

**AUES PROJECT NO. TCS/00704/14** 

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

5<sup>TH</sup> ENVIRONMENTAL MONITORING AND AUDIT (EM&A) MONTHLY REPORT – JANUARY 2015

PREPARED FOR KADEN CONSTRUCTION LIMITED

## **Quality Index**

Date	Reference No.	Prepared By	Approved By
12 February 2015	TCS00704/14/600/R0035v2	Aula	Shum
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Version	Date	Description
1	9 February 2015	First Submission
2	12 February 2015	Amended according to the IEC's comments on 12 February 2015



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12 February 2015

By Email and Post

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

Your Ref .:

Our Ref.:

40032976/437349

Attention: Mr. Kenneth Chow / Environmental Engineer II

Dear Sir

Consultancy Agreement A130-13 Independent Environmental Checker for CRS and LTS LTS - Verification for Fifth Monthly Environmental Monitoring and Audit (EM&A) Report (January 2015) (Report No.: TCS00704/14/600/R0035v2)

We refer to the Fifth Monthly EM&A Report (January 2015) received under cover of the email from the Environmental Team, AUES, dated on 9 February 2015.

Further to our comments provided on 12 February 2015 and subsequent revision of the Report by AUES on 12 February 2015, we have no comment and have verified the captioned report (Report No.: TCS00704/14/600/R0035v2).

Should you have any queries, please feel free to contact the undersigned at 2410 3750 or our Dr. Alex Cheung at 2410 3796.

Yours faithfully

**AECOM Consulting Services Ltd.** 

Independent Environmental Checker

ACWH/wwsc

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**AUES** 

(Attn.: Ms. Nicola Hon)

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## **EXECUTIVE SUMMARY**

ES01 This is the 5<sup>th</sup> monthly EM&A Report presenting the monitoring results and inspection findings for the period from 1 to 31 January 2015 (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:-

		Reporting Period	
Environmental Aspect	Environmental Monitoring Parameters / Inspection	Number of Monitoring Location	Total Occasions
Air Quality	24-hour TSP	1	5
Construction Noise	L <sub>eq(30min)</sub> Daytime	2	8
Site Inspection /	Joint with ET, the Contractor and RE		4
Audit	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 exceedances were registered. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental	Manitaning	Action	I imit	Event & Action		
Environmental Aspect	Monitoring Parameters	Action Level		NOE Issued	Investigation	Corrective Actions
Air Quality	24-hour TSP	0	0	0	0	0
Construction Noise	L <sub>eq(30min)</sub> Daytime	0	0	0	0	0

## **ENVIRONMENTAL COMPLAINT**

ES04 No public complaint was received 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, ET and Contractor was carried out on 9, 15, 22 and 29 January 2015 and the IEC was joined the site inspection on 22 January 2015. No non-compliance was observed during the site inspection.

## **FUTURE KEY ISSUES**

- ES08 Construction noise is the key environmental issue during construction work of the Project as there are residential buildings nearby. Noise mitigation measures should be fully implemented in accordance with the EM&A requirement.
- ES09 Special attention should be paid on the potential construction dust impact as the construction site is located near the residential area. The Contractor should fully implement the construction dust mitigation measures properly.
- ES010 The Contractor should prevent muddy water and other water pollutants via site surface water runoff get into public areas and implement water quality mitigation measures properly. Any discharge water should be strictly complied with wastewater discharge license requirement.



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### 1 INTRODUCTION

#### PROJECT BACKGROUND

- 1.01 **KADEN CONSTRUCTION LIMITED** (hereinafter 'KCL') has been awarded by the MTR Corporation Limited (MTRCL) 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 of:
  - (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 be undertaken for 36 months. In order to effectively implement the environmental protection measures as stipulated in the Particular Specification (PS), 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 the KCL as the independent environmental team (ET) to implement the relevant EM&A programme for the Project.
- 1.05 The baseline monitoring program was carried out 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)" has been verified by IEC submitted to the EPD on 15 July 2014 before commencement of major construction works. The construction of the Project was commenced on 28 August 2014 as notified by KCL. Accordingly, relevant EM&A programme was started on 28 August 2014.
- 1.06 This is 5<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings in the Reporting Period from 1 to 31 January 2015.

## 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 accordance with the EP stipulation, the required documents and submission status to EPD are listed in Table 2-1.

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

<b>EP Condition</b>	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 environmental permits, licenses, and relevant 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	Notified EPD.	
2	Chemical Waste Producer Registration - Waste		
	Producers Number	Approved on 14/05/2014	
	Water Pollution Control Ordinance - Discharge	License no.: WT00019539-2014	
3	License	Approved on 16/07/2014	
	License	Valid to: 31/07/2019	
1	Waste Disposal Regulation - Billing Account	Account no.: 7019837	
4	for Disposal of Construction Waste	Approved on 30/04/2014	



## **CONSTRUCTION PROGRESS**

- 2.11 The construction activities conducted in the Reporting Period are listed in below. Moreover, the master construction program is shown in *Appendix B*.
  - Installation of waling and strut
  - Excavation
  - Plate load test
  - Construction of temporary steel decking
  - Casting of concrete blinding from strut A to strut F



## 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> <li>24-hour Total Suspended Particulate (hereinafter '24-hour TSP')</li> <li>1-hour TSP monitoring (*)</li> </ul>
Construction Noise	• A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'L <sub>eq(30min)</sub> ' during the normal working hours

### Remarks:

### MONITORING LOCATIONS

3.04 According to Sections 2.3 and 3.4 of the EMAP which enclosed in the Project Profile (Register No. PP-472/2012), construction noise and air quality monitoring locations are 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 in *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	Hennessey Building	N1	2/F floor of Hennessey Building	NSR facing to the Project site
Noise	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 as stipulated in the EMAP are presented in following.

## Air Quality

- 3.06 Frequency of impact air quality monitoring:
  - 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.

<sup>(\*)</sup> In case 24-hour TSP exceed the air quality criteria to be carried out



## 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 be depended on 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 (USEPA)*. A direct reading dust meter is used to measure 1-hour TSP air quality, in case of non-compliance of air quality criteria occurred in 24-hour TSP measurement.
- 3.10 The filter paper sample collected in 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory. All equipments to be used for air quality monitoring are listed in *Table 3-3*.

**Table 3-3 Air Quality Monitoring Equipment** 

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

- 3.11 According to the EMAP, wind data monitoring equipment shall 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, the owners rejected to install wind data monitoring equipment.
- 3.13 In this situation, the ET proposed to adopt the meteorological information from King's Park Weather Station from the Hong Kong Observatory as the representative wind data. King's Park Station provided all useful from information such as humidity, rainfall, and air pressure and temperature etc.
- 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 ms<sup>-1</sup>. 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 is a Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with USEPA 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. The valid calibration certificate of the calibration kit with the certificate of HVS calibrated is shown in *Appendix D*.
- 3.19 24-hour TSP is collected on filters of the HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET will keep 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 complied 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). The 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  $(L_{eq})$ .  $L_{eq(30min)}$  in six consecutive  $L_{eq(5min)}$  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 Lev	vel (μg/m³)	Limit Level (µg/m³)		
Monitoring Station	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

Manitanina Station	0700-1900 hours on normal weekdays				
Monitoring Station	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 were 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 (μg/m³)	Action Level	Limit Level	
5-Jan-15	65			
10-Jan-15	108			
16-Jan-15	88	1.60	260	
22-Jan-15	89	162	260	
28-Jan-15	58			
Average (Range)	82 (58 - 108)	Î		

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 were 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 (+3dB(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	L <sub>eq30min</sub>
6-Jan-15	14:53	72.4	72.8	72.1	72.1	72.3	72.0	72
13-Jan-15	13:15	67.3	64.6	69.8	74.8	73.8	70.4	71
20-Jan-15	14:25	73.3	74.6	74.3	75.2	74.0	73.9	74
27-Jan-15	14:06	67.8	69.2	67.2	66.9	70.3	68.4	68
Limit I Construct		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	Le <sub>q30min</sub>
6-Jan-15	14:15	71.8	70.2	67.7	67.9	68.4	68.9	69
13-Jan-15	14:00	72.1	71.9	71.0	72.0	71.8	70.6	72
20-Jan-15	15:07	68.1	68.9	68.2	66.8	67.3	66.9	68
27-Jan-15	14:45	71.8	72.5	71.8	72.8	72.1	71.6	72
Limit L Construct		75 B(A)						

4.05 Referred to above tables, no noise measurement exceedance was recorded at both N1 and N2. Furthermore, there is no noise complaint (Action Level exceedance) received by the MTRC and Contractor or EPD in the Reporting Period. 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 *Tables 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) (m <sup>3</sup> )	1.69784	-
Reused in this Contract (Inert) (m <sup>3</sup> )	0	-
Reused in other Projects (Inert) (m <sup>3</sup> )	0	-
Disposal as Public Fill (Inert) (m <sup>3</sup> )	1.69784	Chai Wan Public Fill Barging Point

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (m <sup>3</sup> )	0	-
Recycled Paper / Cardboard Packing (m <sup>3</sup> )	0	-
Recycled Plastic (m <sup>3</sup> )	0	-
Chemical Wastes (m <sup>3</sup> /L)	0	-
General Refuses (m <sup>3</sup> )	0.0009	SENT Landfill

- 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

- 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 **9**, **15**, **22** and **29 January 2015** and the IEC was joined the site inspection **22 January 2015**.
- 6.03 No non-compliance was noted. However, **two (2)** 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
9 January 2015	• Wounds made by machines were observed from tree TR-10. The Contractor was reminded to carry out proper wound care measures to prevent the tree being infected by disease.	
15 January 2015	Oil spill was observed under a plant, the Contractor should clean the spill in accordance with the chemical waste ordinance.	• The oil stain has been cleaned before site inspection dated 22 January 2015.
22 January 2015	No specific findings were observed.	NA
29 January 2015	No specific findings were observed.	NA

- 6.04 Overall, site housekeeping such as daily cleanliness and weekly tidiness should be implemented in accordance with the PS requirements.
- 6.05 Since excavation was in progress and groundwater seepage was observed, the Contractor was strongly advised to improve the onsite desilting facilities in order to properly treat the wastewater generated from the project.
- 6.06 No site inspection was undertaken by external parties i.e. EPD 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

	Environmental Complaint Statistics						
Reporting Period	orting Period Example Computation Co		Complain	nt Nature			
	Frequency	Cumulative	Air	Noise	Water	Others	
28 Aug – 31 Dec 2014	0	0	NA	NA	NA	NA	
1–31 Jan 2015	0	0	NA	NA	NA	NA	

Table 7-2 Statistical Summary of Environmental Summons

		Environme	onmental Summons Statistics				
Reporting Period	Emagnanav	Cumulativa		Complaint Nature			
	Frequency	<b>Cumulative</b>	Air	Noise	Water	Others	
28 Aug – 31 Dec 2014	0	0	NA	NA	NA	NA	
1–31 Jan 2015	0	0	NA	NA	NA	NA	

Table 7-3 Statistical Summary of Environmental Prosecution

		Environme	ntal Prosec	ution Stati	stics	
Reporting Period	Ewaguanay	Cumulativa	Complaint Nature			
	Frequency	Cumulative	Air	Noise	Water	Others
28 Aug – 31 Dec 2014	0	0	NA	NA	NA	NA
1–31 Jan 2015	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** 

14010 0-1	Environmental Witigation Weasures
Issues	Environmental Mitigation Measures
Air Quality	<ul> <li>Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;</li> </ul>
	<ul> <li>Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;</li> </ul>
	• Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet;
	<ul> <li>Public areas around the site entrance/exit had been kept clean and free from dust; and</li> </ul>
	<ul> <li>Tarpaulin covering of any dusty materials on a vehicle leaving the site.</li> </ul>
Noise	<ul> <li>Good site practices to limit noise emissions at the sources;</li> </ul>
	<ul> <li>Use of quiet plant and working methods;</li> </ul>
	• Use of site hoarding or other mass materials as noise barrier to screen the working site;
	<ul> <li>Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs; and</li> </ul>
	• Limiting as use one construction plant within worksite, where practicable.
Water	Wastewater were appropriately treated by treatment facilities;
Quality	• 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> <li>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;</li> </ul>
	• 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	• Clear demarcation of works area to prevent damages to existing trees in close proximity;
	<ul> <li>Protection of all trees planned to be retained onsite;</li> </ul>
	<ul> <li>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</li> </ul>
	• Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colors.
General	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
- Base blinding and vertical blinding
- Waterproofing works for RC base slab and wall
- Base slab re-bars installation
- Wall re-bars installation
- Formwork installation
- Concreting
- Block work installation inside WAC
- Installation and diversion of E&M Service

#### **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 is the 5<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings in the Reporting Period from 1 to 31 January 2015.
- 9.02 In the Reporting Period, **5** occasions of 24-hours TSP monitoring were 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 of **8** occasions of noise measurement were 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 9, 15, 22 and 29 January 2015 and the IEC was joined the site inspection 22 January 2015. No non-compliance was noted but two (2) observations were recorded by the ET.
- 9.06 In the Reporting Period, no site inspection was undertaken by external parties i.e. EPD.

