Maeda Corporation

MTRCL Contract C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Monthly EM&A Report (Aug 2014)

URS

12 September 2014

By Email and Post

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

Your reference:

Our reference: 40032976/432203

Attention: Mr. Kenneth Chow / Environmental Engineer II

Dear Sir,

Consultancy Agreement A130-13
Independent Environmental Checker for CRS and LTS
CRS - Verification for Fifth Monthly Environmental Monitoring and Audit (EM&A) Report (August 2014) (Report No.: EB001340R0062)

We refer to the Sixth Monthly EM&A Report (August 2014) received under cover of the email from the Environmental Team, Hyder Consulting Limited (HCL), dated on 10 September 2014.

Further to our comments provided on 12 September 2014 and subsequent revision of the Report by HCL on the same day, we have no further comment and have verified the captioned report (Report No.: EB001340R0062).

Should you have any queries, please feel free to contact the undersigned at 2410 3795.

Yours faithfully
URS Hong Kong Ltd

Thomas Wong
Deputy Independent Environmental Checker

TWKW/wwsc

cc. via email
Hyder Consulting Limited (Attn.: Mr. F. N. Wong)
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MAEDA

Maeda Corporation

MTRCL Contract C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Monthly EM&A Report (Aug 2014)

Author	Kelvin Chiang
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Report No	EB001340R0062
Date	12 September 2014

This **Monthly EM&A Report (Aug 2014)** is prepared for Maeda Corporation in accordance with the terms and conditions of appointment dated 30 October 2013. Hyder Consulting Limited (Company Number 126012) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

CONTENTS

TABLES

APPENDICES

EXECUTIVE SUMMARY

Breaches of Action and Limit Levels

ES01 No Notice of Exceedance and the associated investigation and follow-up actions were required as the environmental monitoring results registered no exceedances of Action / Limit Levels of air quality and construction noise during the Reporting Period.

ES02 No corrective actions were required as the environmental audit during the Reporting Period observed:

1) No deficiencies with major environmental significance of the required environmental mitigation measures;

2) No non-compliance with the required waste management; and

3) No adverse environmental impacts on the sensitive receivers environed with the site of the Project.

Environmental Complaints

ES03 No environmental complaints were recorded during the Reporting Period.

Notification of Summons & Successful Prosecutions

ES04 No notification of summons and successful prosecutions were recorded during the Reporting Period.

Reporting Changes

ES05 No major reporting changes were made during the Reporting Period.

Future Key Issues

General

ES06 Full implementations of the environmental mitigation measures, which are required in the EM&A Plan and summarized in the Implementation Schedule, are recommended. Whenever necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.

Construction Noise

ES07 Particular attention should be paid to construction noise mitigation measures, especially during piling works during the coming construction period to ensure full compliance with statutory and non-statutory requirements and guidelines. Proactive review of working methods, careful selection and arrangement of the noisy equipment as well as effective noise mitigation measures are strongly recommended.

Water Quality

ES08 In addition, compliance with water quality mitigation measures remains one of the key environmental issues during the Hong Kong rainy season between April and September.

Air quality

ES09 Furthermore, implementation of construction dust suppression measures are recommended during dusty activities under dry and windy conditions.

ES10 Where appropriate, construction dust suppression measures including decking over the excavation areas, watering of exposed site surface and covering of all excavated and stockpiles of dusty material by impervious sheeting or similar materials are reminded.

1 INTRODUCTION

1.1 The Reporting Period

1.1.1 This is the 6th monthly EM&A report (hereinafter referred as 'This Report') covering construction period from 1 to 31 August 2014 (hereinafter referred as 'the Reporting Period').

1.1.2 This Report has been written in accordance with the ***Environmental Monitoring and Audit Plan*** (hereinafter referred as 'the EM&A Plan') enclosed in the ***Project Profile – MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works***, which is registered in the Environmental Permit No. EP-440/2012 (hereinafter referred as 'the EP') (Register No.: PP-462/2012).

1.2 Project Background

1.2.1 In order to improve the appearance of Carnarvon Road Entrance D1 and D2 of Tsim Sha Tsui (hereafter referred as 'TST') Station and to provide a more comfortable walking environment nearby, MTR Corporation Limited (hereafter referred as 'MTRC' or 'the Corporation') has commissioned Meada Corporation (hereinafter referred as 'MC') the contract MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works (hereafter referred as 'the Project'). The Project is proposed to rebuild the existing Entrance D1 and D2 and construct a new Entrance D3 at the basement B2 level of the K11 Art Mall to connect to the TST station by a subway, which extends from the Entrance D1 and D2 and runs approximately 80m along Carnarvon Road and across the Bristol Avenue to the Entrance D3. The tentative programme for the Project is approximately 25 months, and the construction of the Project was commenced in March 2014.

1.2.2 The existing TST Station had been in operation before the ***Environmental Impact Assessment Ordinance*** (hereafter referred as 'EIAO') came into effect on 1 April 1998. It constitutes an exempted Designated Project (hereinafter referred as 'DP') according to Section 9(2) (g) of the EIAO (Cap. 499). As the Project involves a material change to an exempted DP which may have potential environmental impacts, an environmental permit is required prior to the commencement of the modification works. The Project Profile has been developed to provide information for direct application of an environmental permit. The EP has been granted since 18 July 2012, after the Project Profile and the associated ***EM&A Plan*** were registered.

1.2.3 Site map, works area and locations of the environmental monitoring under the Project are illustrated in Figure 1.1 Site Location Plan of ***Appendix A***.

1.2.4 Management structure of the Project, including organization chart, lines of communication and contact names and telephone numbers of key personnel, is demonstrated in ***Appendix B***.

1.2.5 Construction programme is shown in ***Appendix C***, whereas implementation schedule for the recommended environmental mitigation measures (hereinafter referred as 'the Implementation Schedule') are summarized in ***Appendix D***, which fine tunes the construction activities and shows inter-relationships with the environmental protection / mitigation measures for the construction period.

1.3 Environmental Status

1.3.1 As required in the EP, URS Hong Kong Ltd has been appointed as the Independent Environmental Checker under the Project (hereinafter referred as 'the IEC'), whereas Hyder Consulting Limited has been appointed as the Environmental Team under the Project (hereinafter referred as 'the ET').

1.3.2 According to the EP Condition 3.2 (a) under Environmental Monitoring and Audit (EM&A) during the Construction Period, baseline monitoring has been completed and the required Baseline Monitoring Report has been submitted to EPD on 14 February 2014 prior to commencement of the works under the Project.

1.3.3 Status of relevant environmental permits, licences, and/or notifications on environmental protection for the Project is summarized in ***Table 1-3-1*** below. They are detailed in ***Appendix E***.

