285m ³ , ReBar 49.9T	45.00	06-Jul-15 08:00	26-Aug-15 18:00	14.00																	
Backfill and Miscellaneous Works																						
B03.0700	Play Area - Backfill to ground level, cut sheet pile 2m depth below ground, surface reinstatement	30.00	17-Aug-15 08:00	19-Sep-15 18:00	25.00																	
B03.0710	Play Area - Fencing, utilites, lighting, etc.	83.00	04-Jun-16 08:00	10-Sep-16 18:00	45.00																	
B7.PLA010	Play Area - Excavaton 51 m3, remove equipments incl. footings and foundations, etc.	21.00	21-Oct-14 08:00	13-Nov-14 18:00	1.00																	
TTM 4 - SBC, Playground, JnR North Footpath																						
Preliminaries, Instrumentation, UU Diversions, etc.																						
A01.HRD04	Stage 4 - Erect hoarding 26m, Remove hoarding 26m, and water infill barriers	5.00	02-Jan-15 08:00	07-Jan-15 18:00	24.00																	
B04.0100	Implement TTM4, trial trenches, instrumentation, installation of GIs, UU diversions at North Footpath, etc.	28.00	02-Jan-15 08:00	03-Feb-15 18:00	1.00																	
B5.0040	TTM4 JnR North Footpath - Diversion of existing utilities and misc. works	24.00	02-Jan-15 08:00	29-Jan-15 18:00	30.00																	
Sheet Pile, Pipe Pile, Grouting, Decking																						
B04.0200	Sheet pile at North Footpath, 25 x 24m, total 600m, 47t	25.00	04-Feb-15 08:00	07-Mar-15 18:00	1.00																	
B04.0260	Grouting of sheet pile at North Footpath	25.00	07-Feb-15 08:00	11-Mar-15 18:00	1.00																	
B04.0270	Temporary decking and UU support at JnR North Footpath	25.00	12-Mar-15 08:00	14-Apr-15 18:00	1.00																	
Pump Test, Excavation, ELS																						
B04.0280	Pumping test 3	16.00	15-Apr-15 08:00	04-May-15 18:00	15.00																	
B04.0300	Excavation & ELS, 700 m3	18.00	21-May-15 08:00	11-Jun-15 18:00	1.00																	
RC Structures Underneath JnR EB Carriageway & North Footpath																						
RC Structures Before Mined Tunnel Construction																						
B04.0400	RC Slab - Smoothing concrete 250tk, waterproof membrane, cast slab, 140m ³ Concrete, ReBar 21.1T	36.00	12-Jun-15 08:00	25-Jul-15 18:00	57.00																	
RC Structures After Mined Tunnel Construction																						
B04.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 117m ³ Concrete, ReBar 22.5T	20.00	14-Mar-16 08:00	09-Apr-16 18:00	8.00																	
B04.0600	RC Top Slab - Waterproof membrane, cast top slab, 65m ³ Concrete, ReBar 23.2T	18.00	11-Apr-16 08:00	30-Apr-16 18:00	8.00																	
MB07p	B7 NBC Roof slab; JR NFP & EB Carriageway; Under Tram Track; JR WB and SFP RC completed -Programmed	0.00		30-Apr-16 18:00	245.00																	
Backfill and Miscellaneous Works																						
B04.0700	Backfill to ground level, cut sheet pile 2m depth below ground, road reinstatement	47.00	03-May-16 08:00	28-Jun-16 18:00	8.00																	
TTM 5 - NBC, Playground, JnR North Footpath																						
Preliminaries, Instrumentation, UU Diversions, etc.																						
A01.HRD05	Stage 5 - Erect hoarding 127m, Remove hoarding 36m, Relocate 1 no. gate, and water infill barriers	19.00	13-Jun-15 08:00	07-Jul-15 18:00	3.00																	
B05.0100	Implement TTM5, trial trenches, instrumentation, UU diversion at NBC, etc.	14.00	13-Jun-15 08:00	30-Jun-15 18:00	3.00																	
B5.0050	TTM5 Playground NBC - Diversion of existing utilities and misc. works	28.00	13-Jun-15 08:00	17-Jul-15 18:00	21.00																	
Sheet Pile, Pipe Pile, Grouting, Decking																						
B05.0200	Sheet pile at NBC, 70 x 16m, 8 x 24m, total 1312m, 100t; and King post, 1 nr.	21.00	15-Jul-15 08:00	07-Aug-15 18:00	3.00																	
B05.0240	Pipe pile at GL B (at NBC), 17 x 16m, total 272m	32.00	15-Jul-15 08:00	20-Aug-15 18:00	3.00																	
Pump Test, Excavation, ELS																						
B05.0280	Pumping test 4	11.00	21-Aug-15 08:00	02-Sep-15 18:00	3.00																	
B05.0300	NBC Excavation & ELS, 3000 m3	26.00	03-Sep-15 08:00	05-Oct-15 18:00	3.00																	
B05.0310	NBC Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	23.00	14-Sep-15 08:00	12-Oct-15 18:00	3.00																	
B7.NBC010	W1 NBC - Excavation 116 m3, remove existing basketball court surface 375 m2	4.00	13-Jun-15 08:00	17-Jun-15 18:00	24.00																	
RC Structures																						
B05.0400	RC Slab - Smoothing concrete 250tk, waterproof membrane, cast slab, 420m ³ Concrete, ReBar 29.4T	42.00	29-Sep-15 08:00	18-Nov-15 18:00	3.00																	
B05.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 280m ³ Concrete ReBar 59.3T	44.00	14-Oct-15 08:00	04-Dec-15 18:00	3.00																	
B05.0600	RC Top Slab - Waterproof membrane, cast top slab, 195m ³ Concrete, ReBar 51.1T	48.00	29-Oct-15 08:00	23-Dec-15 18:00	46.00																	
Backfill and Miscellaneous Works																						
B05.0700	Backfill to ground level, cut sheet pile 2m depth below ground, reinstate footpath	48.00	10-Dec-15 08:00	06-Feb-16 18:00	46.00																	
B7.NBC020	W1 NBC - Reinstatement - Subgrade, rc slab/light fnd., EPDM surface coat 375 m2, furnitures, etc.	24.00	24-Dec-15 08:00	23-Jan-16 18:00	58.00																	

- Actual Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Preliminary Master Programme (Rev.B)



Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Total Float	2014												2015												2016												2017																																																																																																																																																																																																													
						M			J			J			A			S			O			N			D			J			F			M			A			M			J			J			A			S			O			N			D			J			F																																																																																																																																																																																		
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
TTM 6 - NBC, Playground, JnR North Footpath, Carriageway WB																																																																																																																																																																																																																																																							
Preliminaries, Instrumentation, UU Diversions, etc.																																																																																																																																																																																																																																																							
A01.HRD06	Stage 6 - Erect hoarding 52m, and water infill barriers	6.00	08-Jul-15 08:00	14-Jul-15 18:00	3.00																																																																																																																																																																																																																																																		
B06.0100	Implement TTM6, trial trenches, instrumentation, UU diversions at North Footpath, etc.	24.00	15-Apr-15 08:00	13-May-15 18:00	6.00																																																																																																																																																																																																																																																		
Sheet Pile, Pipe Pile, Grouting, Decking																																																																																																																																																																																																																																																							
B06.0200	Sheet pile at JnR WB Carriageway, 23 x 21m, total 483m, 37t	6.00	14-May-15 08:00	20-May-15 18:00	6.00																																																																																																																																																																																																																																																		
B06.0240	Pipe pile at Johnston Road WB Carriageway, 17 x 21m, total 357m	38.00	21-May-15 08:00	07-Jul-15 18:00	6.00																																																																																																																																																																																																																																																		
B06.0260	Grouting of pipe pile at JnR WB Carriageway	21.00	15-Jun-15 08:00	10-Jul-15 18:00	6.00																																																																																																																																																																																																																																																		
B06.0265	Jet grout soil blocks for mined tunneling at JnR WB Carriageway	31.00	21-May-15 08:00	27-Jun-15 18:00	16.00																																																																																																																																																																																																																																																		
B06.0270	Temporary decking at JnR WB Carriageway	15.00	11-Jul-15 08:00	28-Jul-15 18:00	6.00																																																																																																																																																																																																																																																		
Mined Tunnel Underneath Tram Track																																																																																																																																																																																																																																																							
Preliminaries, Horizontal Pipe Piles and Grouting																																																																																																																																																																																																																																																							
MIT.TW004	2 Months notification to HKT prior to construction of mined tunneling works	72.00	06-Feb-15 08:00	09-May-15 18:00	28.00																																																																																																																																																																																																																																																		
MIT.TW006	3mT TAM Grout to 1.6m-extent from tunnel temporary extrados	26.00	12-Jun-15 08:00	14-Jul-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW020	Break through pipe piles & flame cut holes in sheet H pile	6.00	08-Jul-15 08:00	14-Jul-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW030	Drilling full periphery for grouting, approx. 12mL	18.00	15-Jul-15 08:00	04-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW040	1.6mT TAM grouting surrounding extrados of proposed steel tube periphery, approx. 12mL	18.00	18-Jul-15 08:00	07-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW050	Install steel tube for full periphery	18.00	22-Jul-15 08:00	11-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW060	Pressure grouting to fill steel tube and drilled voids around steel periphery	18.00	25-Jul-15 08:00	14-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW070	Weld steel rib in front of pipe pile/ sheet pile wall & within steel periphery	14.00	25-Jul-15 08:00	10-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW080	Remove sheet H pile sections and strutting for tunnel heading excavation	3.00	11-Aug-15 08:00	13-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW090	Measure ground water flow and supplementary grouting	2.00	14-Aug-15 08:00	15-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.TW100	Install temporary face support works	3.00	17-Aug-15 08:00	19-Aug-15 18:00	1.00																																																																																																																																																																																																																																																		
RC Structures																																																																																																																																																																																																																																																							
MIT.CS0010	Blinding layer, smooth concrete and waterproofing, 2 bays	3.00	20-Jan-16 08:00	22-Jan-16 18:00	1.00																																																																																																																																																																																																																																																		
MIT.CS0100	RC Base Slabs - Smoothing concrete 250tk, waterproof membrane, cast slab, 68m^3 Concrete, ReBar 10.5T	18.00	23-Jan-16 08:00	16-Feb-16 18:00	1.00																																																																																																																																																																																																																																																		
MIT.CS0200	RC Walls - Smoothing concrete 250tkm waterproof membrane, cast wall, 26m^3 Concrete, ReBar 22.3T	18.00	04-Feb-16 08:00	27-Feb-16 18:00	1.00																																																																																																																																																																																																																																																		
MIT.CS0300	RC Top Slabs - Waterproof membrane, cast top slab, 23m^3 Concrete, ReBar 10.5T	20.00	19-Feb-16 08:00	12-Mar-16 18:00	1.00																																																																																																																																																																																																																																																		
MIT.CS0900	Completion of Mined Tunnel Structure & completion of whole tunnel structure	0.00	14-Mar-16 08:00		1.00																																																																																																																																																																																																																																																		
Mined Tunnel Excavation																																																																																																																																																																																																																																																							
Top Bench																																																																																																																																																																																																																																																							
MIT.EX0110	Excavate 1st 1/4 top bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (135m3)	24.00	20-Aug-15 08:00	16-Sep-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.EX0120	Excavate 2nd 1/4 top bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (135m3)	24.00	03-Sep-15 08:00	02-Oct-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.EX0140	Excavate 3rd 1/4 top bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (135m3)	36.00	03-Oct-15 08:00	14-Nov-15 18:00	13.00																																																																																																																																																																																																																																																		
MIT.EX0150	Excavate last 1/4 top bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (135m3)	36.00	17-Oct-15 08:00	28-Nov-15 18:00	13.00																																																																																																																																																																																																																																																		
Middle Bench																																																																																																																																																																																																																																																							
MIT.EX0155	Excavate 1st 1/2 middle bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (270m3)	36.00	03-Oct-15 08:00	14-Nov-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.EX0160	Excavate last 1/2 middle bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (270m3)	60.00	02-Nov-15 08:00	13-Jan-16 18:00	13.00																																																																																																																																																																																																																																																		
Bottom Bench																																																																																																																																																																																																																																																							
MIT.EX0170	Excavate 1st 1/2 bottom bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c (270m3)	36.00	02-Nov-15 08:00	12-Dec-15 18:00	1.00																																																																																																																																																																																																																																																		
MIT.EX8874	Excavate 1st last 1/2 bottom bench 12x1m advance heading, shotcrete face, install steel frame/beam/column@1000c/c(270m3)	25.00	14-Dec-15 08:00	14-Jan-16 18:00	1.00																																																																																																																																																																																																																																																		
Break Through Pipe Pile Wall																																																																																																																																																																																																																																																							
MIT.EX8878	Break through 1st 1/2 pipe piles & flame cut sheet H pile	18.00	27-Nov-15 08:00	17-Dec-15 18:00	9.00																																																																																																																																																																																																																																																		
MIT.EX8882	Break through remaining 1/2 pipe piles & flame cut sheet H pile	17.00	30-Dec-15 08:00	19-Jan-16 18:00	1.00																																																																																																																																																																																																																																																		
TTM 7 - NBC, Playground, JnR North & South Footpath																																																																																																																																																																																																																																																							
Preliminaries, Instrumentation, UU Diversions, etc.																																																																																																																																																																																																																																																							
A01.HRD07	Stage 7 - Erect hoarding 18m, Remove hoarding 32m, and water infill barriers	5.00	29-Jul-15 08:00	03-Aug-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0100	Implement TTM7	2.00	29-Jul-15 08:00	30-Jul-15 18:00	6.00																																																																																																																																																																																																																																																		
Sheet Pile, Pipe Pile, Grouting, Decking																																																																																																																																																																																																																																																							
B07.0200	Sheet pile at JnR South Footpath, 10 x 21m, total 210m, 16t	5.00	04-Aug-15 08:00	08-Aug-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0270	Temporary decking at JnR South Footpath	10.00	10-Aug-15 08:00	20-Aug-15 18:00	6.00																																																																																																																																																																																																																																																		
Pump Test, Excavation, ELS																																																																																																																																																																																																																																																							
B07.0280	Pumping test 5	12.00	21-Aug-15 08:00	03-Sep-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0300	Excavation & ELS, 700 m3	14.00	04-Sep-15 08:00	19-Sep-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0310	Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	12.00	10-Sep-15 08:00	23-Sep-15 18:00	6.00																																																																																																																																																																																																																																																		
RC Structures																																																																																																																																																																																																																																																							
B07.0400	RC Slab - Smoothing concrete 250tk, waterproof membrane, cast slab, 120m^3 Concrete, ReBar 6.0T	28.00	17-Sep-15 08:00	22-Oct-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 55m^3 Concrete, ReBar 19.3T	34.00	03-Oct-15 08:00	12-Nov-15 18:00	6.00																																																																																																																																																																																																																																																		
B07.0600	RC Top Slab - Waterproof membrane, cast top slab, 55m^3 Concrete, ReBar 9.0T	38.00	17-Oct-15 08:00	01-Dec-15 18:00	6.00																																																																																																																																																																																																																																																		
Backfill and Miscellaneous Works																																																																																																																																																																																																																																																							
B07.0700	Backfill to ground level, cut sheet pile 2m depth below ground, reinstate road & footpath at EB & WB footpaths	30.00	02-Dec-15 08:00	08-Jan-16 18:00	45.00																																																																																																																																																																																																																																																		
TTM 8 - NBC, Playground, JnR Carriageway EB Kerb Lane & WB																																																																																																																																																																																																																																																							



Preliminary Master Programme (Rev.B)



Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Total Float	2014												2015												2016												2017
						M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F			
TTM 8 - NBC, Playground, JnR Carriageway EB Median Lane																																										
A01.HRD08	Stage 8 - Erect hoarding 55m, Remove hoarding 24m, Relocate 1 no. gate, and water infill barriers	8.00	09-Jan-16 08:00	18-Jan-16 18:00	45.00																																					
B08.0100	Implement TTM8	6.00	09-Jan-16 08:00	15-Jan-16 18:00	45.00																																					
B08.0200	Cut down sheetpiles at JnR Carriageway EB Kerb Lane & pipe piles at JnR Carriageway WB 2m below ground	18.00	19-Jan-16 08:00	11-Feb-16 18:00	45.00																																					
B08.0700	Backfill and reinstate	18.00	12-Feb-16 08:00	03-Mar-16 18:00	45.00																																					
TTM 9 - NBC, Playground, JnR Carriageway EB Median Lane																																										
A01.HRD09	Stage 9 - Erect hoarding 14m, Remove hoarding 37m, Relocate 1 no. gate, and water infill barriers	4.00	04-Mar-16 08:00	08-Mar-16 18:00	47.00																																					
B09.0100	Implement TTM9	6.00	04-Mar-16 08:00	10-Mar-16 18:00	45.00																																					
B09.0200	Cut down sheetpiles and pipe piles 2 m below ground at JnR Carriageway EB Median Lane and JnR Carriageway WB	19.00	11-Mar-16 08:00	06-Apr-16 18:00	45.00																																					
B09.0700	Backfill and reinstate	22.00	07-Apr-16 08:00	03-May-16 18:00	45.00																																					
TTM 10 - NBC, Playground																																										
A01.HRD10	Stage 10 - Remove hoarding 32m, and remove water infill barriers	3.00	05-May-16 08:00	07-May-16 18:00	45.00																																					
B10.0100	Implement TTM10	6.00	27-Apr-16 08:00	04-May-16 18:00	45.00																																					
B10.0200	Cut down sheetpiles and pipe piles 2 m below ground at NBC and Playground	22.00	09-May-16 08:00	03-Jun-16 18:00	45.00																																					
B10.0700	Backfill and reinstate - NBC	42.00	04-Jun-16 08:00	25-Jul-16 18:00	176.00																																					
Subway ABWF Works																																										
BAF.0010	Subway ABWF works - Degree 1 (1st Batch)	65.00	13-Jun-15 08:00	29-Aug-15 18:00	3.00																																					
BAF.0011	Subway ABWF works - Degree 1 (Remaining Batch) (31-Jul'14)	80.00	31-Aug-15 08:00	04-Dec-15 18:00	3.00																																					
BAF.0030	Subway ABWF works - Degree 3 (1st Batch)	70.00	30-Jan-16 08:00	28-Apr-16 18:00	107.00																																					
BAF.0031	Subway ABWF works - Degree 3 (2nd Batch)	70.00	29-Apr-16 08:00	23-Jul-16 18:00	107.00																																					
BAF.0032	Subway ABWF works - Degree 3 (Remaining Batch)(30-Oct'16)	70.00	25-Jul-16 08:00	17-Oct-16 18:00	107.00																																					
MB09p	B9 ABWF degree 3 - Programmed	0.00		17-Oct-16 18:00	107.00																																					
B3 Fresh Air Intake Facility																																										
Structure and ABWF																																										
B3.0010	Fresh Air Intake Structure, 40D/20 14 m3, formwork 79 m2, rebar 2t	36.00	27-Aug-15 08:00	09-Oct-15 18:00	14.00																																					
B3.0100	Fresh Air Intake ABWF works, Waterproof membrane 45 m2, Tiling roof+wall&column 9+45m2, kerb 12m, louvre 3 nr.	50.00	10-Oct-15 08:00	08-Dec-15 18:00	107.00																																					
B4 Smoke Extraction Facility																																										
Structure and ABWF																																										
B4.0010	Smoke Extraction Structure, 40D/20 16 m3, formwork 127 m2, rebar 2t	36.00	10-Oct-15 08:00	21-Nov-15 18:00	14.00																																					
B4.0100	Smoke Extraction ABWF works, Waterproof membrane 70 m2, Tiling roof+wall&column 9+45m2, kerb 12m, louvre 1 nr.	42.00	09-Dec-15 08:00	29-Jan-16 18:00	107.00																																					
B6 URA H15 Breakout																																										
Structure and ABWF																																										
B6.0010	Preparation and Breaking out at URA H15, 7.5mW x 4.5mH	36.00	03-Nov-15 08:00	14-Dec-15 18:00	117.00																																					
B6.0020	URA H15 ABWF, Prepare surface 25m, plastering+screeding 25+8m2, tiling 17m2, kerb 2m, ceiling 8m3, cladding 9m2	60.00	15-Dec-15 08:00	29-Feb-16 18:00	117.00																																					
INF.H15p	Interface Access for Contract H15, All Levels, No.Cal.Wk. 131	0.00		29-Feb-16 18:00	117.00																																					
B7 Reprovisioning Works to Southern Playground																																										
NBC and SBC at Works Area 6593.W3 (Stage 11 & Stage 12)																																										
A01.HRD11	Stage 11 - Erect hoarding 66m, Erect 1 no. gate (Reinstatement NBC)	4.00	08-Dec-16 08:00	12-Dec-16 18:00	1.00																																					
A01.HRD12	Stage 12 - Erect hoarding, 58m, Remove hoarding 58m (Reinstatement SBC)	6.00	18-Jan-17 08:00	24-Jan-17 18:00	1.00																																					
B7.NBC310	W3 NBC - Excavaton 116 m3, remove existing basketball court surface 375 m2	4.00	13-Dec-16 08:00	16-Dec-16 18:00	1.00																																					
B7.NBC320	W3 NBC - Reinstatement - Subgrade, rc slab/light fnd., EPDM surface coat 375m2, furnitures, etc.	24.00	17-Dec-16 08:00	17-Jan-17 18:00	1.00																																					
B7.SBC310	W3 SBC - Excavaton 116 m3, remove existing basketball court surface 375 m2	6.00	25-Jan-17 08:00	03-Feb-17 18:00	1.00																																					
B7.SBC320	W3 SBC -Reinstatement - Subgrade, rc slab/light fnd., EPDM surface coat 375m2, furnitures, etc.	18.00	04-Feb-17 08:00	24-Feb-17 18:00	1.00																																					
Play Area																																										
B7.PLA020	Play Area - Reinstatement - Install equipments, safety mat 330 m2, etc.	88.00	10-Nov-15 08:00	26-Feb-16 18:00	206.00																																					
Landscaping Works																																										
B7.LDS200	Play Area - RC wall & footing, finish to match existing 160m, planter wall 197m, etc.	40.00	21-Sep-15 08:00	09-Nov-15 18:00	25.00																																					
B7.LDS300	Play Area - Landscaping, Shrubs 1198 nr, tree 17 nr.	90.00	10-Nov-15 08:00	29-Feb-16 18:00	204.00																																					
B7.LDS900	Playground - Joint inspection and handover to LCSD	28.00	12-Sep-16 08:00	17-Oct-16 18:00	45.00																																					
B8 Ground Investigation Works																																										
B00.0110	Confirmation of location of SI, PH01, by the Engineer	1.00	14-Jul-14 08:00	14-Jul-14 18:00	35.00																																					
B00.0111	Mobilization of SI rigs	4.00	15-Jul-14 08:00	18-Jul-14 18:00	35.00																																					
B00.0120	Site Investigation, PH01	8.00	19-Jul-14 08:00	28-Jul-14 18:00	35.00																																					
B00.0130	Site Investigation, Lab tests and report, and submission	28.00	29-Jul-14 08:00	29-Aug-14 18:00	35.00																																					
C. Subway Building Services Works																																										
Design, Shop Drawings, Materials & Equipments Submission and Approval																																										
C1.0010	BS Works - Design, Materials and Equipments - Submission & AIP (1st Batch)	60.00	14-Apr-14 08:00	28-Jun-14 18:00	6.00																																					
C1.0015	BS Works - Design, Materials and Equipments - Submission & AIP (Remaining)	60.00	30-Jun-14 08:00	08-Sep-14 18:00	6.00																																					
C2.0010	BS Works - Shop drawings - Submission & AIP (1st Batch)	60.00	30-Jun-14 08:00	08-Sep-14 18:00	53.00																																					
C2.0015	BS Works - Shop drawings - Submission & AIP (Remaining)	60.00	10-Sep-14 08:00	20-Nov-14 18:00	53.00																																					
Procurement and Delivery of Materials and Equipments																																										
C3.0010	BS Works - Procurement of all major building service equipments and materials (1st Batch)	50.00	10-Sep-14 08:00	08-Nov-14 18:00	6.00																																					