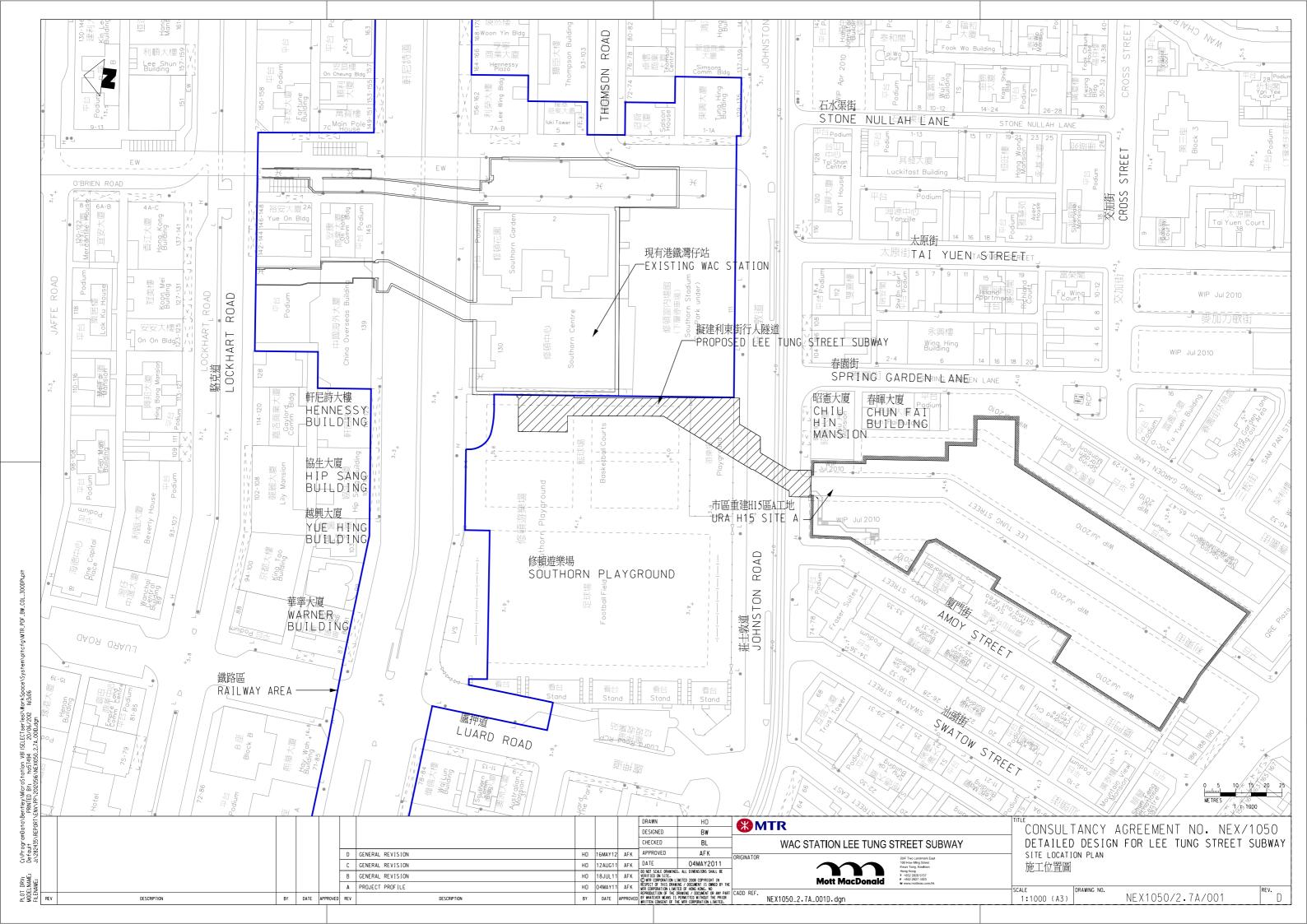
#### RECOMMENDATIONS

- 9.07 Construction noise is the key environmental issue during construction work of the Project as there are residential buildings nearby. Noise mitigation measures should be fully implemented in accordance with the EM&A requirement.
- 9.08 Also, special attention should be paid on the potential construction dust impact as the construction site is located near the residential area. The Contractor should fully implement the construction dust mitigation measures properly.
- 9.09 The Contractor should also prevent muddy water and other water pollutants via site surface water runoff get into public areas. Any discharge water should be strictly complied with wastewater discharge license requirement. As a reminder, water quality mitigation measures should be properly implemented in accordance with the EM&A requirement.
- 9.10 As a reminder, 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** 

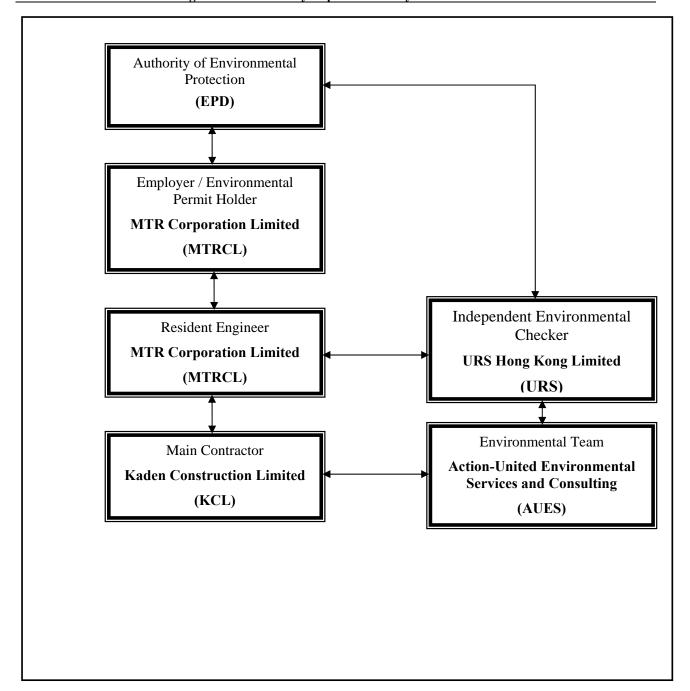




## Appendix B

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

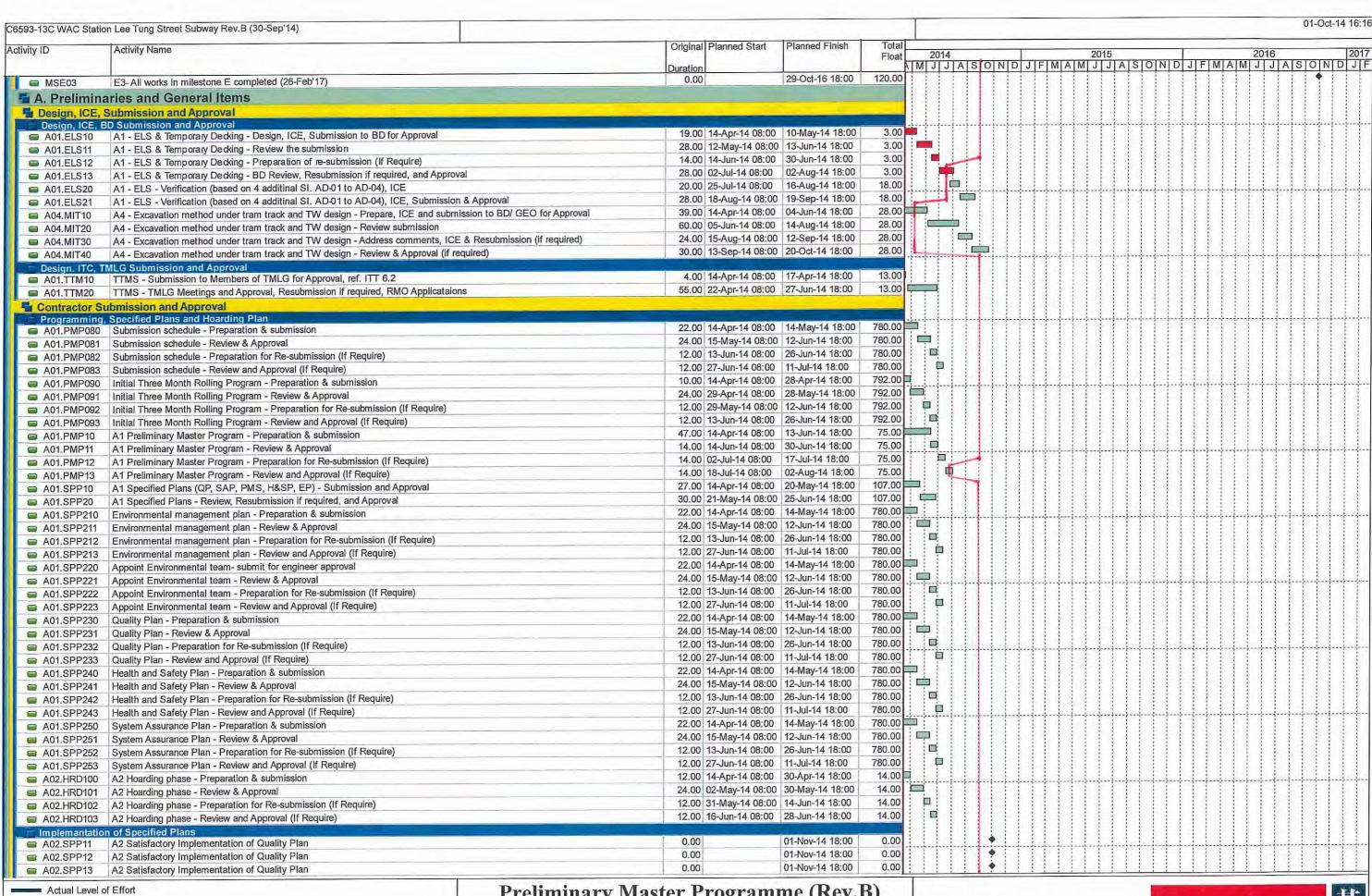
Activity ID	Activity Name	Original Planned Start Plann	Planned Finish	Total Float	2014				2015				2016		
		Duration		Fioat	MJJJ	ASO	NDJ	FMA		ASON	ID J F	MAN		ASO	N
C6503-130	C WAC Station Lee Tung Street Subway Rev.B (30-Sep'14)														
Key Dates			_						1111						1
■ KDCOMM	ment and Completion Commencement of the Works (14-Apr'14)	0.00 14-Apr-14 08:00		0.00							1111				
■ KDCOMP	Completion of the Whole of the Works, No.Cal.Wk. 150 (26-Feb'17)	0.00	26-Feb-17 18:00	0.00									111		
	arts of the Works	0.00						177							
Specified Pa	2A - SBC Complete backfill, resurfacing, fencing, utilities, lighting and return to LCSD (28-Jun'15)	0.00	28-Jun-15 18:00	0.00							111	111	111	111	1
⇒ 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					1111				111		
	Data / Interface Key Dates										111		111	111	1
■ 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					•	i_i_i_i_		lil	1.1.1.		
■ 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					1111					•	
	essession and Return Dates										111			111	1
Site Area Pos									1111	-111			111	111	1
■ WAPW1	Works Area 6593.W1, Within 3 months from commencement of works (14-Jul 14)	0.00 14-Jul-14 08:00		0.00					1.1.1.1		.111	111	.111.	.1	
■ WAPW2	Works Area 6593.W2, Within 9 months from commencement of works (14-Jan'15)	0.00 14-Jan-15 08:00		0.00									111		
■ WAPW3	Works Area 6593.W3, No later than 1 month after completion of resinstatement works at Works Area 6539.W1	0.00 08-Dec-16 08:00		1.00					1111		111		111	111	
Site Area Ret											111	111	1 1 1	111	1
■ 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				1.1.1.	4-4-4-4		4-4-4		4-4-4-		
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					1111						
Milestone So	chedule								1111	111	1 1 1 7				
Milestones A															1
MSA01	A1 Approval of Preliminary Master Program, ICE, TTA, ELS & Temporay decking (3-Aug'14)	0.00	02-Aug-14 18:00	939.00					1111	111	1 1 1				
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				ļķ	4		.)	ļ			
MSA03	A3 Satisfactory Implementation of Specified Plans (25-Jan'15)	0.00	24-Jan-15 18:00	764.00			•		1111						
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					?	111			1 1 1		- 1
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					1			111		111	1
MSA06	A6 Satisfactory Implementation of PMS (1-Nov'15)	0.00	31-Oct-15 18:00	484.00		1	1 1		1111	1				111	:
MSA07	A7 Satisfactory Implementation of Specified Plans (31-Jan'16)	0.00	30-Jan-16 18:00	393.00	ļ			ļļ <del>.</del>	.ii				4-4-4-		
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								1	111	111	- 1
MSA09	A9 Satisfactory Implementation of Specified Plans (31-Jul'16)	0.00	30-Jul-16 18:00	211.00							1111	111	1 1	111	:
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						111	1111	111		1 1 7	1
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									111		
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							1111		111		
■ 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							1117		111		1
■ 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					•		1117			111	:
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							1111				:
■ 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						<del></del>	•	f <del> </del> <del> </del>	+		:
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							1 1				:
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							1 1 1 1	I	111		1
MSB08	B8 ABWF degree 1; NBC- Resurfacing & reinstatement works completed (31-Jul'16)	0.00	03-May-16 18:00	299.00							1117				:
MSB09	B9 ABWF degree 3; Road reinstatement in JR & Hennessy Road completed (30-Oct'16)	0.00	17-Oct-16 18:00	132.00						111	1117			111	1
■ MSB10	B10 All works in Cost Centre B satisfactorily completed (26-Feb'17)	0.00	07-Dec-16 18:00	81.00											
Milestones C		2.00	00.0 44.40.00	000.00			11			111	1117			111	1
MSC01	C1 AIP BS detail design (2-Nov'14)	0.00	08-Sep-14 18:00	902.00			•		1111		1117	111	111		1
MSC02	C2 AIP BS shop drawings (25-Jan'15)	0.00	20-Nov-14 18:00	829.00							1117			111	1
MSC03	C3 Order all BS equiptment and materials (3-May'15)	0.00	09-Jan-15 18:00	779.00											1
MSC04	C4 Complete all factory acceptence testings (29-Nov'15)	0.00	27-May-15 18:00	641.00					<del>                                     </del>		+	•		+-+-+	
MSC05	C5 Complete all delivery to site for ECS plant room (31-Jul'16)	0.00	22-Mar-16 18:00	341.00	111		1 1								1
MSC06	C6 Complete all installation, T&C for New Subway (4-Dec'16)	0.00	07-Oct-16 18:00	142.00			11		1111					111	
MSC07	C7 Complete and pass all statutory inspections, Operations Team (26-Feb'17)	0.00	07-Dec-16 18:00	81.00					1111					111	:
Milestones D		0.00	24 Nov 44 40:00	825.00					1111						1
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					1111			•		111	
MSD03	D3 Breakthrought into WAC (29-May 16)	0.00	15-Mar-16 18:00	348.00						111	1111		111	111	1
MSD04	D4 All works in Cost Centre D satisfactorily completed (31-Jul'16)	0.00	21-Apr-16 18:00	311.00					1111						1
Milestones E		0.00	22-Dec-15 18:00	432.00							•			111	1
MSE01  MSE02	E1- AFC gates and barrier relocation works completed (3-Jan'16)  E2- All structural A&A works for TIM completed (30-Od'16)	0.00	29-Oct-16 18:00	120.00				+++-	··*··	++++			1-1-1-		
	LEST OF OTRICTURED D.Y.O. MORRO FOR LIBE COMPLETED STATES									3 3 3	- P	4 i	1 1 1	1 1 1	