Table 1-3-1 Summary of Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust)	Notification Ref. 365953 acknowledged on 21 Oct 2013.
2	Water Pollution Control Ordinance (Discharge License)	Water Discharge Licence Ref. WT00018229-2014 granted on 4 Mar 2014
3	Billing Account for Disposal of Construction Waste	A/C Ref. 7018523 granted on 25 Oct 2013
4	Chemical Waste Producer Registration	Registration Ref. 5213-2214-M2446-16 granted on 4 Mar 2014
5	Noise Control Ordinance	Noise Permit no. GW-RE0876-14 granted on 07 Aug 2014

1.4 Construction Activities

1.4.1 Construction activities undertaken during the Reporting Period and the following month are summarized in ***Table 1-4-1***:

Table 1-4-1 Construction Activities Undertaken during the Reporting Period and Up-Coming Month

Item	Description
	Construction Activities Undertaken during the Reporting Period
1	Pipe piling for the excavation lateral support (ELS)
2	Pipe piling for the cut and cover (C&C) tunnel
3	Pipe piling for the temporary staircase
4	Curtain grout for the ELS
	Construction Activities to be Undertaken in the Up-Coming Month
1	Pipe piling for the C&C tunnel
2	Pipe piling for the temporary staircase
3	Curtain grout for the ELS
4	Driving sheet piling (stage 2)
5	Re-alignment of the site hoarding

2 EM&A REQUIREMENTS

2.1 Air Quality

Monitoring Parameters and Frequency

2.1.1 24-Hour Total Suspended Particulates (hereinafter referred as '24-Hr TSP') is required to be monitored once a week during construction period of the Project.

2.1.2 1-Hour Total Suspended Particulates (hereinafter referred as '1-Hr TSP') is required to be monitored when exceedances of 24-Hr TSP occur, following the Event and Action Plan presented in ***Appendix F***.

2.1.3 Schedules for 24-Hr TSP monitoring for the Reporting Period and the next month were prepared and submitted to MTRC, IEC and MC prior to implementation via e-mail and / or facsimile for ease of necessary inspection. If amendment is necessary under ad hoc conditions, including actual and broadcast adverse weather, accidental instrument failures, etc., notification will be given at least 24 hours prior to implementation or as practical as possible. The monitoring schedules are enclosed in ***Appendix G***.

Monitoring Location

2.1.4 According to the EM&A Plan, Mirador Mansion was designated to be the air quality monitoring station of the Project. As the access to the air monitoring location designated in the EM&A Plan has been denied by the owner of the property, the ET proposes an alternative monitoring location on the roof-top above the 4/F of the commercial complex of K11 (hereinafter referred as 'K11'), which has been agreed among MTRC, IEC and MC, and the associated access to K11 has been granted by the management office of K11 prior to the commencement of the baseline monitoring in January 2014.

2.1.5 Air quality monitoring location is summarized in ***Table 2-1-1*** below and illustrated in ***Appendix A***.

Table 2-1-1 Air Quality Monitoring Location

Location ID	Name of Premises	Description
K11	K11 Art Mall	Rooftop, 4/F

Monitoring Equipment

2.1.6 The air quality monitoring equipment to be used for construction air impact monitoring is shown in ***Table 2-1-2*** below:

Table 2-1-2 Air Quality Monitoring Equipment

Equipment Type	Model	Serial Number	Calibration Orifice Number	Location
High Volume Air Sampler	TE5005X	1713	1785	K11
Sibata Digital Dust Monitor	LD-3B	296098	Not Applicable	K11

2.1.7 High Volume Air Sampler (hereinafter referred as 'the HVAS') is used for monitoring 24-Hr TSP, following the standard sampling method set out in High Volume Method for Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA (hereinafter referred as 'the USEPA High Volume Method').

2.1.8 Weather information including wind speeds and wind directions is obtained from King's Park Weather Station, which is about 1.7 km to the north of the monitoring station K11. The weather information is used as weather conditions during the Reporting Period. They are presented in ***Appendix H***.

Calibration of Monitoring Equipment

2.1.9 The HVAS is calibrated before commencement of monitoring using standard orifice 5-points calibration method with orifice calibrator to determine the actual flow rate of each HVAS. A calibration Kit (Model - TE5025A) is used for calibration of the HVAS. At least once every 12 months, recalibration of the calibration kit is carried out during its maintenance.

2.1.10 Calibration of the HVAS is conducted following the manufacturer's instruction manual. Initial calibration of the equipment is conducted upon installation and thereafter at bi-monthly intervals throughout the period of impact monitoring. The transfer standard should be traceable to the internationally recognized primary standard and be calibrated annually.

2.1.11 The Sibata Digital Dust Monitor LD-3B for 1-hour TSP monitoring is calibrated annually and the calibration certificates of the equipment are shown in ***Appendix I***.

Monitoring Methodology – 24-Hr TSP

2.1.12 Air quality monitoring (24-Hr TSP) will be conducted once a week under typical weather conditions (with no adverse weather such as typhoon signal or rain storm warning).

Installation of HVAS

2.1.13 When positioning the HVAS, the following points will be noted:

a) A horizontal platform with appropriate support to secure the samplers against gusty wind will be provided;

b) No two samplers will be placed less than 2 m apart;

c) The distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler where possible;

d) A minimum of 2 m of separation from walls, parapets and penthouses is required for rooftops samplers;

e) A minimum of 2 m of separation from any supporting structure, measured horizontally is required;

f) No furnace or incinerator flue or building vent is nearby;

g) Airflow around the sampler is unrestricted;

h) The sampler is more than 20 m from the dripline;

i) Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;

j) Permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and

k) A secured supply of electricity is needed to operate the samplers.

Preparation of Filter Papers and Laboratory Analysis

2.1.14 Sufficient pieces of filter paper should be labelled before sampling. It should be a clean filter paper with no pinholes, and should be conditioned in a humidity-controlled chamber for over 24-hour and be pre-weighed before use for the sampling. The preferred room temperature is around 25 °C ±3 °C with relative humidity (hereinafter referred as 'the RH') less than 50% ± 5%, preferably 40%.

2.1.15 Preparation of filters and subsequent laboratory analysis of the collected 24-Hr TSP samples were performed by ALS Technichem (HK) Pty Ltd (hereinafter referred as 'ALS'), a local laboratory which have been accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS).

2.1.16 All the collected samples should be kept by the ET in standard office conditions for 6 months before disposal.

Field Monitoring Procedures

2.1.17 Procedures for field monitoring are as follows:

a) Check power supply to ensure the HVAS works properly.

b) Clean the filter holder and the area surrounding the filter.

c) Remove the filter holder by loosening the four bolts and carefully align a new filter, with stamped number upward, on a supporting screen.

d) Align the filter properly on the screen so that the gasket forms an airtight seal on the outer edges of the filter.

e) Fasten the swing bolts to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.

f) Close the shelter lid and secure with the aluminium strip.

g) Warmed-up the HVAS for about 5 minutes to establish run-temperature conditions.

h) Set a new flow rate record sheet into the flow recorder.

i) Checked and adjust the flow rate of the HVAS at around 1.1 m3 per minute. (The range specified in the EM&A Plan is between 0.6-1.7 m3 per minute.)

j) Set the programmable timer for a sampling period of 24 hours, and record the starting time, weather condition and the filter number.

k) Record the initial elapsed time.

l) At the end of sampling, remove the sampled filter carefully and fold it in half-length so that only surfaces with collected particulate matter are in contact.

m) Place the sampled filter in a clean plastic envelope and seal.

n) Record all monitoring information on a Field Data Sheet as shown in ***Appendix J***.

o) Send the filters to ALS for analysis.