- Actual Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone

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Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Total Float	2014												2015												2016												2017											
						A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F													
Breaking Out WAC Station																																																					
D2070	Breaking out WAC Station - Form opening, core holes 72 nr, chain cut 1225 x 900mm block 55 nr.	90.00	25-Nov-15 08:00	15-Mar-16 18:00	8.00	[Gantt bar: 25-Nov-15 to 15-Mar-16, Critical Remaining Work]																																															
WAC Station Modification Works																																																					
D1001	Liaison with MTR and relevance parties for works in WAC station	90.00	14-Apr-14 08:00	04-Aug-14 18:00	121.00	[Gantt bar: 14-Apr-14 to 04-Aug-14, Actual Work]																																															
D1002	Preparation works for works in WAC station	12.00	05-Aug-14 08:00	18-Aug-14 18:00	121.00	[Gantt bar: 05-Aug-14 to 18-Aug-14, Actual Work]																																															
D1010	Internal Hoarding in WAC station (NTH)	12.00	19-Aug-14 08:00	01-Sep-14 18:00	121.00	[Gantt bar: 19-Aug-14 to 01-Sep-14, Actual Work]																																															
D1020	Construct new AFC/Audit Room next to Entrance B1, B2, ABWF & BS Works (NTH)	69.00	02-Sep-14 08:00	24-Nov-14 18:00	121.00	[Gantt bar: 02-Sep-14 to 24-Nov-14, Actual Work]																																															
D1030	Modification Works to existing AFC/Audit, Store & Kiosk 3 & 5 (NTH)	84.00	05-May-15 08:00	13-Aug-15 18:00	13.00	[Gantt bar: 05-May-15 to 13-Aug-15, Actual Work]																																															
D1040	Modification to existing Kiosk 2 (NTH)	80.00	14-Aug-15 08:00	18-Nov-15 18:00	13.00	[Gantt bar: 14-Aug-15 to 18-Nov-15, Actual Work]																																															
D1050	Relocate 4 Advertising Panels (NTH)	10.00	19-Nov-15 08:00	30-Nov-15 18:00	93.00	[Gantt bar: 19-Nov-15 to 30-Nov-15, Actual Work]																																															
D1060	Install New Telephone Booth and associated works (NTH)	36.00	14-Aug-15 08:00	24-Sep-15 18:00	57.00	[Gantt bar: 14-Aug-15 to 24-Sep-15, Actual Work]																																															
INF.AFCp	Interface Access for AFC, C&C DC in new AFC Audit Room inside WAC, Concourse Level, No.Cal.Wk. 55 - Programmed	0.00		24-Nov-14 18:00	153.00	[Milestone diamond at 24-Nov-14 18:00]																																															
Testing and Commissioning																																																					
D4090	Testing and Commissioning	28.00	16-Mar-16 08:00	21-Apr-16 18:00	8.00	[Gantt bar: 16-Mar-16 to 21-Apr-16, Critical Remaining Work]																																															
KD2Bp	Specified Part 2B - Complete all works at the 2 new Shop Kiosks and hand over to the Employer - Programmed	0.00		21-Apr-16 18:00	8.00	[Milestone diamond at 21-Apr-16 18:00]																																															
E. WAC Station Imporvement Works (Part C Works)																																																					
Improvement Works to WAC Station																																																					
E1020	Modify, provide & install new glass barrier to suit new AFC gates (NTH)	40.00	17-Sep-15 08:00	05-Nov-15 18:00	94.00	[Gantt bar: 17-Sep-15 to 05-Nov-15, Actual Work]																																															
E1030	Provide and install additional AFC gates (NTH)	40.00	06-Nov-15 08:00	22-Dec-15 18:00	94.00	[Gantt bar: 06-Nov-15 to 22-Dec-15, Actual Work]																																															
E1040	Provide builder works for TIMS relocation (NTH)	80.00	16-Mar-16 08:00	24-Jun-16 18:00	28.00	[Gantt bar: 16-Mar-16 to 24-Jun-16, Actual Work]																																															
E1050	T&C by Designated Contractor for TIMS (NTH)	30.00	25-Jun-16 08:00	30-Jul-16 18:00	28.00	[Gantt bar: 25-Jun-16 to 30-Jul-16, Actual Work]																																															
E1060	Make Good builder works for TIMS (NTH)	75.00	01-Aug-16 08:00	29-Oct-16 18:00	28.00	[Gantt bar: 01-Aug-16 to 29-Oct-16, Actual Work]																																															
MSE03p	E3- All works in milestone E completed - Programmed	0.00		29-Oct-16 18:00	28.00	[Milestone diamond at 29-Oct-16 18:00]																																															

- █ Actual Level of Effort
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◆ Milestone

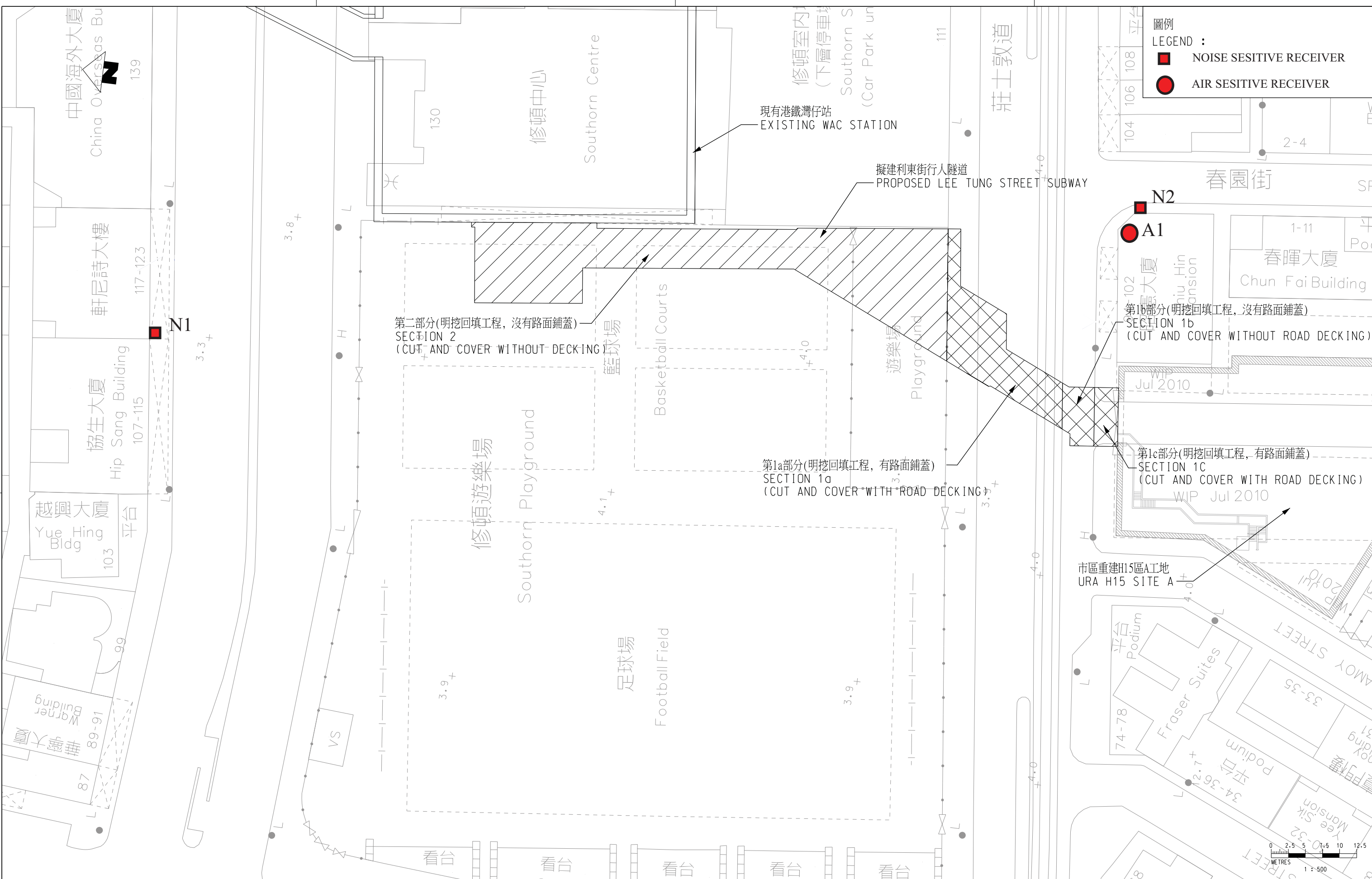
Preliminary Master Programme (Rev.B)