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Actual Work Remaining Work

♦ Milestone

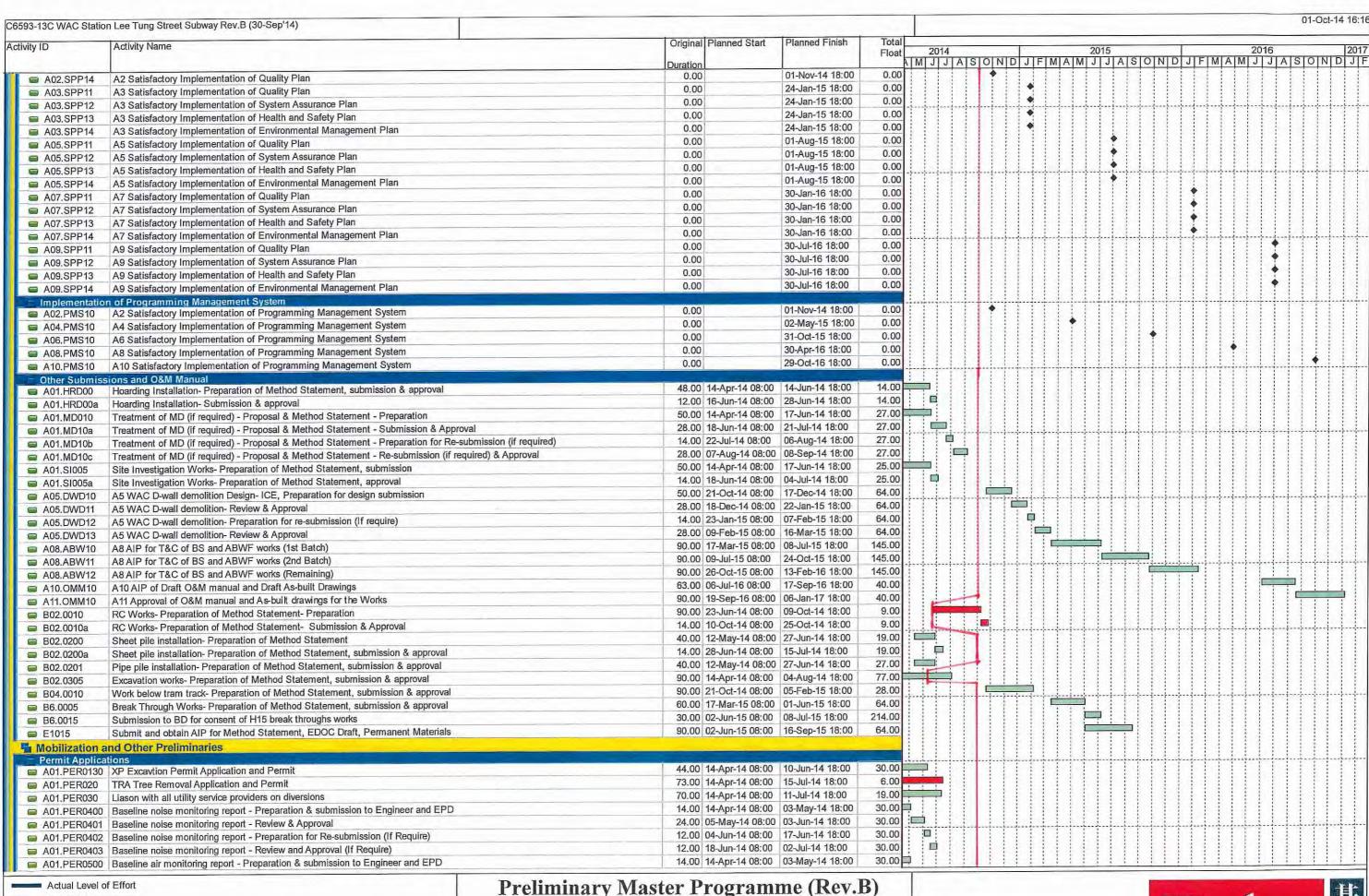
Critical Remaining Work



Preliminary Master Programme (Rev.B)

Actual Work Remaining Work

Critical Remaining Work

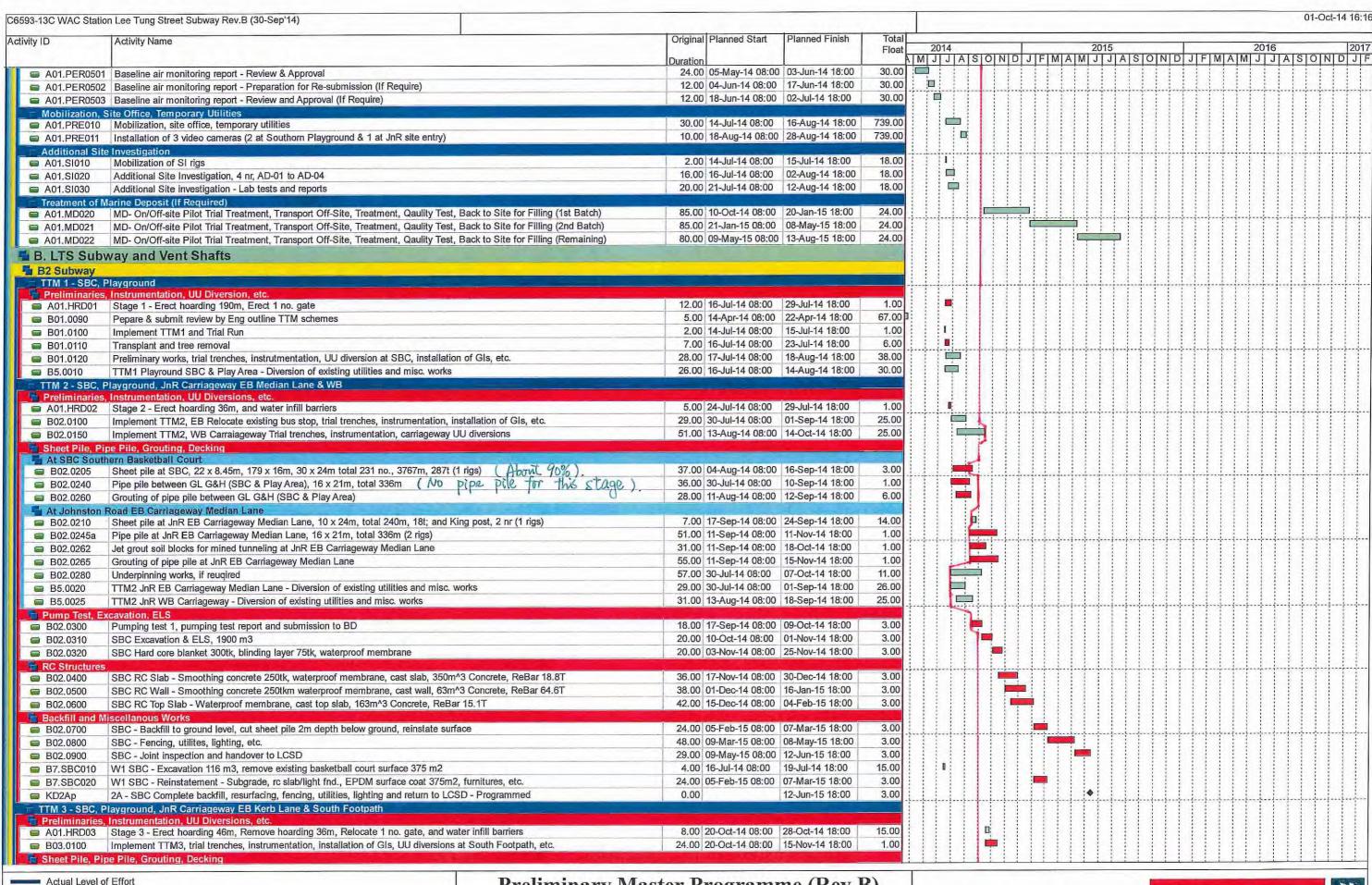


Kaden

Actual Work Remaining Work

Milestone

Critical Remaining Work



Preliminary Master Programme (Rev.B)