Monitoring Methodology – 1-Hr TSP

Field Monitoring

2.1.18 The procedures for measurement of 1-Hr TSP follow Manufacturer's Instruction Manual, which is summarised as follows:

a) Set power to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).

b) Push the knob at MEASURE position.

c) Push "O-ADJ" button. (Then meter's indication is 0).

d) Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.

e) Pull out the knob and return it to MEASURE position.

f) Push "START" button.

g) Record all monitoring information on a Field Data Sheet as shown in ***Appendix J***.

Maintenance and Calibration

2.1.19 The procedures for maintenance and calibration of 1-Hr TSP follow Manufacturer's Instruction Manual as follows:

a) The Sibata is checked at 3-month intervals and calibrated at 1-year intervals throughout the whole construction period.

b) Calibration records for the Sibata Digital Dust Monitor direct dust meters are shown in ***Appendix I***.

Action and Limit Levels

2.1.20 The Action and Limit levels (hereinafter referred as 'the A/L Levels) at K11 have been established in the Baseline Monitoring Report in accordance with the derivation criteria specified in Section 3.7 of the EM&A Plan, which are summarised in ***Table 2-1-3*** as follows:

Table 2-1-3 Derivation of Action and Limit Levels for Air Quality at K11, μg/m^3

Parameter	Action Level	Limit Level
24-Hr TSP	For baseline level ≤200 μg/m^3, Action level = (130% of baseline level + Limit level)/2 For baseline level >200 μg/m^3, Action level = Limit level	260
1-Hr TSP	For baseline level ≤384 μg/m^3, Action level = (130% of baseline level + Limit level)/2 For baseline level >384 μg/m^3, Action level = Limit level	500

2.1.21 The established A/L Levels for 24-Hr and 1-Hr TSP are summarized in ***Table 2-1-4*** as follows:

Table 2-1-4 Action & Limit Levels for Air Quality at K11, µg/m3

Parameter	Action Level	Limit Level
24-Hr TSP	222	260
1-Hr TSP	373	500

Event and Action Plan

2.1.22 In case exceedances of Action and/or Limit levels for air quality occur, Event and Action Plan for Air Quality enclosed in ***Appendix F*** will be implemented.

Environmental Mitigation Measures for Air Quality

2.1.23 Although most of the construction works would be carried out underground, appropriate dust mitigation measures as stipulated in the EP, Project Profile, related environmental regulation including Air Pollution Control (Construction Dust) Regulation as well as those recommended in the Implementation Schedule should be implemented to control fugitive dust emission. The following key dust suppression measures are recommended:

a) Decking over the excavation areas;

b) Regular watering to reduce dust emissions from all exposed site surface, particularly

c) During dry weather;

d) Frequent watering for particularly dusty construction areas and areas close to air

e) Sensitive receivers;

f) Cover all excavated or stockpiles of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;

g) Provision of vehicle washing facilities at the exit points of the site; and

h) Provision of tarpaulin covering for any dusty materials on a vehicle leaving the site.

2.1.24 Details of the implementation schedule for the required environmental mitigation measures are presented in ***Appendix D.***

2.2 Construction Noise

Monitoring Parameters and Frequency

2.2.1 ***Table 2-2-1*** summarizes the monitoring parameters and frequency for construction noise:

Table 2-2-1 Noise Monitoring Parameters and Frequency

Parameters	Frequency
L_{eq} in 30 minutes	Once a week

2.2.2 Monitoring schedules for construction noise for the Reporting Period and the next Reporting Period are prepared and submitted to MTRC, IEC and MC prior to implementation via e-mail and / or facsimile for ease of necessary inspection. Where amendment is necessary under ad hoc conditions, including actual and broadcast

adverse weather, accidental instrument failures, etc., advanced notification is given at least 24 hours prior to implementation or as practical as possible.

Monitoring Equipment

2.2.3 With reference to the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications (both publications have been withdrawn and replaced by 61672:2003) are used for carrying out the noise monitoring. The details of the calibration of the sound level meters and their respective calibrators are as shown in the following ***Table 2-2-2***:

Table 2-2-2 Construction Noise Monitoring Equipment

Item	Equipment Name	Model
1	Sound Level Meter	B&K 2238 (Serial no. 2562782)
2	Acoustic Calibrator	Larson Davis CAL200 (Serial no. 10929)

Monitoring Location

2.2.4 As stated in previous ***Section 2.1.4***, the alternative air quality monitoring location K11 which is proposed by the ET and agreed among MTRC, IEC and MC, i.e. on the roof-top above the 4/F of the commercial complex of K11, is used for the construction noise monitoring location. The access to K11 has been granted by the management office of the K11 prior to the commencement of the baseline monitoring in January 2014.

2.2.5 ***Table 2-2-3*** summarizes the recommended alternative noise monitoring location, which is illustrated in ***Appendix A***.

Table 2-2-3 Noise Monitoring Location

Location ID	Name of Premises	Description
K11	K11 Art Mall	Rooftop, 4/F

Monitoring Methodology

Field Monitoring

2.2.6 Procedures for noise monitoring summarized as follows:

a) The microphones of the Sound Level Meter are about 1 m from the exterior of the building façade.

b) The battery condition is checked to ensure the correct functioning of the meter.

c) Parameters such as frequency weighting, the time weighting and the measurement time are set as follows:

   i. Frequency weighting: A

   ii. Time weighting: Fast

   iii. Time measurement: 30 minutes intervals (0700-1900 daily)

d) Prior to and after each noise measurement, the meter is calibrated using a Calibrator for 94 dB at 1 kHz. If the difference in the calibration level before and after measurement is more than 1 dB, the measurement should be considered invalid and the measurement repeated after re-calibration or repair of the equipment.

e) During the monitoring period, the Leq(30 min) are recorded.

f) Record all monitoring information on a Field Data Sheet as shown in ***Appendix J***.

g) Maintenance and Calibration

h) The meter and calibrator are sent to the supplier or HOKLAS laboratory to check and calibrate prior to the monitoring. Calibration records are presented in ***Appendix I***.

Weather Condition

2.2.7 The wind speeds and directions during the monitoring period are recorded and shown in ***Appendix H.***

Action and Limit Levels

2.2.8 The Action and Limit levels (hereinafter referred as 'the A/L Levels) at K11 have been established in the Baseline Monitoring Report. They are summarised in ***Table 2-2-4*** as follows:

Table 2-2-4 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one valid documented complaint is received.	75*

*Note: *70 dB(A) for schools and 65 dB(A) during school examination periods. If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.*

Event and Action Plan

2.2.9 In case exceedances of Action and/or Limit levels for construction noise occur, the Event and Action Plan enclosed in ***Appendix F*** will be triggered.