Appendix C

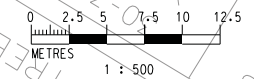
Monitoring Locations

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 PRINTED BY: h051494 20/06/2012 12:08:11



圖例
 LEGEND :

- NOISE SENSITIVE RECEIVER
- AIR SENSITIVE RECEIVER



REV	DESCRIPTION	BY	DATE	APPROVED
D	GENERAL REVISION			
C	GENERAL REVISION			
B	GENERAL REVISION			
A	PROJECT PROFILE			

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

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MTR

WAC STATION LEE TUNG STREET SUBWAY

ORIGINATOR

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 F +852 2827 1823
 www.mottmac.com.hk

TITLE

CONSULTANCY AGREEMENT NO. NEX/1050
 DETAILED DESIGN FOR LEE TUNG STREET SUBWAY
 LOCATION OF NOISE AND AIR SENSITIVE RECEIVER

SCALE 1:500 (A3)

DRAWING NO.

REV.

Appendix D

**Calibration Certificate of
Monitoring Equipment**

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Chiu Hin Mansion

Date of Calibration: 9-Oct-14

Location ID : A1

Next Calibration Date: 9-Dec-14

Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)
Temperature (°C)

1010.8
26.5

Corrected Pressure (mm Hg)
Temperature (K)

758.1
300

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> 2.00757
Qstd Intercept -> -0.01628

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.713	53	52.67	Slope = 32.7467 Intercept = -3.3908 Corr. coeff. = 0.9998
13	4.7	4.7	9.4	1.530	47	46.71	
10	3.5	3.5	7	1.321	40	39.75	
7	2.4	2.4	4.8	1.095	33	32.79	
5	1.5	1.5	3	0.868	25	24.84	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta)) - b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)] - b)$$

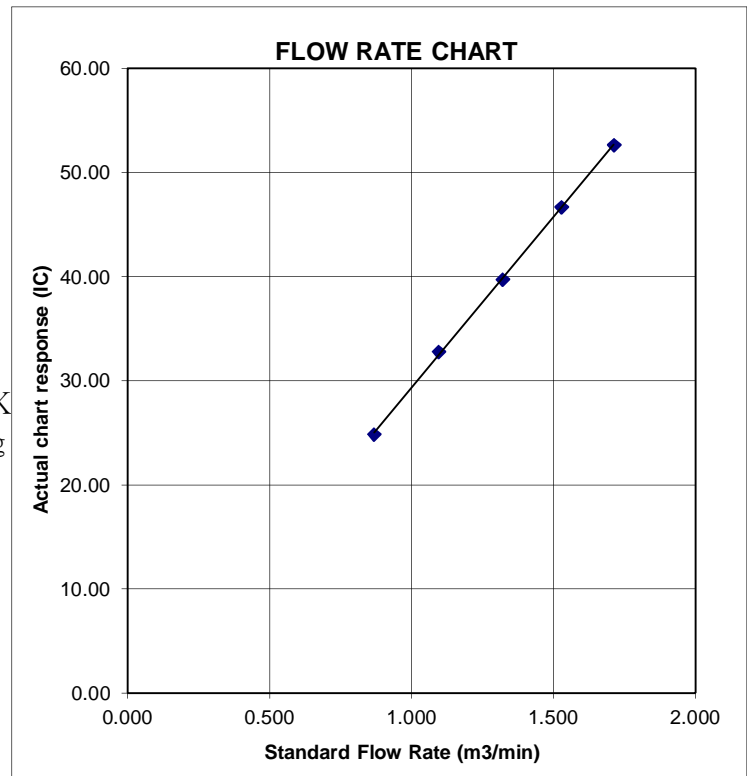
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 07, 2014 Rootmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 1612 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3940	3.2	2.00
2	NA	NA	1.00	0.9790	6.4	4.00
3	NA	NA	1.00	0.8800	7.8	5.00
4	NA	NA	1.00	0.8350	8.8	5.50
5	NA	NA	1.00	0.6910	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866	0.7077	1.4077	0.9957	0.7142	0.8896
0.9823	1.0034	1.9908	0.9914	1.0127	1.2581
0.9804	1.1140	2.2258	0.9894	1.1243	1.4066
0.9791	1.1726	2.3345	0.9881	1.1834	1.4753
0.9739	1.4094	2.8155	0.9829	1.4224	1.7793
Qstd slope (m) = 2.00757			Qa slope (m) = 1.25710		
intercept (b) = -0.01628			intercept (b) = -0.01029		
coefficient (r) = 0.99989			coefficient (r) = 0.99989		
y axis = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

$V_{std} = \text{Diff. Vol} [(\text{Pa} - \text{Diff. Hg}) / 760] (298 / \text{Ta})$
 $Q_{std} = V_{std} / \text{Time}$

$V_a = \text{Diff Vol} [(\text{Pa} - \text{Diff Hg}) / \text{Pa}]$
 $Q_a = V_a / \text{Time}$

For subsequent flow rate calculations:

$Q_{std} = 1/m \{ [\text{SQRT}(\text{H2O}(\text{Pa}/760)(298/\text{Ta}))] - b \}$
 $Q_a = 1/m \{ [\text{SQRT}(\text{H2O}(\text{Ta}/\text{Pa}))] - b \}$



Certificate of Calibration

校正證書

Certificate No. : C142871
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 8 May 2014

Description / 儀器名稱 : Integrating Sound Level Meter (EQ006)

Manufacturer / 製造商 : Brüel & Kjær

Model No. / 型號 : 2238

Serial No. / 編號 : 2285762

Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check


DATE OF TEST / 測試日期 : 13 May 2014


TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By : 
測試 K C Lee
Project Engineer

Certified By : 
核證 K M Wu
Engineer

Date of Issue : 15 May 2014
簽發日期

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

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

Certificate of Calibration

校正證書

Certificate No. : C142871
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

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

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

- 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.3

- 6.1.1.2 After Self-calibration

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

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

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

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

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

Certificate of Calibration

校正證書

Certificate No. : C142871
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	55.1	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

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

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

Certificate of Calibration

校正證書

Certificate No. : C142871
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)	
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)			
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5	
								90	89.5	± 0.5	
			60 sec.					1/10 ³	80	79.2	± 1.0
			5 min.					1/10 ⁴	70	69.1	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812705

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

- Uncertainties of Applied Value :

94 dB	31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :

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

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

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



Certificate of Calibration 校正證書

Certificate No. : C142872
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 8 May 2014
Description / 儀器名稱 : Integrating Sound Level Meter (EQ008)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285690
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 May 2014