Critical Remaining Work

Actual Work

Remaining Work

13C WAC Statio	on Lee Tung Street Subway Rev.B (30-Sep'14)											01-0	Oct-
	Activity Name	Original Planned Start	Planned Finish	Total									=
ID	Activity Name			Float	2014  M  J  J  A	SIOINID	ΠΕΙΜΙΔΙ	2015 MI II II A	ISIOINIE	OLUFIMI	2016 A I M I . I . I I	AISIOI	N
		Duration			IVI J J A	S O N D	A C INI A	141 0 0 7	0 0 111 2	2 0 1 1 111	11	7, 0	
At Playgrour	Sheet pile at Playground, 42 x 16m, 23 x 24m, total no 65, 1224m, 93t, (prebored allowed); king post, 4 nr (Abovi 60%).	20.00 14-Nov-14 08:00	06-Dec-14 18:00	1.00			1111			1111			, ;
B03.0200		28.00 27-Nov-14 08:00		1.00			1111	111					
B03.0270	Temporary decking at Play Area	20.00 27 107 11 00:00		-11			1111						
B03.0206	ageway Kerb Lane 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		1					1 1 1 1		
B03.0200	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									
B03.0245	Grouting of pipe pile at JnR EB Carriageway Kerb Lane	11.00 20-Nov-14 08:00		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		0	1111			1111			
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			1111						
B5.0030	TTM3 JnR South Footpath - Diversion of existing utilities and misc. works	24.00 20-Oct-14 08:00		38.00						1111	1111		
	xcavation, ELS												
B03.0280	Pumping test 2	16.00 15-Apr-15 08:00	04-May-15 18:00	1.00						1111	1111	1111	
B03.0200	Play Area - Excavation & ELS, 3700 m3	14.00 05-May-15 08:00	20-May-15 18:00	1.00							1111		
B03.0300	Play Area - Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	14.00 21-May-15 08:00		14.00						1111	1111	111	
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			111				1111		f
B03.0500	RC Stab - Blinding tayer concrete 75tk, waterproof membrane, cast wall, 275m^3 Concrete, ReBar 87.2T	38.00 19-Jun-15 08:00	04-Aug-15 18:00	14.00			1111			1111		111	
B03.0500	RC Top Slab - Cast top concrete slab, 285m^3, ReBar 49.9T	45.00 06-Jul-15 08:00		14.00						1111		1-1-1	3
	RC Top Stab - Cast top condete stab, 2control, Rebail 49.91  Miscellanous Works						1111	111					
Bos.0700	Play Area - Backfill to ground level, cut sheet pile 2m depth below ground, surface reinstatemant	30.00 17-Aug-15 08:00	19-Sep-15 18:00	25.00						1111	1.1.1.1		
B03.0700	Play Area - Fencing, utilities, lighting, etc.	83.00 04-Jun-16 08:00		45.00									
	Play Area - Excavation 51 m3, remove equipments incl. footings and foundations, etc.	21.00 21-Oct-14 08:00	13-Nov-14 18:00	1.00						1111	1111	111	
	Playground, JnR North Foothpath						1111				1111		
	, Instrumentation, UU Diversions, etc.						1111	111		1111	1111	111	
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		D	1111						
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						1 1 1 1			
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								111	
	pe Pile, Grouting, Decking							111		1111	1111	1 1 1	
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						1.1.1.1	1.1.1.1.1		
B04.0200	Temporary decking and UU support at JnR North Footpath	25.00 12-Mar-15 08:00	14-Apr-15 18:00	1.00									
	xcayation, ELS						1111	1 1 1		1111			
	Pumping test 3	16.00 15-Apr-15 08:00	04-May-15 18:00	15.00							1111	111	
	Excavation & ELS, 700 m3	18.00 21-May-15 08:00	11-Jun-15 18:00	1.00			1111			1111		111	
	Underneath JnR EB Carriageway & North Footpath						4444				-		
RC Structure	s 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			1111			1111	1111		
RC Structture	es After Mined Tunnel Construction						1111						
B04.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 117m^3 Concrete, ReBar 22.5T	20.00 14-Mar-16 08:00		8.00								111	
B04.0600	RC Top Slab - Waterproof membrane, cast top slab, 65m^3 Concrete, ReBar 23.2T	18.00 11-Apr-16 08:00		8.00	llll		4-4-4-6			4	1		
■ 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			1111			1111	Till	111	
Backfill and I	Miscellanous Works	THE PERSON NAMED IN					1111						
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						1111			
	Playground, JnR North Footpath						1111				1111		
Preliminaries	, Instrumentation, UU Diversions, etc.	40.00 40 1 45.00.00	07 Jul 45 40:00	2.00	<del>     </del>		+-+			†	1-1-1-1		-
	Stage 5 - Erect hoarding 127m, Remove hoarding 36m, Rolocate 1 no. gate, and water infill barriers	19.00 13-Jun-15 08:00		3.00			1111						
B05.0100	Implement TTM5, trial trenches, instrumentation, UU diversion at NBC, etc.	14.00 13-Jun-15 08:00		3.00			1111			1 1 1 1	1111		
B5.0050	TTM5 Playround NBC - Diversion of existing utilities and misc. works	28.00 13-Jun-15 08:00	17-Jul-15 18:00	21.00			1111	ITI					
	pe Pile, Grouting, Decking	24 00 45 1445 00:00	07 Aug 45 40:00 T	3.00			1111			1111			
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		3.00			+++++			<del></del>			•••
	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			1111	HIT			1111	111	
	xcavation, ELS	41 00 24 Aug 45 00:00	02 Sep. 15 19:00	3.00			1111				1111		
	Pumping test 4	11.00 21-Aug-15 08:00 26.00 03-Sep-15 08:00		3.00			1111	111			1111		
B05.0300	NBC Excavation & ELS, 3000 m3			3.00			1111				1111	111	
B05.0310	NBC Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	23.00 14-Sep-15 08:00		24.00	} <del> </del>		+-+	0		†	·iiii	11111	7
B7.NBC010	W1 NBC - Excavation 116 m3, remove existing basketball court surface 375 m2	4.00 13-Jun-15 08:00	17-Juli-15 16:00	24.00			1111			1111	1111	111	
RC Structures		42.00 20.00 45.00.00	19 Nov 15 19-00	3.00			1111	111					
	RC Slab - Smoothing concrete 250tk, waterproof membrane, cast slab, 420m^3 Concrete, ReBar 29.4T	42.00 29-Sep-15 08:00					1111				1111	111	
B05.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 280m^3 Concrete ReBar 59.3T	44.00 14-Oct-15 08:00		3.00			1111				1111		
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						4-4-4-4			
	Morks Works				: : : : :		1111		-	1 4 1	1111		
Backfill and N	il scellatious works	40.00 40.0 45.00.00	00 F=k 40 40.00	46 00	1 1 1 1 1	1 1 1							
Backfill and N B05.0700	Backfill to ground level, cut sheet pile 2m depth below ground, reinstate foothpath W1 NBC - Reinstatement - Subgrade, rc slab/light fnd., EPDM surface coat 375 m2, furnitures, etc.	48.00 10-Dec-15 08:00 24.00 24-Dec-15 08:00		46.00 58.00					-		1111		-

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Actual Work

♦ Milestone

Remaining Work Critical Remaining Work

720	Transition of the state of the	Original Planned Start Planned Finish	Total						
/ ID	Activity Name	Original Flamed Start Flamed Finish	Float	2014		2015		2016	
		Duration		AMJJA	SONDI	FMAMJJAS	IONDITEM	<u> Viwijijiyi</u>	SIOIN
	C, Playground, JnR North Footpath, Carriageway WB								
Preliminar	ies, Instrumentation, UU Diversions, etc.	6.00 08-Jul-15 08:00 14-Jul-15 18:00	3.00	i i i i i i i i i i i i i i i i i i i			******		
	6 Stage 6 - Erect hoarding 52m, and water infill barriers	24.00 15-Apr-15 08:00 13-May-15 18:00	6.00						
■ B06.0100	Implement TTM6, trial trenches, instrumentation, UU diversions at North Footpath, etc.	24.00 13-Api-13 00.00 10 May 10 10.00	0.00						
	Pipe Pile, Grouting, Decking 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						
B06.0200	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				IIIIIIII		
B06.0240	Grouting of pipe pile at JnR WB Carriageway	21.00 15-Jun-15 08:00 10-Jul-15 18:00	6.00						
B06.0260	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					11111	
B06.0265	Temporary decking at JnR WB Carriageway	15.00 11-Jul-15 08:00 28-Jul-15 18:00	6.00						
	nel Underneath Tram Track								
	ies, Horizontal Pipe Piles and Grouting			1.1.1.1			1		
MIT.TW00		72.00 06-Feb-15 08:00 09-May-15 18:00	28.00						
MIT.TW00		26.00 12-Jun-15 08:00 14-Jul-15 18:00	1.00						1 1
MIT.TW02		6.00 08-Jul-15 08:00 14-Jul-15 18:00	1.00						
MIT.TW03		18.00 15-Jul-15 08:00 04-Aug-15 18:00	1.00					11111	
MIT.TW04		18.00 18-Jul-15 08:00 07-Aug-15 18:00	1.00				1-1-1-1-1-1		
MIT.TW05		18.00 22-Jul-15 08:00 11-Aug-15 18:00	1.00						
MIT.TW06		18.00 25-Jul-15 08:00 14-Aug-15 18:00	1.00						1 1
MIT.TW07		14.00 25-Jul-15 08:00 10-Aug-15 18:00	1.00					11111	
MIT.TW08	The state of the s	3.00 11-Aug-15 08:00 13-Aug-15 18:00	1.00				111111		
MIT.TW09		2.00 14-Aug-15 08:00 15-Aug-15 18:00	1.00				1 1 1 1 1 1 1		
MIT.TW10	7 PAIL 25 2 - ■	3.00 17-Aug-15 08:00 19-Aug-15 18:00	1.00						11
RC Structu									11
	10 Blinding layer, smooth concrete and waterproofing, 2 bays	3.00 20-Jan-16 08:00   22-Jan-16 18:00	1.00				1 1 1 1 1 1	11111	11
MIT CS010	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 CS020	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			. 1 . 1 . 1 . 1 . 1 . 1 . 1			
MIT CS030	00 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						1 1
MIT CS090	Completion of Mined Tunnel Structure & completion of whole tunnel structure	0.00 14-Mar-16 08:00	1.00				•		
in the second se	nel Excavation							11111	1 1
Ton Bench						111111			1 1
MIT.EX01	10 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	4.4.4			4	-4444-	
MIT.EX01	20 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						1 1
MIT.EX01	40 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						1 1
MIT.EX01	50 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						111
Middle Be	ench								11
MIT.EX01	55 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.EX01	60 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 Be	ench								1 1
MIT.EX01	70 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						11
■ MIT.EX88	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					11111	11
Break Thre	ough Pipe Pile Wall		0.00				<del>┼</del> ╌┼╌┼╌┼		
	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					11111	
■ MIT.EX88	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						1 1
TTM 7 - NBC	C, Playground, JnR North & South Footpath								
Preliminari	ies, Instrumentation, UU Diversions, etc.	5.00 29-Jul-15 08:00 03-Aug-15 18:00	6.00						
	7 Stage 7 - Erect hoarding 18m, Remove hoarding 32m, and water infill barriers		6.00	+++		-+-+	<del>†      </del>	-1	
B07.0100		2.00   29-Jul-15 08:00   30-Jul-15 18:00	6.00					11111	1 1
	Pipe Pile, Grouting, Decking	5.00 04-Aug-15 08:00 08-Aug-15 18:00	6.00			1111111111			
B07.0200	Sheet pile at JnR South Footpath, 10 x 21m, total 210m, 16t	10.00 10-Aug-15 08:00 20-Aug-15 18:00	6.00						1 1
B07.0270	Temporary decking at JnR South Footpath	10.00 10-Aug-15 08.00   20-Aug-15 18.00	0.00						
	, Excavation, ELS	12.00 21-Aug-15 08:00 03-Sep-15 18:00	6.00	++			tririti	TITT	1
B07.0280	Pumping test 5	14.00 04-Sep-15 08:00 19-Sep-15 18:00	6.00						1 1
B07.0300	Excavation & ELS, 700 m3	12.00 10-Sep-15 08:00 23-Sep-15 18:00	6.00					1111	
B07.0310	Hard core blanket 300tk, blinding layer 75tk, waterproof membrane	12.00 10-3ep-13 00.00   23-3ep-13 16:00	0.00	1111					
RC Structu	res	28.00 17-Sep-15 08:00 22-Oct-15 18:00	6.00					11111	
B07.0400	RC Slab - Smoothing concrete 250tk, waterproof membrane, cast slab, 120m^3 Concrete, ReBar 6.0T	34.00 03-Oct-15 08:00 12-Nov-15 18:00	6.00	+					777
B07.0500	RC Wall - Smoothing concrete 250tkm waterproof membrane, cast wall, 55m^3 Concrete, ReBar 19.3T	38.00 17-Oct-15 08:00 01-Dec-15 18:00	6.00					11111	
B07.0600	RC Top Slab - Waterproof membrane, cast top slab, 55m^3 Concrete, ReBar 9.0T	30.00 17-0d-13 08.00 01-Dec-13 16.00	0,00						
	d Miscellanous Works  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					11111	1 1
B07.0700	Backfill to ground level, cut sneet pile zm depth below ground, reinstate road & tootpath at EB & WB tootpaths	30.00 02-Dec-13 00.00 00-Jail-10 10.00	70.00	1 1 1 1		1 1 1 1 1 1 1	1 1 1 1 1 1 1	1 1 1 1 1	1 1