Mitigation Measures for Construction Noise

2.2.10 Although no residual noise impact would be generated after the proposed mitigation measures are in place, the general construction noise control measures stipulated in the EP, Project Profile as well as those recommended in the Implementation Schedule should be fully implemented in order to minimise noise impacts during the construction phase. They are summarized as follows:

i) 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;

j) The statutory and non-statutory requirements and guidelines shall be complied with;

k) 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;

l) 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;

m) Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical;

n) Unused equipment shall be turned off;

o) PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;

p) All plant and equipment shall be maintained regularly;

q) Material stockpiles and other structures shall be effectively utilized as noise barriers, whenever practicable; and

r) Enclosure of Entrance D1 with acoustic mat during demolition.

2.2.11 Details of the implementation schedule for the mitigation measures are presented in ***Appendix D***.

3 MONITORING RESULTS

3.1 Air Quality

Monitoring Results

3.1.1 24-Hr TSP monitoring during the Reporting Period was conducted following the agreed monitoring schedule.

3.1.2 24-Hr TSP results of the Reporting Period are summarized in the following ***Table 3-1-1***. Graphical plots of the parameter are illustrated in ***Appendix K***.

Table 3-1-1 Summary of 24-Hr TSP Monitoring Results, ug/m3

Monitoring Date	24-Hr TSP	Action Level	Limit Level
5-Aug-14	39.4	**222**	**260**
12-Aug-14	38.7		
19-Aug-14	33.9		
26-Aug-14	38.7		
Mean (Min – Max)	**37.6 (33.9 – 39.4)**		

Discussion

3.1.3 ***Table 3-1-1*** demonstrates that all 24-Hr TSP results of the Reporting Period fluctuated well below the A/L Levels of the parameter, i.e. neither Action Level nor Limit Level exceedances were recorded.

3.1.4 No Notice of Exceedances (thereinafter referred as 'NOE') and the associated NOE Investigation as well as remedial actions were required during the Reporting Period.

3.2 Construction Noise

Monitoring Results

3.2.1 Construction noise monitoring during the Reporting Period was conducted following the agreed monitoring schedule.

3.2.2 Construction noise monitoring results of the Reporting Period are summarized in the following ***Table 3-2-1***. Graphical plots of the parameter are illustrated in ***Appendix K***.

Table 3-2-1 Summary of Construction Noise Monitoring Results at K11, dB(A)

Monitoring Date	$L_{eq\ (30\ min)}$	A/L Levels
1-Aug-14	67.3	**Limit Level: *75***
5-Aug-14	69.8	
14-Aug-14	74.6	**Action Level:**
19-Aug-14	69.7	***Any documented complaint against construction noise.***
26-Aug-14	68.7	
Mean (Min – Max), *Leq* (30 min)	**70.8 (67.3 – 74.6)**	

3.3 Discussion

3.3.1 No environmental complaint against construction noise was registered during the Reporting Period, whereas Table 3-2-1 demonstrates that all construction noise results of the Reporting Period were fell below the Limit Level of the parameter. Neither exceedances of Action Level nor exceedances of Limit Level were recorded.

3.3.2 Neither NOE nor NOE investigation and the associated remedial actions were required during the Reporting Period.

3.3.3 Nevertheless, it is noted that the noise impact monitoring result recorded on 14 August 2014, was significantly higher than the baseline noise level of 65.3 dB(A).

3.3.4 The Contractor's attention is drawn to certain noisy construction activities, which were scheduled to be conducted during the coming month as listed in ***Table 1-2*** under ***Section 1.1.1:*** *Construction Activities Undertaken during the Reporting Period and Up-Coming Month*.

3.3.5 It is re-instated that adequate mitigation measures should be implemented during the noisy construction activities in order to alleviate noise nuisance generated from the Project related construction activities.

Weather Conditions

3.3.6 No weather conditions and any other factors were identified to have significant effects on the air and noise monitoring results within the Reporting Period.

3.3.7 Weather information during the Reporting Period which is extracted from Hong Kong Observatory King's Park Weather Station and enclosed for reference in ***Appendix H***.

3.4 Conclusions and Recommendations

Conclusions

3.4.1 No exceedances of A/L Levels of air quality and construction noise were registered during the Reporting Period.

3.4.2 No NOE and the associated NOE Investigation as well as the related corrected actions were required during the Reporting Period.

Recommendations

3.4.3 Full implementation of the environmental mitigation measures, which are required in the EM&A Plan and summarized in Implementation Schedule of ***Appendix D***, is recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.

3.4.4 Nevertheless, as high noise levels were occasionally recorded during the Reporting Period, adequate mitigation measures should be implemented prior to noisy construction activities, in particular piling work, in order to alleviate noise nuisance generated from noisy construction activities under the Project.

3.4.5 In addition, construction dust shall be suppressed during dusty construction activities under dry and windy conditions.

4 ENVIRONMENTAL AUDIT

4.1 Site inspection

4.1.1 Weekly site inspections during the Reporting Period were conducted by MTRC, MC and ET, whereas the monthly site inspection of the Reporting Period was jointly conducted by the IEC, MTRC, MC and ET. The site inspection follows strictly to the agreed Site Inspection Checklist, which covers all the site audit requirements stipulated in the EM&A Plan, PS and all relevant environmental laws.

4.1.2 The completed Site Inspection Checklists are distributed to all relevant parties within 48 hours upon completion of the site inspection for agreement and signature of the relevant parties and, where appropriate, for implementation of the recommended corrected actions to promptly rectify the situation.

4.1.3 The site inspections during the Reporting Period were conducted on 5, 12, 19 and 26 August 2014. Deficiencies or findings of the site audit and the associated follow up actions are summarized in the following ***Table 4-1***:

Table 4-1-1 Summary of Findings and Follow-Up Actions of the Site Inspection

Date	Deficiencies or findings	Follow-Up Action
5-Aug-2014	***Follow-up item(s)***	
	An air compressor (near Nathan Road) was found enclosed with acoustic materials on site, but top of the enclosure was not yet provided in the reporting period. Contractor was required to install sufficient acoustic materials for the top of the air compressor, whenever possible.	To be followed-up on next site inspection.
	Containers of chemical were found without drip tray on site, the Contractor was reminded to store all chemical with drip tray or remove them from site.	Closed, containers of chemical were not observed on site.
	A generator was found without sufficient noise enclosures on site (refer to EP-440/2012, item 2.6 (ii)). The Contractor was reminded to implement any noise mitigation measures that are applicable on site.	Closed, the generator was enclosed with acoustic materials.
	Observation(s) on the day of inspection	
	No deficiency was observed on site.	Not required.
12-Aug-2014	***Follow-up item(s)***	Not required.
	An air compressor (near Nathan Road) was found enclosed with acoustic materials on site, but top of the enclosure was not yet provided in the reporting period. Contractor was required to install sufficient acoustic materials for the top of the air compressor, whenever possible.	To be followed-up on next site inspection.
	Observation(s) on the day of inspection	
	No deficiency was observed on site.	Not required.
19-Aug-2014	***Follow-up item(s)***	
	An air compressor (near Nathan Road) was found enclosed with acoustic materials on site, but top of the enclosure was not yet provided in the reporting period. Contractor was required to install sufficient acoustic materials for the top of the air compressor, whenever possible.	Closed. The top for the air compressor was enclosed with acoustic material.
	Observation(s) on the day of inspection	
	Broken sand bags were observed next to the gate near Nathan Road. The Contractor was reminded to replace the broken sand bags in providing a better protection for any possible water overflow.	To be followed-up on next site inspection.
26-Aug-2014	***Follow-up item(s)***	
	Broken sand bags were observed next to the gate near Nathan Road. The Contractor was reminded to replace the broken sand bags in providing a better protection for any possible water overflow.	Closed, broken sand bags were replaced.
	Observation(s) on the day of inspection	
	Containers of chemical were observed on site without drip tray. The Contractor was reminded to provide drip tray for storage of any chemicals on site.	To be followed-up on the next site inspection.