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By : 
測試 : K C Lee
Project Engineer

Certified By : 
核證 : K M Wu
Engineer

Date of Issue : 15 May 2014
簽發日期

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

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

Certificate of Calibration

校正證書

Certificate No. : C142872
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

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

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

- 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFF}	A	F	94.00	1	94.2

- 6.1.1.2 After Self-calibration

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

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFF}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.0

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

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

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

Certificate of Calibration

校正證書

Certificate No. : C142872
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.8	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.0	-1.1 (+1.5 ; -3.0)
12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)					

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

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

Certificate of Calibration

校正證書

Certificate No. : C142872
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.2	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.1	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)	
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)			
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5	
								90	89.7	± 0.5	
			60 sec.					1/10 ³	80	79.8	± 1.0
			5 min.					1/10 ⁴	70	69.8	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812706

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

- Uncertainties of Applied Value :

94 dB : 31.5 Hz - 125 Hz	: ± 0.35 dB
250 Hz - 500 Hz	: ± 0.30 dB
1 kHz	: ± 0.20 dB
2 kHz - 4 kHz	: ± 0.35 dB
8 kHz	: ± 0.45 dB
12.5 kHz	: ± 0.70 dB
104 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level	: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :

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

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

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

Appendix E

HOKLAS-Accreditation Certificate of the Testing Laboratory



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as listed in the HOKLAS Directory of Accredited Laboratories within the test category of
此實驗所符合ISO / IEC 17025 : 2005 – 《測試及校正實驗所能力的通用規定》所訂的要求，獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定
測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : **HOKLAS 066**
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日



Appendix F

Event and Action Plan

Event and Action Plan for Construction Noise

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

Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source; 2. If valid, inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and EPD; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial action required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial Measure properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial action to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source; 2. Inform ER and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. 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 ET; 2. Check Contractor's working method; 3. Discuss with ET and the Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify sources; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix G

Monitoring Schedule

Monitoring Schedule in the Reporting Period – November 2014

DATE		AIR QUALITY	NOISE
		24-HOUR TSP	L _{EQ} 30MIN
Sat	1-Nov-14		
Sun	2-Nov-14		
Mon	3-Nov-14	✓	
Tue	4-Nov-14		
Wed	5-Nov-14		
Thu	6-Nov-14		✓
Fri	7-Nov-14		
Sat	8-Nov-14	✓	
Sun	9-Nov-14		
Mon	10-Nov-14		
Tue	11-Nov-14		✓
Wed	12-Nov-14		
Thu	13-Nov-14		
Fri	14-Nov-14	✓	
Sat	15-Nov-14		
Sun	16-Nov-14		
Mon	17-Nov-14		
Tue	18-Nov-14		✓
Wed	19-Nov-14		
Thu	20-Nov-14	✓	
Fri	21-Nov-14		
Sat	22-Nov-14		
Sun	23-Nov-14		
Mon	24-Nov-14		
Tue	25-Nov-14		✓
Wed	26-Nov-14	✓	
Thu	27-Nov-14		
Fri	28-Nov-14		
Sat	29-Nov-14		
Sun	30-Nov-14		

✓	Monitoring Day
	Sunday or Public Holiday

Air Quality Monitoring Location

A1 - balcony at 1/F of Chiu Hin Mansion

Construction Noise Monitoring Location:

N1 - 2/F floor of Hennessey Building

N2 - balcony at 1/F of Chiu Hin Mansion

Monitoring Schedule for the Coming Month – December 2014

DATE		AIR QUALITY	NOISE
		24-HOUR TSP	L _{EQ} 30MIN
MON	1-DEC-14		
TUE	2-DEC-14	✓	✓
WED	3-DEC-14		
THU	4-DEC-14		
FRI	5-DEC-14		
SAT	6-DEC-14		
SUN	7-DEC-14		
MON	8-DEC-14		
TUE	9-DEC-14	✓	✓
WED	10-DEC-14		
THU	11-DEC-14		
FRI	12-DEC-14		
SAT	13-DEC-14		
SUN	14-DEC-14		
MON	15-DEC-14		
TUE	16-DEC-14	✓	✓
WED	17-DEC-14		
THU	18-DEC-14		
FRI	19-DEC-14		
SAT	20-DEC-14		
SUN	21-DEC-14		
MON	22-DEC-14		
TUE	23-DEC-14	✓	✓
WED	24-DEC-14		
THU	25-DEC-14		
FRI	26-DEC-14		
SAT	27-DEC-14		
SUN	28-DEC-14		
MON	29-DEC-14		
TUE	30-DEC-14	✓	✓
WED	31-DEC-14		

✓	Monitoring Day
	Sunday or Public Holiday

Air Quality Monitoring Location

A1 - balcony at 1/F of Chiu Hin Mansion

Construction Noise Monitoring Location:

N1 - 2/F floor of Hennessey Building

N2 - balcony at 1/F of Chiu Hin Mansion

Appendix H

Database of Monitoring Results

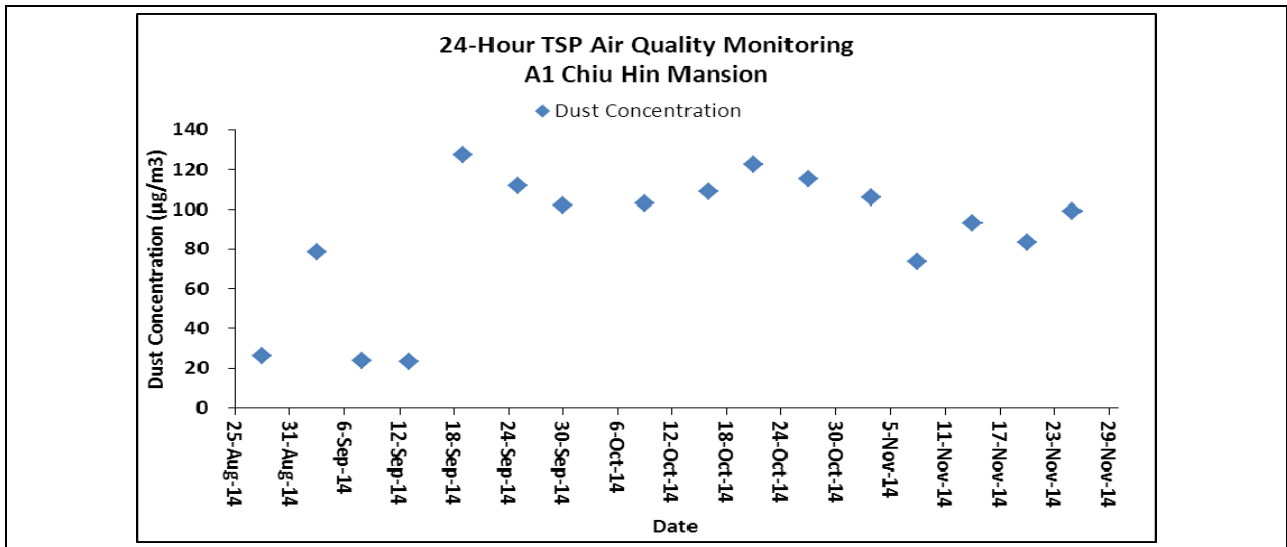
Result of 24-hour TSP Monitoring

Location: A1 (balcony at 1/F of Chiu Hin Mansion)															
Date	Sample Number	Elapsed Time			Chart Reading			Ave. Temp. (°C)	Standard			Filter Weight (g)		Weight Dust Collected (g)	Dust 24-hour TSP in Air (µg/m³)
		Initial	Final	Actual (min)	Min	Max	Ave		Ave. Press. (hPa)	Flow Rate (m³/min)	Air Volume (std m³)	Initial	Final		
3-Nov-14	27341	15503.15	15526.28	1387.80	38	40	39.0	21.7	1017.4	1.30	1809	2.7528	2.9441	0.1913	106
8-Nov-14	27396	15526.28	15549.29	1380.60	37	40	38.5	23	1016.4	1.28	1774	2.6783	2.8088	0.1305	74
14-Nov-14	27384	15549.29	15573.38	1445.40	38	40	39.0	20.9	1019.9	1.31	1889	2.6801	2.8564	0.1763	93
20-Nov-14	27441	15573.38	15597.46	1444.80	38	40	39.0	20.7	1018.7	1.31	1887	2.7294	2.8862	0.1568	83
25-Nov-14	27457	15597.46	15621.51	1443.00	32	40	36.0	21.1	1018.2	1.21	1750	2.6972	2.8709	0.1737	99