Preliminary Master Programme (Rev.B)

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Actual Level of EffortActual Work

Remaining Work

93-13C WAC Statio	n Lee Tung Street Subway Rev.B (30-Sep'14)			01-Oct-1
vity ID	Activity Name	Original Planned Start Planned Finish	Total Float	
		Duration		AMJJASONDJEMAMJJASONDJEMAMJJASON
■ 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 18:0		
■ B08.0100	Implement TTM8	6.00 09-Jan-16 08:00 15-Jan-16 18:0		
■ 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 18:0 18.00 12-Feb-16 08:00 03-Mar-16 18:		
■ B08.0700	Backfill and reinstate Playground, JnR Carriageway EB Median Lane	18.00 12-Peb-10 08.00 03-Mai-10 18.	45.00	4
■ 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:		
■ 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 18:0		<u> </u>
■ B09.0700	Backfill and reinstate	22.00 07-Apr-16 08:00 03-May-16 18:	00 45.00	
TTM 10 - NBC,		3.00 05-May-16 08:00 07-May-16 18:	00 45.00	
■ A01.HRD10 ■ B10.0100	Stage 10 - Remove hoarding 32m, and remove water infill barriers	6.00 27-Apr-16 08:00 04-May-16 18:		
■ B10.0100	Cut down sheetpiles and pipe piles 2 m below ground at NBC and Playround	22.00 09-May-16 08:00 03-Jun-16 18:0		<b>4</b>
■ B10.0700	Backfill and reinstate - NBC	42.00 04-Jun-16 08:00 25-Jul-16 18:0	0 176.00	
Subway ABWF	Works			<u> </u>
■ BAF.0010	Subway ABWF works - Degree 1 (1st Batch)	65.00 13-Jun-15 08:00 29-Aug-15 18:		4 , , , , , , , , , , , , , , , , , , ,
■ BAF.0011	Subway ABWF works - Degree 1 (Remaining Batch) (31-Jul'14)	80.00 31-Aug-15 08:00 04-Dec-15 18:0		4
BAF.0030	Subway ABWF works - Degree 3 (1st Batch)	70.00 30-Jan-16 08:00 28-Apr-16 18:0 70.00 29-Apr-16 08:00 23-Jul-16 18:0		4
■ BAF.0031	Subway ABWF works - Degree 3 (2nd Batch)	70.00 25-Jul-16 08:00 17-Oct-16 18:0		4
■ BAF.0032 ■ MB09p	Subway ABWF works - Degree 3 (Remaining Batch)(30-Oct'16)  B9 ABWF degree 3 - Programmed	0.00 17-Oct-16 18:0		4
B3 Fresh Air I		0.00		
Structure and				
■ B3.0010	Fresh Air Intake Structure, 40D/20 14 m3, formwork 79 m2, reebar 2t	36.00 27-Aug-15 08:00 09-Oct-15 18:0		
■ 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 18:0	00 107.00	
	traction Facility			
Structure and /	ABWF Smoke Extraction Structure, 40D/20 16 m3, formwork 127 m2, rebar 2t	36.00 10-Oct-15 08:00   21-Nov-15 18:0	00 14.00	
■ B4.0010 ■ B4.0100	Smoke Extraction Structure, 400/20 10 ms, formwork 127 mz, febal 2t  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 18:0		
B6 URA H15 E				
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 18:0		
■ 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 18:0		
■ INF.H15p	Interface Access for Contract H15, All Levels, No.Cal.Wk. 131	0.00 29-Feb-16 18:0	00 117.00	
	oning Works to Southorn Playground 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 18:0	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 18:0		
■ B7.NBC310	W3 NBC - Excavaton 116 m3, remove existing basketball court surface 375 m2	4.00 13-Dec-16 08:00 16-Dec-16 18:0		
■ 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 18:0		
■ B7.SBC310	W3 SBC - Excavaton 116 m3, remove existing basketball court surface 375 m2	6.00 25-Jan-17 08:00 03-Feb-17 18:0	2772	
■ 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 18:0	0 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 18:0	0 206.00	
Landscaping W				
■ 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 18:0	0 25.00	
■ B7.LDS300	Play Area - Landscaping, Shrubs 1198 nr, tree 17 nr.	90.00 10-Nov-15 08:00 29-Feb-16 18:0	0 204.00	
	Playground - Joint inspection and handover to LCSD	28.00 12-Sep-16 08:00 17-Oct-16 18:0	0 45.00	
	vestigation Works		05.00	
■ B00.0110	Confirmation of location of SI, PH01, by the Engineer	1.00 14-Jul-14 08:00 14-Jul-14 18:00		<del> </del>
B00.0111	Mobilization of SI rigs	4.00 15-Jul-14 08:00 18-Jul-14 18:00 8.00 19-Jul-14 08:00 28-Jul-14 18:00	1000	
■ B00.0120 ■ B00.0130	Site Investigation, PH01 Site Investigation, Lab tests and report, and submission	28.00 29-Jul-14 08:00 29-Aug-14 18:0		
		20.00 17 00.00   20 mag 14 10.0	55.00	
C. Subway I	Building Services Works Drawings, Materials & Equipments Submission and Approval			
	BS Works - Design, Materials and Equipments - Submission & AIP (1st Batch)	60.00 14-Apr-14 08:00 28-Jun-14 18:0	0 6.00	
	BS Works - Design, Materials and Equipments - Submission & AIP (Remaining)	60.00 30-Jun-14 08:00 08-Sep-14 18:0		
	BS Works - Shop drawings - Submisssion & AIP (1st Batch)	60.00 30-Jun-14 08:00 08-Sep-14 18:0		
	BS Works - Shop drawings - Submisssion & AIP (Remaining)	60.00 10-Sep-14 08:00 20-Nov-14 18:0		
Procurement a	and Delivery of Materials and Equipments			
- 02 0040	BS Works - Procurement of all major building service equipments and materials (1st Batch)	50.00 10-Sep-14 08:00 08-Nov-14 18:0	0 6.00	
C3.0010	, , , , , , , , , , , , , , , , , , , ,			