4.1.4 As shown in ***Table 4-1-1***, no major deficiencies or non-compliance of environmental mitigation measures or adverse environmental impacts were observed during the Reporting Period.

4.2 Compliance with Legal/Contractual Requirement

4.2.1 Construction activities under the Project must comply with all environmental protection and pollution control laws in Hong Kong, as well as the contractual requirements of the Project. ***Table 4-2-1*** summarizes breaches of legal and contractual requirements.

Table 4-2-1 Summary of Breaches of Legal and Contractual Requirements

Month	No. of Breach(s)	Cumulative no. from March to the Reporting Period
August 2014	0	0

4.3 Environmental Complaints

4.3.1 Environmental complaints are handled following closely the flow chart of complaint response procedure which is enclosed in ***Appendix L***.

4.3.2 Environmental complaints registered during the Reporting Period are summarised in ***Table 4-3-1*** below:

Table 4-3-1 Summary of Complaint

Month	No. of Complaint(s)	Cumulative no. from March to the Reporting Period
August 2014	0	0

4.4 Notification of Summons/Successful Prosecutions

4.4.1 Notification of summons and successful prosecutions registered during the Reporting Period are summarised in ***Table 4-4-1*** below:

Table 4-4-1 Summary of Summon and Successful Prosecutions

Month	No. of Issue(s)	Cumulative no. from March to the Reporting Period
August 2014	0	0

5 CONSTRUCTION WASTE

5.1 Waste Management

5.1.1 Waste management under the Project is performed in accordance with the Waste Management Plan, which has been prepared for implementation of the construction waste mitigation measures in compliance with the requirements stipulated in the EM&A Plan, PS, Waste Disposal Ordinance and the associated subsidiary regulations.

5.2 Waste Management Status and Record

5.1.2 Updated waste management status is detailed in ***Appendix M***, where the 3-R status of the construction waste generated from construction of the Project during the Reporting Period is presented.

5.1.3 Despite small scale of the Project and the amount of C&D material that needs to be hauled off site and disposed of is anticipated not to be significant, 3-R waste management i.e. Reduce, Reuse and Recycle, is adopted in order to minimize adverse environmental impacts to be generated from construction of the Project.

6 FUTURE ENVIRONMENTAL ISSUES

6.1 Key Environmental Issues

6.1.1 Future key environmental issues include:

1) Air quality in particular construction dust during dusty construction activities, e.g. demolishment of the Entrance D1 and excavation works, under dry and windy conditions;

2) Construction noise during noisy activities; and

3) Particularly site surface water run-off and construction wastewater discharge in the rain season.

6.2 Mitigation Measures

6.1.2 To avoid potential adverse environmental impacts of the future key environmental issues stated above, full implementation of the mitigation measures as stipulated in the Implementation Schedule shown in ***Appendix D*** is required.

6.1.3 Mitigation measures for air quality, construction noise and water quality implemented to date shall be properly maintained.

6.1.4 Where appropriate, improvement of the implemented mitigation measures is reminded to ensure effectiveness of the mitigation measures.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

7.1.1 Neither NOE & the associated NOE investigation nor follow-up actions were required as the environmental monitoring results registered no exceedances of A/L Levels of air quality and construction noise during the Reporting Period.

7.1.2 Base on the findings listed in ***Table 4.1*** within the Reporting Period, one corrective action is required:

1) The Contractor was reminded to provide drip tray for storage of any chemicals on site.

Any follow-up of the above actions will be reported in the next Reporting Period.

7.1.3 In addition, no remedial actions were required as no environmental complaints, notification of summons and successful prosecutions were reported during the Reporting Period.

7.1.4 Nevertheless, high noise levels and inadequacies of environmental mitigation measures were occasionally noted during the EM&A and regular site inspection and audit. Special attention is therefore drawn to proactive mitigation measure to avoid adverse environmental impacts generated from the Project.

7.2 Recommendations

7.2.1 Full implementation of the environmental mitigation measures stipulated in the EM&A Plan and summarized in the ***Implementation Schedule*** of ***Appendix D,*** are recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.