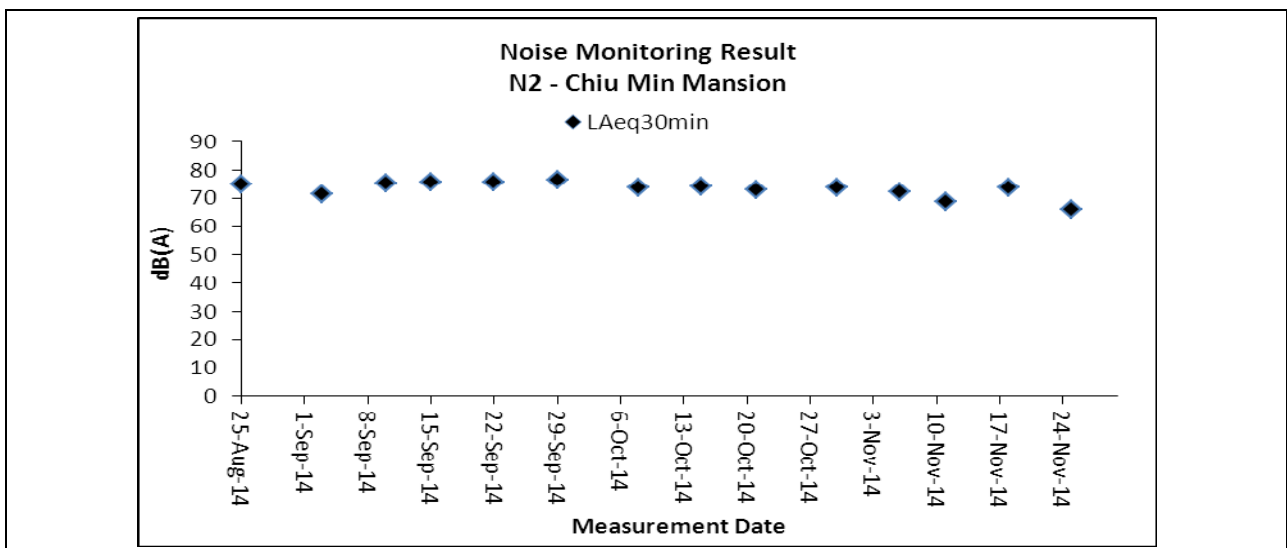
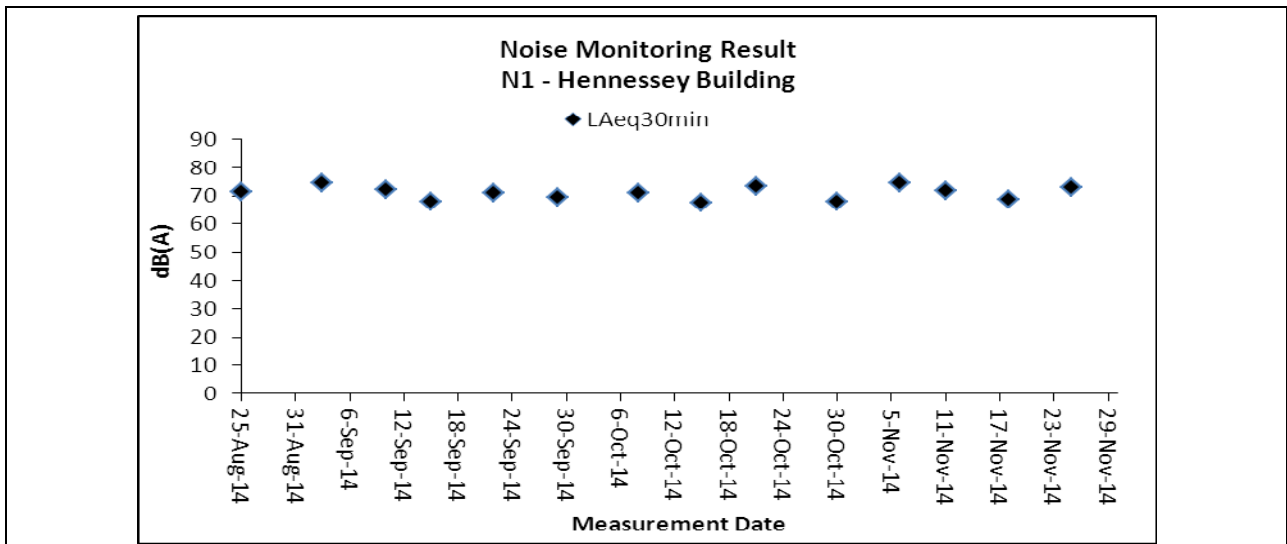
Appendix I

Graphical Plots

Air Quality



Construction Noise



Appendix J

Meteorological Information

Meteorological Data downloaded from HKO in the Reporting Period							
Date	Weather	Total Rainfall (mm)	Kings Park Station				
			Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction	
1-Nov-14	Sat	Mainly cloudy. Moderate to fresh easterly winds.	26	6.5	77.2	E/SE	26
2-Nov-14	Sun	Mainly cloudy. Moderate to fresh easterly winds.	24.7	7.5	71	NE	24.7
3-Nov-14	Mon	Cloudy with a few rain patches. Moderate to fresh easterly winds.	21.1	8.5	66	N/NE	21.1
4-Nov-14	Tue	Cloudy with a few rain patches. Moderate to fresh easterly winds.	22.1	7.8	73	E/SE	22.1
5-Nov-14	Wed	Mainly cloudy. Moderate to fresh easterly winds.	23.6	10.6	75.5	E/SE	23.6
6-Nov-14	Thu	Mainly cloudy. Moderate to fresh easterly winds.	24.4	6.5	77.5	E/SE	24.4
7-Nov-14	Fri	Cloudy with a few rain patches. Moderate to fresh easterly winds.	22.5	8.5	88.5	E/SE	22.5
8-Nov-14	Sat	Mainly cloudy. Visibility relatively low in some areas. Moderate northeasterly winds.	20.2	8.2	91.2	NE	20.2
9-Nov-14	Sun	Mainly cloudy. Visibility relatively low in some areas. Moderate northeasterly winds.	22.1	9.7	77	E/SE	22.1
10-Nov-14	Mon	Mainly cloudy. Visibility relatively low in some areas. Moderate northeasterly winds.	23.8	11.1	76.7	E/SE	23.8
11-Nov-14	Tue	Mainly cloudy. Moderate north to northeasterly winds.	23.8	8.1	78.3	E/SE	23.8
12-Nov-14	Wed	Mainly cloudy. Moderate north to northeasterly winds.	21.5	5.6	80	N/NE	21.5
13-Nov-14	Thu	Fine and dry. Moderate north to northeasterly winds, fresh at times.	19.2	6.5	80	N/NE	19.2
14-Nov-14	Fri	Mainly cloudy. Moderate north to northeasterly winds.	20.7	6.4	71.7	N/NE	20.7
15-Nov-14	Sat	Fine and dry. Moderate north to northeasterly winds, fresh at times.	22.2	9.7	70.5	E/SE	22.2
16-Nov-14	Sun	Fine and dry. Moderate north to northeasterly winds, fresh at times.	22.9	7	71	E/SE	22.9
17-Nov-14	Mon	Fine and dry. Moderate to fresh north to northeasterly winds.	21.4	8	59.5	N/NE	21.4
18-Nov-14	Tue	Mainly fine and dry. Moderate northeasterly winds, fresh at times.	20.5	8.2	60	N/NE	20.5
19-Nov-14	Wed	Mainly fine and dry. Moderate northeasterly winds, fresh at times.	21.5	5.5	62.5	E/SE	21.5
20-Nov-14	Thu	Mainly fine. Moderate easterly winds.	21.5	9.8	67.5	E/SE	21.5
21-Nov-14	Fri	Mainly fine. Moderate easterly winds.	22.7	9.5	69.2	E/SE	22.7
22-Nov-14	Sat	Mainly fine. Moderate easterly winds.	22.7	9.6	76	E/SE	22.7
23-Nov-14	Sun	Mainly fine. Moderate easterly winds.	23.4	9.7	74.5	E/SE	23.4
24-Nov-14	Mon	Mainly fine. Moderate easterly winds.	24	8.5	72.5	E/SE	24
25-Nov-14	Tue	Fine. Light winds.	23.7	5.7	78.7	W/NW	23.7
26-Nov-14	Wed	Cloudy. A few rain patches tomorrow. Fresh easterly winds.	23.7	8.2	79	E/SE	23.7
27-Nov-14	Thu	Mainly cloudy. Sunny intervals in the afternoon. Moderate easterly winds, fresh at times.	21.7	9	82.5	E/SE	21.7
28-Nov-14	Fri	Fine. Light winds.	23.6	7.1	81.5	E/SE	23.6
29-Nov-14	Sat	Cloudy. A few rain patches tomorrow. Fresh easterly winds.	23.1	9.6	87.5	E/SE	23.1
30-Nov-14	Sun	Mainly fine. Moderate easterly winds.	24.5	6.5	89	E/SE	24.5