Actual Work Remaining Work

93-13C WAC Stati	ion Lee Tung Street Subway Rev.B (30-Sep'14)					01-Oct-1
ivity ID	Activity Name	Original Planned Start	Planned Finish	Total	A Company of the Comp	
IVILY ID	Activity Name			Float	2014 2015 MJJJASONDJFMAMJJJASO	2016
- 00 0044	BS Works - Procurement of all major building service equipments and materials (Remaining)	Duration 50.00 10-Nov-14 08:00	09-Jan-15 18:00	6.00		
C3.0011	BS Works - Procurement or all major building service equipments and materials (Nemaning)  BS Works - Place Order for Air Handling Unit	3.00 24-Nov-14 08:00		74.00		
■ C3.00210 ■ C3.00211	BS Works - Manufacture of Air Handling Unit	73.00 27-Nov-14 08:00		74.00		
■ C3.00211 ■ C3.00212	BS Works - Delivery of Air Handling Unit	3.00 27-Feb-15 08:00	02-Mar-15 18:00	74.00		<u> </u>
■ C3.00212 ■ C3.00220	BS Works - Place Order for In-line Centrifugal Fan	3.00 15-Dec-14 08:00		74.00		
C3.00220	BS Works - Manufacture of In-line Centrifugal Fan	55.00 18-Dec-14 08:00	26-Feb-15 18:00	74.00		
C3.00222	BS Works - Delivery of In-line Centrifugal Fan	3.00 27-Feb-15 08:00		74.00		
C3.00230	BS Works - Place Order for Smoke Extraction Fan	3.00 15-Dec-14 08:00	17-Dec-14 18:00	74.00		
■ C3.00231	BS Works - Manufacture of Smoke Extraction Fan	55.00 18-Dec-14 08:00	26-Feb-15 18:00	74.00		4-4-4-4-4-4-4-4-4-4-4-4-4
C3.00232	BS Works - Delivery of Smoke Extraction Fan	3.00 27-Feb-15 08:00		74.00		
C3.00240	BS Works - Order for Fan Coil Unit	3.00 15-Dec-14 08:00		74.00		
C3.00241	BS Works - Manufacture of Fan Coil Unit	55.00 18-Dec-14 08:00		74.00		
C3.00242	BS Works - Delivery of Fan Coil Unit	3.00 27-Feb-15 08:00		74.00		
C3.00250	BS Works - Order for Smoke & Fire damper	3.00 27-Oct-14 08:00		74.00	<u> </u>	<del> - - - - - - - - - - - - - - - - - -</del>
C3.00251	BS Works - Manufacture of Motorized Smoke & Fire damper	97.00 30-Oct-14 08:00		74.00		
C3.00252	BS Works - Delivery of Motorized Smoke & Fire damper	3.00 27-Feb-15 08:00		74.00		
C4.0010	BS Works - FATs for all major building service equipments and materials (1st Batch)	50.00 10-Jan-15 08:00		6.00		
C4.0011	BS Works - FATs for all major building service equipments and materials (Remaining)	59.00 13-Mar-15 08:00		6.00		
C5.0000	Exchange of Design Information with Designated and Interfacing Contractors	90.00 10-Jan-15 08:00		13.00	<u> </u>	<del>{}</del>
C5.0010	BS Works - Delivery of all major equipments for the ECS plant room (1st Batch)	70.00 28-May-15 08:00		6.00		<u> </u>
C5.0015	BS Works - Delivery of all major equipments for the ECS plant room (2nd Batch)	86.00 20-Aug-15 08:00		6.00		
C5.0016	BS Works - Delivery of all major and others equipments for the ECS plant room (Remaining)	90.00 02-Dec-15 08:00	22-Mar-16 18:00	275.00		
Installation of	of Building Services					
C6.0110	Electrical - Within Stn, Distribution equip. 16 nr, cable tray & trunk 420m, lighting fitting 81nr, earthing tape 276m	43.00 05-Dec-15 08:00		3,00	<del> </del>	<del>             -</del>
C6.0120	Electrical - Subway, D.eq.82nr, cable tray&trunk 803m, cable 2200m, light fit 91nr, earth 170m, sign 42nr, connection(1)	75.00 28-Jan-16 08:00		7.00		
C6.0125	Electrical - Subway, D.eq.82nr, cable tray&trunk 803m, cable 2200m, light fit 91nr, earth 170m, sign 42nr, connection(2)	75.00 04-May-16 08:00		7.00		
C6.0210	ECS - Within WAC Stn, Grille 6 nr, air duct 115m2, damper 7 nr.	33.00 28-Jan-16 08:00		4.00		
C6.0220	ECS - Subway, Pipe/insul.75m, fan 12nr, grille 45nr, airduct 1106m2, paint 60m2, damper 36nr, control 4nr, etc. (1st)	60.00 10-Mar-16 08:00	Control of the Contro	4.00		
C6.0225	ECS - Subway, Pipe/insul.75m, fan 12nr, grille 45nr, airduct 1106m2, paint 60m2, damper 36nr, control 4nr, etc. (2nd)	60.00 26-May-16 08:00		4.00	<del>┩╍┋╍┋╍┋╍┋╸┋╺┋╸┋╸┋╸┋╸┋</del>	
C6.0310	FS Works - Within H15, Pipe 59m, dectector 7 nr, hose reel 1 nr	30.00 14-Mar-16 08:00		1.00		
C6.0320	FS Works - Subway, Pipe 155m, valve 2 nr, detectors 38 nr, hose reel 1 nr, fire extinguisher 4 nr, connection, etc.	90.00 22-Apr-16 08:00		1.00		
C6.0410	Drainage System - Waste - Existing WSC Stn, 35 m pipe, 2 valve, 4 pit, 1 switch/ control panel, 1 power supply system	60.00 28-Jan-16 08:00		3.00		
€ C6.0420	Drainage System - Waste - Subway, Pipe DI/Cl 257+18m, 7 joint, 6 OTC	90.00 15-Apr-16 08:00		3.00		
■ C6.0430	Drainage System - Rainwater Discharge, CI pipe, 8+18m above/below ground, 2 manholes	59.00 16-May-16 08:00		-	<del>┆┈┆┈┆┈┆┈┞┈┆┈┼┈┼┈┼┈┼┈┼┈┼┈┼┈┼┈</del>	
C6.0510	Cleansing Water System - Within WAC Station, 137m copper pipe, 3 gate valve, 2 stopcock, 2 water meter	48.00 15-Apr-16 08:00		11.00		
C6.0520	Cleansing Water System - Subway, 87m copper pipe, 1 gate valve, 1 joint	27.00 14-Jun-16 08:00		11.00		
C6.0521	Remaining BS Works.	28.00 29-Jun-16 08:00		8.00		
C6.0522	Installation of flood gate	28.00 23-Oct-15 08:00		40.00		•
INF.SAMSp	Interface Access for SAMS, Comms, MCS to All Areas, All Levels and Locations (25-Jul'16)	0.00	09-Aug-16 18:00	40.00	<del></del>	<del> - - - - - - - - - - - - - - - - - - -</del>
Testing and	Commissioning	35.00 06-Aug-16 08:00	IE Can 16 19:00	4.00		
C9.BS31TC	T&C ECS - Tests on Ventilation Fans, Air Balancing, Equipment & System, Control, Noise & Sound, etc.			7.00		
C9.BS32TC	T&C - SAT of HV Sw Boards/ TX, LV Sw Boards & MCC, Lighting Control, etc.	35.00 03-Aug-16 08:00		1.00		
C9.BS33TC	T&C Fire Services - Performance Test/ FH & HR System/ Auto Fire Alam System	35.00 10-Aug-16 08:00 30.00 26-Jul-16 08:00		3.00		
C9.BS34TC	T&C Plumbing and Drainage - P&D Pumps, Control System			12.00	<del>                                      </del>	
G9.BS36TC	T&C ELV System - Contol Systems	30.00 03-Aug-16 08:00		1.00		
C9.BSFSI	FSI - Integrated Test	14.00 21-Sep-16 08:00	77-001-16 16.00	1.00		
	spection and Approval	30.00 30-Aug-16 08:00	DE Oat 16 19:00	3.00		
C9.S10020	DSD/ WSD Inspection and Connection	30.00 30-Aug-16 08:00		138.00		
C9.SI0025	Connection for electricity	2.00 08-Oct-16 08:00		1.00	<del>                                      </del>	
C9.S10030	Submit Forms FS 314 & FS 501	12.00 12-Oct-16 08:00		1.00		
C9.S10040	FS Inpection / Re-inspection	18.00 27-Oct-16 08:00		1.00		
C9.S10050	FS Defect Rectification and Approval	1.00 17-Nov-16 08:00		1.00		
C9.S10060	Obtain FS Certification	10.00 18-Nov-16 08:00		1.00		
C9.SI0065	OP Inpection/ Re-inspection	1.00 30-Nov-16 08:00		1.00	<del>                                      </del>	
C9.S10070	Obtain OP	6.00 01-Dec-16 08:00		1.00		
C9.SIHO	Joint Inspection and Handover to Operation Team for the BS of the New Subway		07-Dec-16 18:00	1.00		
MSB10p	Complete & pass all statutory, joint Inspection & handover to Operation Team for the BS of new Subway- Programmed	0.00	7, 500-10 10,00	1.00		
	ation Modification Works (Part B Works)					
	s & Misc Works	00.00 40 No. 45 00.00	20 Jan 16 18:00	71.00	<del>┦╒┢╒┢┋┋</del>	
D3080	ABWF - Plaster & titling 29 m2, baffling ceiling 10 m2, metal cladding 9 m2	60.00 19-Nov-15 08:00	00:01 01-116C-00	11.00		



Actual Work

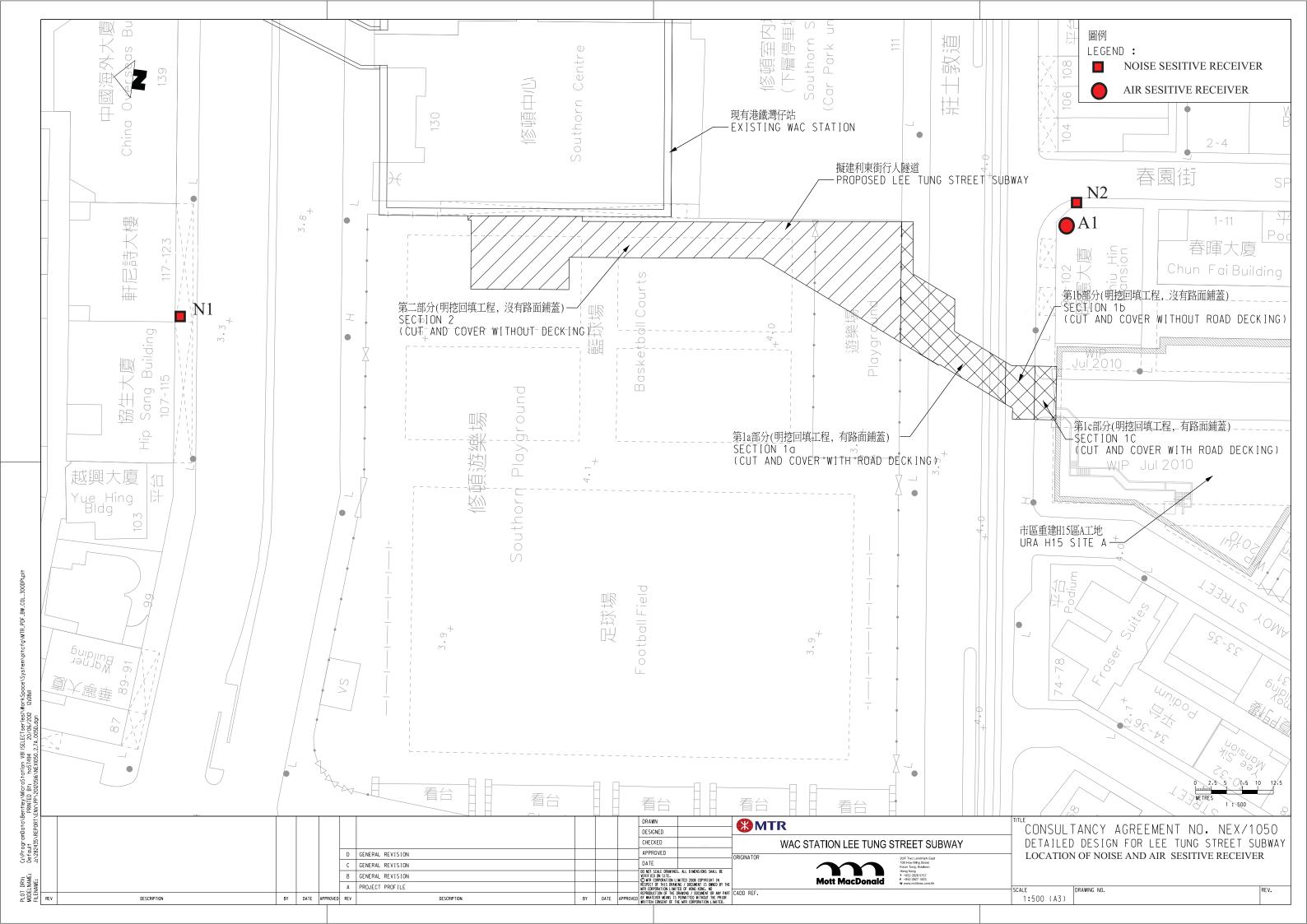
Remaining Work

		Original Planned Start	Planned Finish	Total	A. S. Alba						12.
Activity ID	Activity Name	Original Francisco Start	Tiginiou i mien	Float	2014	-1	2015	IAIGIOINIB	2016	TAICIOIN	12
		Duration		A	MJJJAS	וחואוס	J I F I W I A I W I J I J	ININIDIA	J F M A M J J	ASON	1 D
Breaking O	ut WAC Station			0.00							
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							
WAC Statio	n Modification Works		Taran and the second	101.00		111					
■ D1001	Liaison with MTR and relevance parties for works in WAC station	90.00 14-Apr-14 08:00		121.00				<del> </del>	<del></del>	+	
■ D1002	Preparation works for works in WAC station	12.00 05-Aug-14 08:00		121.00							1
■ D1010	Internal Hoarding in WAC station (NTH)	12.00 19-Aug-14 08:00		121.00			111111				1
■ D1020	Construct new AFC/Audit Room next to Entrance B1, B2, ABWF & BS Works (NTH)	69.00 02-Sep-14 08:00		121.00	4-			41111		1111	
■ D1030	Modification Works to existing AFC/Audit, Store & Kiosk 3 & 5 (NTH)	84.00 05-May-15 08:00		13.00		111	111111				
■ D1040	Modification to existing Kiosk 2 (NTH)	80.00 14-Aug-15 08:00		13.00				i-training		···	
■ D1050	Relocate 4 Advertising Panels (NTH)	10.00 19-Nov-15 08:00		93.00		111	111111				
■ D1060	Install New Telephone Booth and associated works (NTH)	36.00 14-Aug-15 08:00		57.00				T			
■ 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		•					1
	Commissioning					111					1
■ D4090	Testing and Commissioning	28.00 16-Mar-16 08:00		8.00				<u> </u>			
■ 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							
F WAC St	ation Imporvement Works (Part C Works)										1
	nt Works to WAC Station					111		1 1 1 1 1			
■ E1020	Modify, provide & install new glass barrier to suit new AFC gates (NTH)	40.00 17-Sep-15 08:00		94.00		111					
■ E1030	Provide and install additional AFC gates (NTH)	40.00 06-Nov-15 08:00		94.00							
■ E1040	Provide builder works for TIMS relocation (NTH)	80.00 16-Mar-16 08:00		28.00							
■ E1050	T&C by Designated Contractor for TIMS (NTH)	30.00 25-Jun-16 08:00		28.00		1 1 1					
■ E1060	Make Good builder works for TIMS (NTH)	75.00 01-Aug-16 08:00		28.00		111					
■ MSE03p	E3-All works in milestone E completed - Programmed	0.00	29-Oct-16 18:00	28.00		111					-:-:



## **Appendix C**

**Monitoring Locations** 





## Appendix D

**Calibration Certificate of Monitoring Equipment** 

#### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Chiu Hin MansionDate of Calibration: 9-Dec-14Location ID :A1Next Calibration Date: 9-Feb-15

Technician: Mr. Ben Tam

#### **CONDITIONS**

Sea Level Pressure (hPa) Temperature (°C)

1021.5
19.4

Corrected Pressure (mm Hg)
Temperature (K)