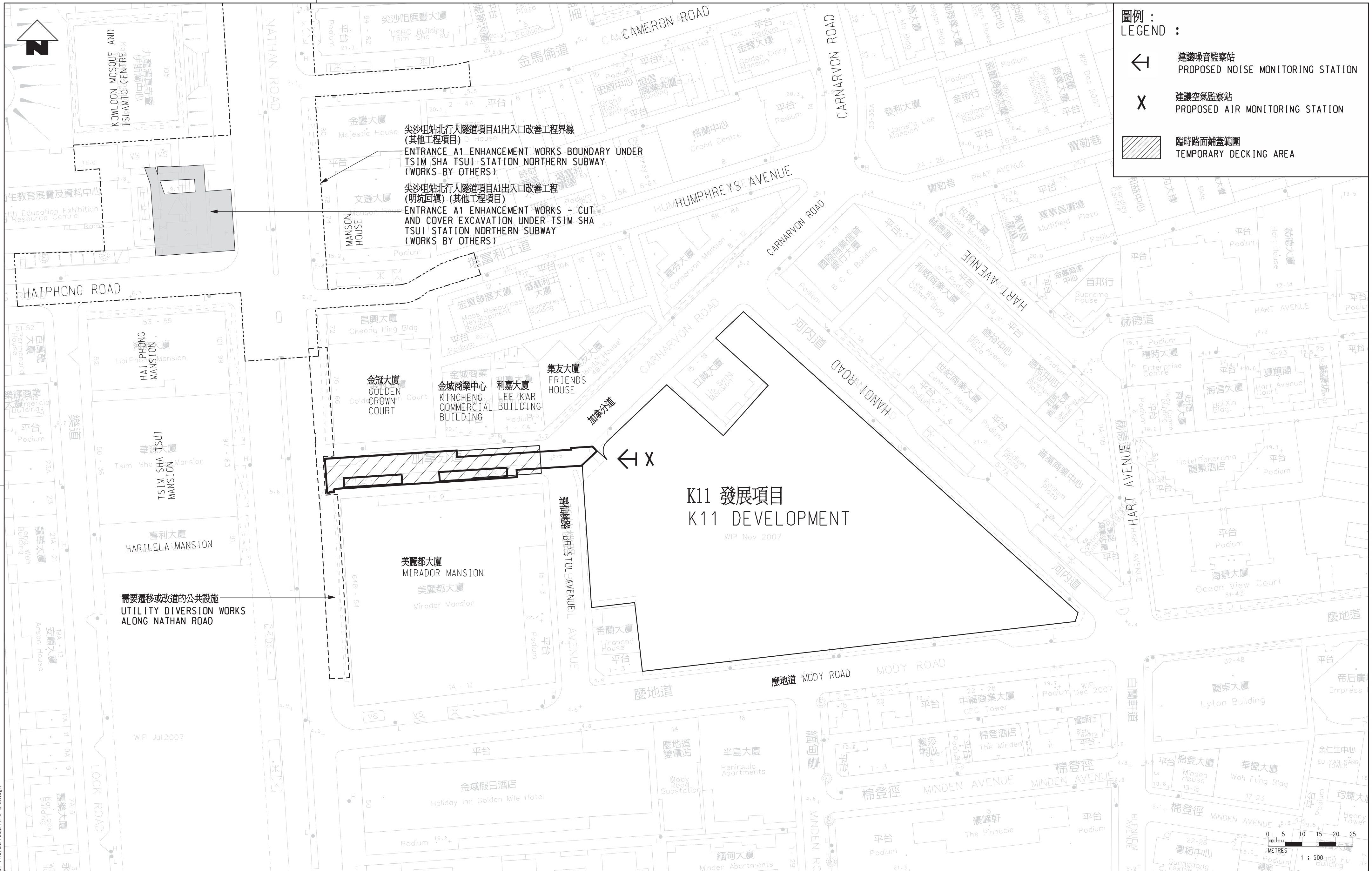
7.2.2 As noisy construction activities such as piling works were being conducted during the Reporting Period, adequate mitigation measures should be implemented in order to alleviate noise nuisance.

7.2.3 In addition, suppression of construction dust is reminded during dusty construction activities under dry and windy conditions.

7.2.4 Furthermore, compliance with water quality mitigation measures during the approaching rain season is also reminded.

Appendix A

Site Location Plan



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APPROVED	--
DATE	--

REV	DESCRIPTION	BY	DATE	APPROVED
A	PROJECT PROFILE	HO	--	--

MTR
TST STATION CARNARVON ROAD SUBWAY

ORIGINATOR
Mott MacDonald
In associated with
Ivanho Architect Ltd
ERM Hong Kong Ltd

CADD REF.

TITLE
CONSULTANCY AGREEMENT NO. NEX/1049
DETAILED DESIGN FOR CARNARVON ROAD SUBWAY
AIR AND NOISE MONITORING LOCATIONS
空氣及噪音監察站位置圖

SCALE 1:500 (A1) | DRAWING NO. APPENDIX B | REV. A

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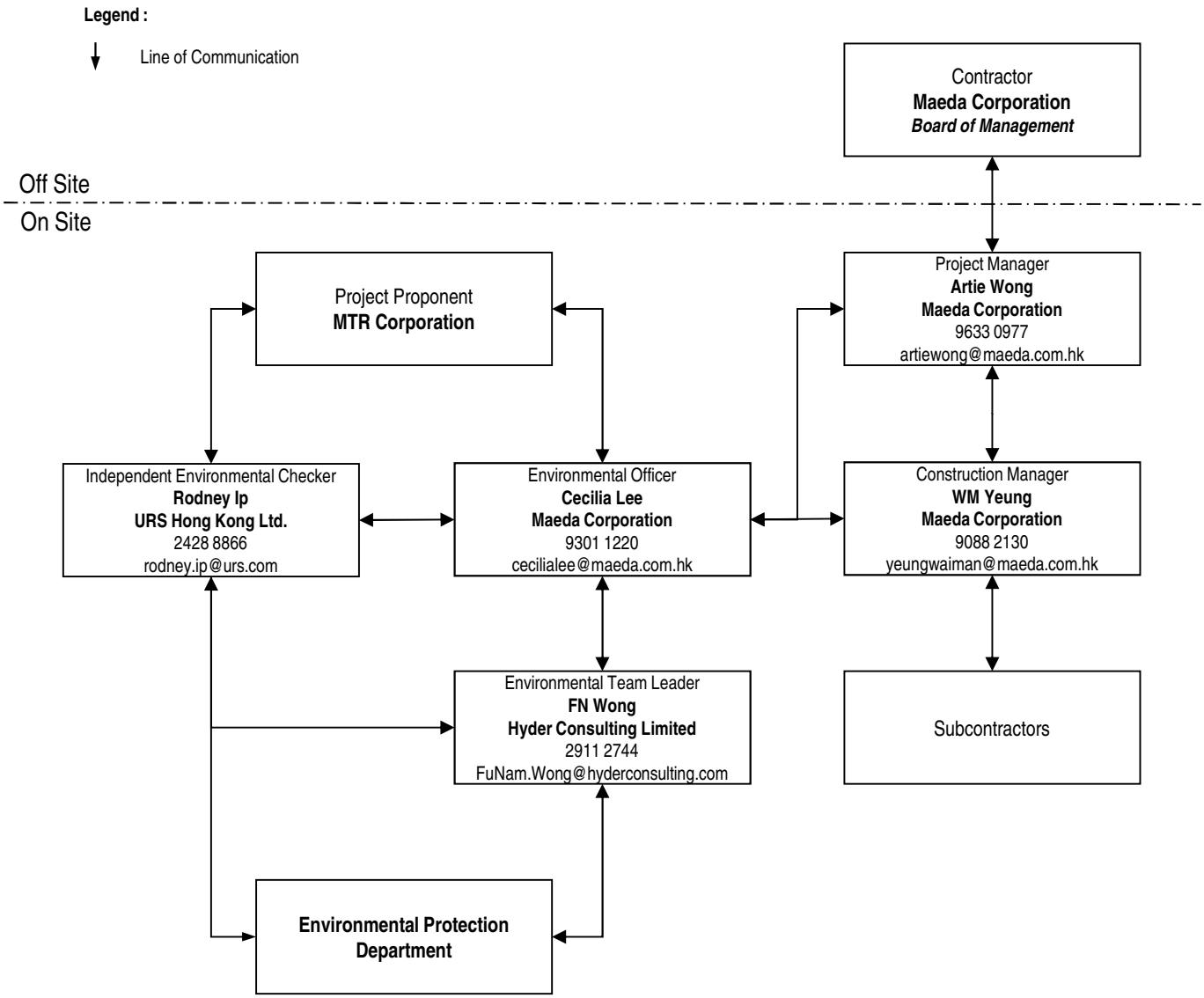
Appendix B