Appendix K

Monthly Summary Waste Flow Table

Wan Chai Station Lee Tung Street Subway- C6593-13C

Monthly Summary Waste Flow Table for 2014

Name of Employer: MTR Corporation Limited											Contract No.: C65931-13C				
Month	Actual Quantities of Inert C&D Materials Generated Monthly										Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Slurry	Rock	Soil	Reused in this Project	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton / Litre)	(in ton)
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	39.67	0	0	0	0	0	0	0	39.67	0	0	0	0	0	0.67
Oct	276.63	0	0	0	0	0	0	0	276.63	0	0	0	0	0	0
Nov	162.42	0	0	0	0	0	0	0	154.99	0	0	0	0	0	7.43
Dec															
Total	478.72	0	0	0	0	0	0	0	471.29	0	0	0	0	0	8.1

Notes:

Appendix L

Implementation Schedule for Environmental Mitigation Measures (ISEMM)

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
NOISE IMPACT						
S.5.1.1	<u>Use of quieter plant</u>	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control Ordinance
S.5.1.1	<u>Use of noise enclosure and movable barrier</u> <ul style="list-style-type: none"> • movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME; • noise enclosure can achieve 15dB(A) reduction for PME; • noise enclosure is proposed to be built after open excavation in order to minimize the noise impact due to further excavation work and construction of subway. The enclosure should either be provided with acoustic door for access purpose which should be kept closed during the construction works or should be designed with no direct line of sight from the open side to the NSRs; • A typical design barrier with a steel frame of vertical / cantilever type would be adopted and located close to the noise generating part of PME; • Barrier material of surface mass in excess of 7kg/m² shall be required to achieve the maximum screening effect (and minimum 10kg/m² for noise enclosure); • The length of barrier should generally be at least five times greater than its height and the minimum height of a barrier should be such that no part of the noise source will be visible from the noise sensitive receiver being protected. 	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93, Noise Control Ordinance and EIAO Guidance Note NO. 9/2010
S.5.1.1	<u>General Construction Noise Control Measures</u> <ul style="list-style-type: none"> • The Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted; • The statutory and non-statutory requirements and guidelines shall be complied with; • Approval for the method of working, equipment and noise mitigation measures intended to be used at the site shall be granted from the Project Engineer before commencing any work; 	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control Ordinance

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	<ul style="list-style-type: none"> • Working methods to minimize the noise impact on the surrounding NSRs shall be formulated and executed, and the implementation of these methods shall be monitored by experienced personnel with suitable training; • Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical; • Unused equipment shall be turned off; • PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided; • All plant and equipment shall be maintained regularly; and • Material stockpiles and other structures shall be effectively utilized as noise barriers, whenever practicable. 					
AIR QUALITY IMPACT						
S.5.1.2	<p><u>Construction Dust Control Measures</u></p> <ul style="list-style-type: none"> • Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Covering of stockpile of excavated dusty materials, if any, with impervious sheeting or spraying with water to maintain the entire surface wet; • Provision of vehicle washing facilities at the entry and exit points of site; • Tarpaulin covering of any dusty materials being transported to and from site by vehicle; • Positioning of construction plant at maximum practicable distance from air sensitive receivers; and • Due to the small size of the works sites and lack of space for stockpiling, excavated materials should be hauled off-site almost immediately. However, in the event of any stockpiled excavated materials, they should be covered with tarpaulin and be removed offsite as soon as practicable to avoid any dust nuisance arising 	To minimize the dust impacts arising from the construction works	Contractor	Work site	Construction Stage	Air Pollution Control (Construction Dust) Regulation

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
WATER QUALITY IMPACT						
S.5.1.3	<p><u>Construction Water Quality Impact Measures</u></p> <ul style="list-style-type: none"> • Collection of wastewater into a sedimentation tank for treatment before discharge into the public drainage system; • Provision of silt trap and oil interceptor to remove the oil, lubricants, grease, silt, grit and debris from the wastewater prior to discharge to the public stormwater system. The silt traps and oil interceptors should be cleaned and maintained regularly; • Installation of wheel washing facilities to minimize muddy runoff; • Regular maintenance and inspection of drainage systems and erosion control and silt removal facilities; • Management and monitoring of sewage treatment facilities (if any); • Any foul effluent should not be discharged into any public sewer and stormwater drain, unless an effluent discharge permit is obtained under the WPCO by the Contractor; • Coverage of stockpiles of C&D materials (if any) during rainstorms; and • Site toilet facilities, if needed, should be chemical toilets or should have the sewage discharge directed to a foul sewer. 	To reduce water quality impact induced by the construction work	Contractor	Work site	Construction Stage	ProPECC PN1/94; Water Pollution Control Ordinance
WASTE MANAGEMENT						
S.5.1.4	<p><u>Construction Waste Management Measures</u></p> <ul style="list-style-type: none"> • Scrap metals or abandoned equipment should be recycled if possible; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill. Independent audits of the Contractor and resident site staff will be undertaken to ensure that the correct procedures are being followed; • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes; and 	To adopt waste management measures in the way of avoiding, minimizing, reusing and recycling so as to reduce waste generation	Contractor	Work site	Construction Stage	Waste Disposal Ordinance (Cap. 354); Waste Disposal (Chemical Waste) (General) Regulation; DEVB TCW No. 6/2010; ETWB TCW No. 19/2005.

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	<ul style="list-style-type: none"> All general refuse should be segregated and stored in enclosed bins or compaction units and waste separation facilities for paper, aluminum cans, plastic bottles etc. should be provided to facilitate reuse or recycling of materials and their proper disposal. 					
LANDSCAPE AND VISUAL IMPACT						
S.5.1.5	<p><u>Landscape and Visual Measures</u></p> <ul style="list-style-type: none"> Clear demarcation of works area to prevent damages to existing trees in close proximity; Protection of all trees planned to be retained onsite; Preserving all affected trees by transplanting where practical. Tree transplanting application and tree removal application shall be submitted for approval in accordance with ETWB TCW 3/2006; and Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colours. 	To reduce landscape and visual impact by construction works.	Contractor	Work Site and nearby playground	Construction Stage	EIAO; ETWB TCW No. 3/2006.