766.125 292

#### **CALIBRATION ORIFICE**

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

Qstd Slope -> Qstd Intercept ->

2.00757 -0.01628

#### **CALIBRATION**

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.0	6.0	12	1.757	54	55.26	Slope = 33.3912
13	4.7	4.7	9.4	1.556	46	47.07	Intercept = $-4.0192$
10	3.5	3.5	7	1.344	40	40.93	Corr. coeff. = 0.9990
7	2.6	2.6	5.2	1.159	34	34.79	
5	1.4	1.4	2.8	0.853	24	24.56	

#### Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

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 )[Sqrt(298/Tav)(Pav/760)]-b)

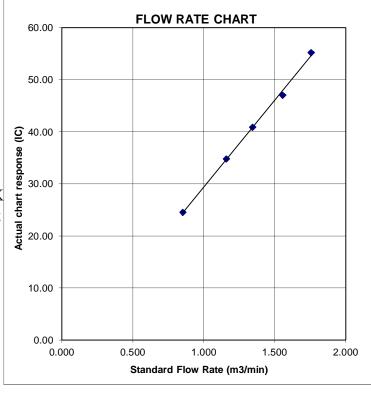
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





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

## ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

-=====	Tisch	Orifice I.I		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	NA NA	NA	1.00	0.9790	6.4	2.0
3	NA	NA	1.00	0.8800	7.8	5.0
4	NA	NA	1.00	0.8350	8.8	5.5
5	NA	NA	1.00	0.6910	12.7	8.0

#### DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866 0.9823 0.9804 0.9791 0.9739	0.7077 1.0034 1.1140 1.1726 1.4094	1.4077 1.9908 2.2258 2.3345 2.8155	0.9957 0.9914 0.9894 0.9881 0.9829	0.7142 1.0127 1.1243 1.1834 1.4224	0.8896 1.2581 1.4066 1.4753 1.7793
Qstd slo intercep coeffici y axis =	t (b) = ent (r) =	2.00757 -0.01628 0.99989 Pa/760)(298/Ta)]	Qa slop intercep coefficient	t (b) =	1.25710 -0.01029 0.99989

#### CALCULATIONS

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

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

For subsequent flow rate calculations:

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



#### Sun Creation Engineering Limited

Calibration and Testing Laboratory

# 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 Serial No. / 編號

2238 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 / 温度 :  $(23 \pm 2)^{\circ}C$  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

KM Wu Engineer Date of Issue 簽發日期

15 May 2014

The sest 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測源至國際標準。局部被印本證書需先獲本實驗所書而批准。



#### Sun Creation Engineering Limited

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1. 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. 2.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment:

Equipment ID

Description

Certificate No.

CL280 CL281 40 MHz Arbitrary Waveform Generator

C140016

Multifunction Acoustic Calibrator

DC130171

5. Test procedure: MA101N.

6. Results:

Sound Pressure Level 6.1

Reference Sound Pressure Level 6.1.1

6.1.1.1 Before Self-calibration

	UUT	Setting	Applied	UUT		
Range Parameter (dB)		Frequency Time Weighting Weighting		Level Freq. (dB) (kHz)		Reading (dB)
50 - 130	LAFP	A	F	94.00	1	94.3

6.1.1.2 After Self-calibration

	UUT	Setting		Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

	UU	Γ Setting		Applie	UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130 L	L <sub>AFP</sub>	A	F	94.00	1	94.0 (Ref.)
	3.00			104.00		104.0
			-	114.00		113.9

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

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

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### Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142871

證書編號

6.2 Time Weighting

Continuous Signal 6.2.1

	UUT Setting				d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.0	Ref.
	L <sub>ASP</sub>		S			94.0	± 0.1
	L <sub>AIP</sub>		1			94.0	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

	UUT	Setting		App	lied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.
	L <sub>AFMax</sub>			-	200 ms	105.0	$-1.0 \pm 1.0$
	L <sub>ASP</sub>		S		Continuous	106.0	Ref.
	L <sub>ASMax</sub>				500 ms	102.0	$-4.1 \pm 1.0$

#### 6.3 Frequency Weighting

6.3.1 A-Weighting

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

The lest 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 winten approval of this laboratory.

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



#### Sun Creation Engineering Limited

Calibration and Testing Laboratory

## Certificate of Calibration 校正證書

Certificate No.: C142871

證書編號

6.3.2 C-Weighting

0		Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130 L <sub>CFP</sub>	С	F	94.00	31.5 Hz	91.4	$-3.0 \pm 1.5$	
				63 Hz	93.3	$-0.8 \pm 1.5$	
				125 Hz	93.8	$-0.2 \pm 1.0$	
					250 Hz	94.0	$0.0 \pm 1.0$
					500 Hz	94.0	$0.0 \pm 1.0$
					1 kHz	94.0	Ref.
					2 kHz	93.8	$-0.2 \pm 1.0$
					4 kHz	93.2	$-0.8 \pm 1.0$
					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	IEC 60804	
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec	4	1	1/10	110.0	100	99.9	± 0.5
						1/102		90	89.5	±0,5
			60 sec.			1/103		80	79.2	± 1.0
			5 min.			1/104		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

 $\begin{array}{lll} 250 \text{ Hz} - 500 \text{ Hz} & : \pm 0.30 \text{ dB} \\ 1 \text{ kHz} & : \pm 0.20 \text{ dB} \\ 2 \text{ kHz} - 4 \text{ kHz} & : \pm 0.35 \text{ dB} \\ 8 \text{ kHz} & : \pm 0.45 \text{ dB} \\ 12.5 \text{ kHz} & : \pm 0.70 \text{ dB} \end{array}$ 

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.

本意片所載校正用之測試器材均可測源至國際標準。局部複印本證書語先獲本實驗所書面批准。



#### Sun Creation Engineering Limited

Calibration and Testing Laboratory

# 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 Serial No. / 編號

2238

2285690

Action-United Environmental Services and Consulting Supplied By / 委託者

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 :

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

Project Engineer

Certified By 核證

K M Wu

Date of Issue 簽發日期

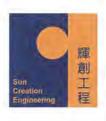
1

15 May 2014

Engineer

The lest 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.

本證問所載校正用之測試器材均可測源至國際標準。 局部複印本證書關先獲本實驗所書面批准。



#### Sun Creation Engineering Limited

Calibration and Testing Laboratory

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- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. 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. 2.
- The results presented are the mean of 3 measurements at each calibration point. 3.
- 4. Test equipment:

Equipment ID

Description

Certificate No.

CL280 CL281

40 MHz Arbitrary Waveform Generator

C140016

Multifunction Acoustic Calibrator

DC130171

- 5. Test procedure: MA101N.
- 6. Results:
- Sound Pressure Level 6.1
- Reference Sound Pressure Level 6.1.1

### 6.1.1.1 Before Self-calibration

	UUT	Setting	Applied	UUT		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	LAFP	A	F	94.00	1	94.2

#### 6.1.1.2 After Self-calibration

	UUT	Setting		Applie	d Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1	± 0.7	

6.1.2 Linearity

	UU	Γ Setting	Applie	UUT			
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1 (Ref.)	
				104.00		104.1	
				114.00		114.0	

IEC 60651 Type 1 Spec. :  $\pm$  0.4 dB per 10 dB step and  $\pm$  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測源至國際標準。局部複印本證書需先獲本實驗所書而批准。



## Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142872

證書編號

Time Weighting 6.2

Continuous Signal 6.2.1

	UUT Setting			Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	Ref.
	L <sub>ASP</sub>		S			94.1	± 0.1
- 1	L <sub>AIP</sub>		I			94.1	± 0.1

Tone Burst Signal (2 kHz) 6.2.2

	UUT Setting			App	lied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.
	L <sub>AFMax</sub>		-		200 ms	105.0	$-1.0 \pm 1.0$
	L <sub>ASP</sub>		S		Continuous	106.0	Ref.
	L <sub>ASMax</sub>				500 ms	102.0	$-4.1 \pm 1.0$

#### 6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	31.5 Hz	54.8	$-39.4 \pm 1.5$
			-		63 Hz	67.9	$-26.2 \pm 1.5$
					125 Hz	77.9	$-16.1 \pm 1.0$
					250 Hz	85.4	$-8.6 \pm 1.0$
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	95.1	$+1.0 \pm 1.0$
					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. 本證得所載校正用之測試器材均可測源至國際標準。局部複印本證書需先獲本實驗所書面批准。



#### Sun Creation Engineering Limited

Calibration and Testing Laboratory

## Certificate of Calibration 校正證書

Certificate No.: C142872

證書編號

6.3.2 C-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130 L <sub>CFP</sub>	L <sub>CFP</sub>	C	F	94.00	31.5 Hz	91.2	$-3.0 \pm 1.5$
	- City		63 Hz	93.3	$-0.8 \pm 1.5$		
			-		125 Hz	93.9	$-0.2 \pm 1.0$
					250 Hz	94.1	$0.0 \pm 1.0$
					500 Hz	94.1	$0.0 \pm 1.0$
					1 kHz	94.1	Ref.
					2 kHz	93.9	$-0.2 \pm 1.0$
					4 kHz	93.3	$-0.8 \pm 1.0$
1/1	1/				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	IEC 60804
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
	2.00		1 2 2	-		1/102		90	89.7	± 0.5
			60 sec.			1/103		80	79.8	± 1.0
			5 min.			1/104		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

 $\begin{array}{lll} 250 \; Hz - 500 \; Hz & : \pm 0.30 \; dB \\ 1 \; kHz & : \pm 0.20 \; dB \\ 2 \; kHz - 4 \; kHz & : \pm 0.35 \; dB \\ 8 \; kHz & : \pm 0.45 \; dB \end{array}$ 

12.5 kHz : ± 0.70 dB

- 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.

本證 胡香戒校正用之細試器材均可溯源至國際標準 + 局部被印本證書需先獲本實驗所書面批准。

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.



## **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 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, of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as 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 listed in the HOKLAS Directory of Accredited Laboratories within the test category of 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 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 quality management system (see joint IAF-ILAC-ISO Communiqué). (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**

E4		Action		
Event	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.	Submit noise mitigation proposals to IEC     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			T	T
Exceedance for one sample	1. Identify source;     2. If valid, inform IEC and ER;     3. Repeat measurement to confirm finding;     4. Increase monitoring frequency to daily	Check monitoring data submitted by ET;     Check Contractor's working method.	1. Notify Contractor	1. Rectify any     unacceptable     practice;     2. Amend working     methods if     appropriate
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and EPD; 3. Repeat measurements to 1. 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.	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.	1. Confirm receipt of notification of failure in writing;     2. Notify Contractor;     3. Ensure remedial Measure properly implemented.	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	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.	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.	1. Confirm receipt of notification of failure in writing;     2. Notify Contractor;     3. Ensure remedial measures properly implemented.	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	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.	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 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	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 – January 2015**

	DATE	AIR QUALITY	Noise
		24-HOUR TSP	$L_{EQ}$ 30MIN
Thu	1-Jan-15		·
Fri	2-Jan-15		
Sat	3-Jan-15		
Sun	4-Jan-15		
Mon	5-Jan-15	✓	
Tue	6-Jan-15		✓
Wed	7-Jan-15		
Thu	8-Jan-15		
Fri	9-Jan-15		
Sat	10-Jan-15	✓	
Sun	11-Jan-15		
Mon	12-Jan-15		
Tue	13-Jan-15		✓
Wed	14-Jan-15		
Thu	15-Jan-15		
Fri	16-Jan-15	✓	
Sat	17-Jan-15		
Sun	18-Jan-15		
Mon	19-Jan-15		
Tue	20-Jan-15		✓
Wed	21-Jan-15		
Thu	22-Jan-15	✓	
Fri	23-Jan-15		
Sat	24-Jan-15		
Sun	25-Jan-15		
Mon	26-Jan-15		
Tue	27-Jan-15		✓
Wed	28-Jan-15	✓	
Thu	29-Jan-15		
Fri	30-Jan-15		
Sat	31-Jan-15		