Management Structure

Project Organization Chart in Environmental Management (Rev.01)

Effective Date: 2 Apr 2014



Note: In compliance with

i) Clause.1.3 of Environmental Monitoring and Audit Manual (Appendix VII of Project Profile PP462/2012)

Appendix C

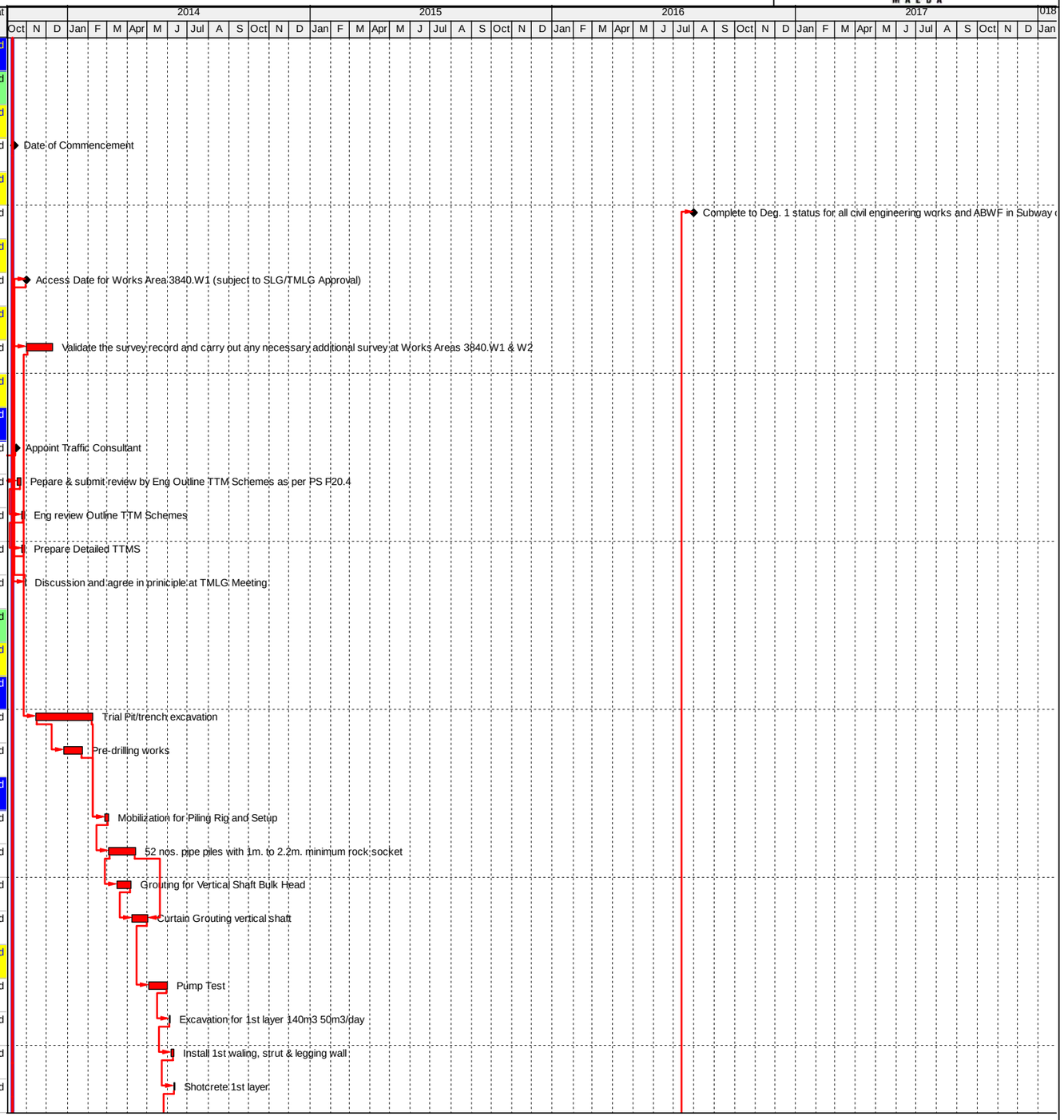
Construction Programme

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
Preliminary Master Programme Revision 2		827d	14-Oct-13	31-Jul-16	0d
Preliminaries		827d	14-Oct-13	31-Jul-16	0d
Contract Key Dates		0d	14-Oct-13	14-Oct-13	0d
C3840-CD-20	Date of Commencement	0d	14-Oct-13		0d
Specified Degrees of Completion		0d	31-Jul-16	31-Jul-16	0d
C3840-CD-2A	Complete to Deg. 1 status for all civil engineering works and ABWF in Subway outside K11 Lot Boundary (31 Jul 16)	0d		31-Jul-16	0d
Possession of Works Area As PS Clause P8 & PS Appendix G		0d	31-Oct-13	31-Oct-13	0d
C3840-AD-20	Access Date for Works Area 3840.W1 (subject to SLG/TMLG Approval)	0d	31-Oct-13		0d
Initial Site Survey		35d	31-Oct-13	10-Dec-13	0d
C3840-SS-20	Validate the survey record and carry out any necessary additional survey at Works Areas 3840.W1 & W2	35d	31-Oct-13	10-Dec-13	0d
Temporary Works Design & Approval Process (Incl. Demolition)		12d	16-Oct-13	30-Oct-13	0d
Temporary Traffic Mangement Scheme (TTM)		12d	16-Oct-13	30-Oct-13	0d
C3840-TTM-100	Appoint Traffic Consultant	0d		16-Oct-13	0d
C3840-TTM-110	Pepare & submit review by Eng Outline TTM Schemes as per PS P20.4	6d	17-Oct-13	23-Oct-13	0d
C3840-TTM-120	Eng review Outline TTM Schemes	4d	24-Oct-13	28-Oct-13	0d
C3840-TTM-130	Prepare Detailed TTMS	5d	24-Oct-13	29-Oct-13	0d
C3840-TTM-140	Discussion and agree in priniciple at TMLG Meeting	1d	30-Oct-13	30-Oct-13	0d
Carnarvon Road Subway and Entrances		769d	14-Nov-13	22-Jun-16	8d
Open Cut Sequence 1 (Advance Ground Works & Piling Works)		135d	14-Nov-13	02-May-14	8d
Advance Ground Works		69d	14-Nov-13	08-Feb-14	0d
C3840-AGW-020	Trial Pit/trench excavation	69d	14-Nov-13	08-Feb-14	0d
C3840-AGW-040	Pre-drilling works	24d	27-Dec-13	24-Jan-14	0d
Piles & Grouting for Vertical Shaft		51d	27-Feb-14	02-May-14	8d
C3840-EVS-010	Mobilization for Piling Rig and Setup	4d	27-Feb-14	03-Mar-14	0d
C3840-EVS-020	52 nos. pipe piles with 1m. to 2.2m. minimum rock socket	35d	04-Mar-14	14-Apr-14	0d
C3840-EVS-030	Grouting for Vertical Shaft Bulk Head	18d	17-Mar-14	07-Apr-14	8d
C3840-EVS-040	Curtain Grouting vertical shaft	18d	08-Apr-14	02-May-14	8d
Tunnel (Vertical Shaft Excavation)		226d	03-May-14	31-Jan-15	8d
C3840-SH-100	Pump Test	24d	03-May-14	31-May-14	8d
C3840-SH-110	Excavation for 1st layer 140m3 50m3/day	3d	03-Jun-14	05-Jun-14	8d
C3840-SH-120	Install 1st waling, strut & legging wall	4d	06-Jun-14	10-Jun-14	8d
C3840-SH-130	Shotcrete 1st layer	2d	11-Jun-14	12-Jun-14	8d