✓	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 - February 2015

	DATE	AIR QUALITY	Noise
		24-HOUR TSP	L <sub>eq</sub> 30min
Sun	1-Feb-15		
Mon	2-Feb-15		
Tue	3-Feb-15	✓	✓
Wed	4-Feb-15		
Thu	5-Feb-15		
Fri	6-Feb-15		
Sat	7-Feb-15		
Sun	8-Feb-15		
Mon	9-Feb-15	✓	
Tue	10-Feb-15		✓
Wed	11-Feb-15		
Thu	12-Feb-15		
Fri	13-Feb-15		
Sat	14-Feb-15	✓	
Sun	15-Feb-15		
Mon	16-Feb-15		
Tue	17-Feb-15		✓
Wed	18-Feb-15	✓	
Thu	19-Feb-15	Chinese N	New Year
Fri	20-Feb-15	Chinese N	New Year
Sat	21-Feb-15	Chinese N	New Year
Sun	22-Feb-15		
Mon	23-Feb-15		
Tue	24-Feb-15	✓	✓
Wed	25-Feb-15		
Thu	26-Feb-15		
Fri	27-Feb-15		
Sat	28-Feb-15		

✓	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: A	Location: A1 (balcony at 1/F of Chiu Hin Mansion)  Elapsed Time Chart Reading Ave. Standard (g)										Weight	Dust 24-hour			
Date	Sample Number	Initial	Final	Actual (min)	Min	Max	Ave	Temp.	Ave. Press. (hPa)	Flow Rate (m³/min)	Air Volume (std m <sup>3</sup> )	Initial	Final	Dust Collected (g)	TSP in Air (µg/m³)
5-Jan-15	27609	15766.76	15790.78	1441.20	38	40	39.0	17	1020.4	1.31	1886	2.7303	2.8525	0.1222	65
10-Jan-15	27536	15790.78	15814.85	1444.20	33	36	34.5	16.8	1020.2	1.17	1692	2.8180	3.0010	0.1830	108
16-Jan-15	27612	15814.85	15838.90	1443.00	36	38	37.0	16.7	1022.4	1.25	1803	2.7389	2.8966	0.1577	88
22-Jan-15	27623	15838.90	15862.94	1442.40	39	40	39.5	15.9	1019.7	1.33	1912	2.7962	2.9657	0.1695	89
28-Jan-15	27613	15862.94	15886.98	1442.40	38	40	39.0	16.9	1018.8	1.31	1886	2.7345	2.8439	0.1094	58

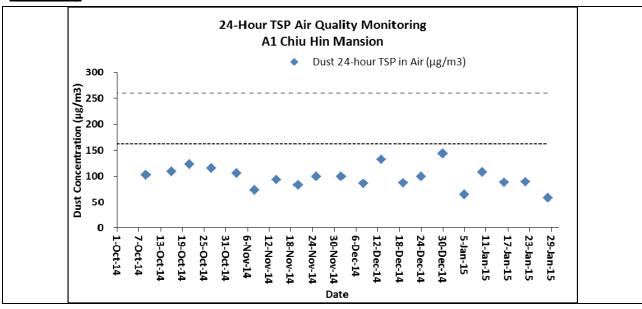


## Appendix I

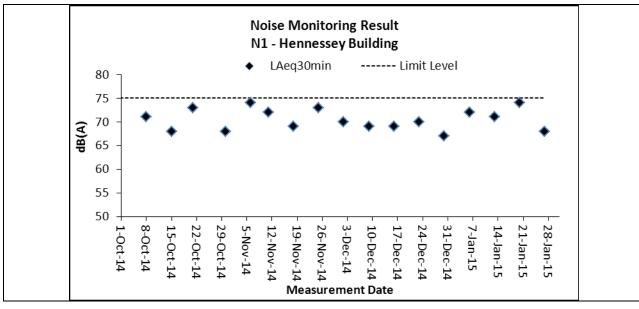
**Graphical Plots** 

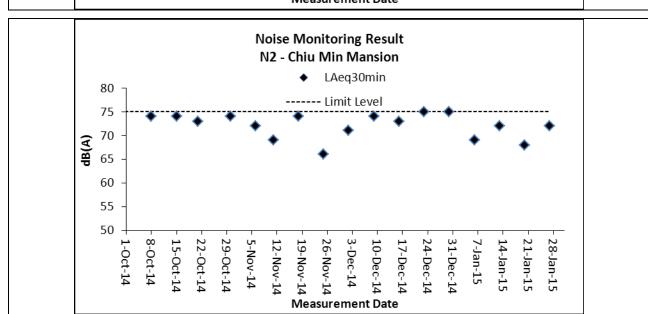


#### **Air Quality**



### **Construction Noise**







## Appendix J

**Meteorological Information** 



	Meteorological Data downloaded from HKO in the Reporting Period									
			Total		Kings	Park Station				
Date	e	Weather	Total Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)				
1-Jan-15	Thu	Some haze. Cloudy and significantly cooler overnight. Moderate to fresh north to northeasterly winds.	0	16.7	6.5	72.5	SE			
2-Jan-15	Fri	Some haze. Cloudy and significantly cooler overnight. Moderate to fresh north to northeasterly winds.	0	15	8.2	63.5	E/SE			
3-Jan-15	Sat	Fine and dry. Moderate northeasterly winds, fresh at times.	0	15.6	8.2	59.2	E/SE			
4-Jan-15	Sun	Mainly fine and dry. Moderate east to northeasterly winds, fresh offshore.	0	17.6	8.2	71.2	SE			
5-Jan-15	Mon	Some haze. Cloudy and significantly cooler overnight. Moderate to fresh north to northeasterly winds.	0	19.3	9.4	78	SE			
6-Jan-15	Tue	Some haze. Cloudy and significantly cooler overnight. Moderate to fresh north to northeasterly winds.	0	21	6.1	80	W/NW			
7-Jan-15	Wed	Some haze. Cloudy and significantly cooler overnight. Moderate to fresh north to northeasterly winds.	0.1	17.1	6	78.7	NE			
8-Jan-15	Thu	Fine and dry. Moderate northeasterly winds, fresh at times.	0	15.6	8.7	63.5	NE			
9-Jan-15	Fri	Mainly fine and dry. Moderate east to northeasterly winds, fresh offshore.	0	15.6	8	59.7	E/SE			
10-Jan-15	Sat	Mainly fine and dry. Moderate east to northeasterly winds, fresh offshore.	0	16.5	7.4	63	E/SE			
11-Jan-15	Sun	Overcast with occasional rain. Fresh north to northeasterly winds.	Trace	16.9	7.5	60.5	E/SE			
12-Jan-15	Mon	Overcast with occasional rain. Fresh north to northeasterly winds.	14.9	13.8	12.7	79.5	N/NE			
13-Jan-15	Tue	One or two light rain patches at first. It will be cold. Moderate north to northeasterly winds, fresh at first.	25.8	12.2	8.9	91	NE			
14-Jan-15	Wed	Fine and dry. Moderate northeasterly winds.	0	14.1	13.2	61	N/NE			
15-Jan-15	Thu	Fine and dry. Moderate northeasterly winds.	0	14.6	7.4	60	E/SE			
16-Jan-15	Fri	Fine and dry. Moderate northeasterly winds.	0	17	5.4	65.7	W/NW			
17-Jan-15	Sat	Mainly fine. Moderate to fresh easterly winds.	0	15.8	12	63	E/SE			
18-Jan-15	Sun	Mainly fine. Moderate to fresh easterly winds.	0	16	8.2	58.7	E/SE			
19-Jan-15	Mon	Fine. Very dry in the afternoon. Moderate easterly to northeasterly winds, occasionally fresh later.	0	16.7	9	37.7	NE			
20-Jan-15	Tue	Sunny periods in the afternoon. Cloudy tonight. Fresh easterly winds.	0	16.3	7.4	62.2	E/SE			
21-Jan-15	Wed	Mainly fine. Moderate to fresh easterly winds.	Trace	16.7	4.5	67.5	W/NW			
22-Jan-15	Thu	Fine and dry. Moderate northeasterly winds.	0	17.6	9.5	39	E/SE			
23-Jan-15	Fri	Mainly fine. Moderate to fresh easterly winds.	0	16.5	8.9	59.7	SE			
24-Jan-15	Sat	Mainly fine. Moderate to fresh easterly winds.	0.9	17.2	10.1	76.7	E/SE			
25-Jan-15	Sun	Fine. Very dry in the afternoon. Moderate easterly to northeasterly winds, occasionally fresh later.	Trace	18.7	10.3	76.5	SE			
26-Jan-15	Mon	Sunny periods in the afternoon. Cloudy tonight. Fresh easterly winds.	0	18.8	8.5	81.7	SE			
27-Jan-15	Tue	Mainly fine. Moderate to fresh easterly winds.	0	18.2	8.8	80	SE			
28-Jan-15	Wed	Sunny periods in the afternoon. Cloudy tonight. Fresh easterly winds.	Trace	17	11.1	75.7	E/SE			
29-Jan-15	Thu	Mainly fine. Moderate to fresh easterly winds.	Trace	16.8	11.4	75	SE			
30-Jan-15	Fri	Mainly fine. Moderate to fresh easterly winds.	0	16.7	6.5	77.2	W/NW			
31-Jan-15	Sat	Mainly fine. Moderate to fresh easterly winds.	Trace	14.5	6.5	82.5	E/SE			



## Appendix K

**Monthly Summary Waste Flow Table** 

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

## **Monthly Summary Waste Flow Table for 2015**

Name of Emp	oloyer: MTR Co	rporation Limi	ted								Contract No.:	C65931-13C			
	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Qua	antities of Non-	-Inert C&D Wa	astes Generate	ed Monthly					
Month	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 m³)	(in m³)	(in m <sup>3</sup> )	(in m³)	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m³)	(in m <sup>3</sup> )	(in m³)	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m3/ Litre)	(in m³)
Jan	1.69784	0	0	0	0	0	0	0	1.69784	0	0	0	0	0	0.0009
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1.69784	0	0	0	0	0	0	0	1.69784	0	0	0	0	0	0.0009

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 IM	PACT					
S.5.1.1	Use of quieter plant	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control Ordinance
S.5.1.1	Use of noise enclosure and movable barrier	To minimize	Contractor	Work site	Construction	ProPECC PN2/93,
	• movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME;	construction noise emissions			Stage	Noise Control Ordinance and EIAO Guidance
	• noise enclosure can achieve 15dB(A) reduction for PME;					Note NO. 9/2010
	<ul> <li>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;</li> </ul>					
	• 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.					
S.5.1.1	<b>General Construction Noise Control Measures</b>	To minimize	Contractor	Work site	Construction	ProPECC PN2/93
	• 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;	construction noise emissions			Stage	and Noise Control Ordinance
	• 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;					



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
	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 QUAL	ITY IMPACT	I				
S.5.1.2	Construction Dust Control Measures	To minimize the dust	Contractor	Work site	Construction	Air Pollution
	• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;	impacts arising from the construction works			Stage	Control (Construction Dust) Regulation
	• 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					



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 Q	UALITY IMPACT					
S.5.1.3	Construction Water Quality Impact Measures	To reduce water	Contractor	Work site	Construction	ProPECC PN1/94;
	Collection of wastewater into a sedimentation tank for treatment before discharge into the public drainage system;	quality impact induced by the construction work			Stage	Water Pollution Control Ordinance
	• 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.					
WASTE M	ANAGEMENT		ı			
S.5.1.4	Construction Waste Management Measures	To adopt waste	Contractor	Work site	Construction	Waste Disposal
	Scrap metals or abandoned equipment should be recycled if possible;	management measures in the way			Stage	Ordinance (Cap. 354); Waste
	Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner;	of avoiding, minimizing, reusing				Disposal (Chemical Waste) (General)
	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;	and recycling so as to reduce waste generation				Regulation; DEVB TCW No. 6/2010; ETWB TCW No. 19/2005.
	Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes; and					



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> <li>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.</li> </ul>					
LANDSCA	PE AND VISUAL IMPACT					
S.5.1.5	Landscape and Visual Measures     Clear demarcation of works area to prevent damages to existing trees in close proximity;	To reduce landscape and visual impact by construction works.	Contractor	Work Site and nearby playground	Construction Stage	EIAO; ETWB TCW No. 3/2006.
	• Protection of all trees planned to be retained onsite;					
	<ul> <li>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</li> </ul>					
	<ul> <li>Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colours.</li> </ul>					