Actual Work ◆ Milestone

Remaining Work

Critical Remaining Work

Data Date: 11-Oct-13

Preliminary Master Programme

Extract Critical Path 1

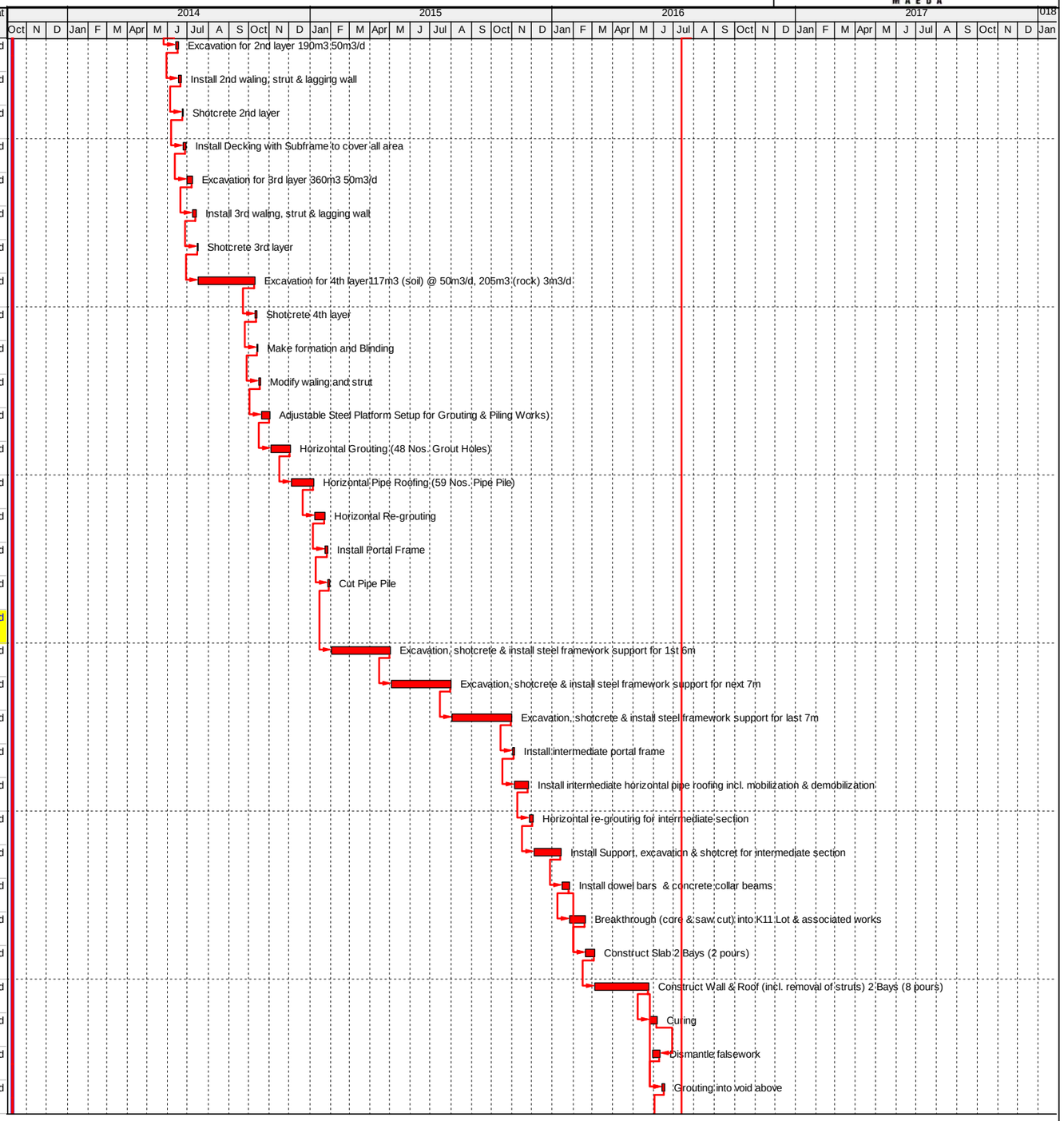
Maeda/P/PMP/2			
Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-SH-140	Excavation for 2nd layer 190m3 50m3/d	4d	13-Jun-14	17-Jun-14	8d
C3840-SH-150	Install 2nd waling, strut & lagging wall	4d	18-Jun-14	21-Jun-14	8d
C3840-SH-160	Shotcrete 2nd layer	2d	23-Jun-14	24-Jun-14	8d
C3840-SH-170	Install Decking with Subframe to cover all area	4d	25-Jun-14	28-Jun-14	8d
C3840-SH-180	Excavation for 3rd layer 360m3 50m3/d	7d	30-Jun-14	08-Jul-14	8d
C3840-SH-190	Install 3rd waling, strut & lagging wall	5d	09-Jul-14	14-Jul-14	8d
C3840-SH-200	Shotcrete 3rd layer	2d	15-Jul-14	16-Jul-14	8d
C3840-SH-210	Excavation for 4th layer117m3 (soil) @ 50m3/d, 205m3 (rock) 3m3/d	71d	17-Jul-14	10-Oct-14	8d
C3840-SH-230	Shotcrete 4th layer	2d	11-Oct-14	13-Oct-14	8d
C3840-SH-240	Make formation and Blinding	2d	14-Oct-14	15-Oct-14	8d
C3840-SH-250	Modify waling and strut	3d	16-Oct-14	18-Oct-14	8d
C3840-SH-260	Adjustable Steel Platform Setup for Grouting & Piling Works)	12d	20-Oct-14	01-Nov-14	8d
C3840-SH-270	Horizontal Grouting (48 Nos. Grout Holes)	27d	03-Nov-14	03-Dec-14	8d
C3840-SH-280	Horizontal Pipe Roofing (59 Nos. Pipe Pile)	27d	04-Dec-14	07-Jan-15	8d
C3840-SH-290	Horizontal Re-grouting	14d	08-Jan-15	23-Jan-15	8d
C3840-SH-300	Install Portal Frame	3d	24-Jan-15	27-Jan-15	8d
C3840-SH-310	Cut Pipe Pile	4d	28-Jan-15	31-Jan-15	8d
Tunnel (ELS, Excavation & Construction of Tunnel)		408d	02-Feb-15	22-Jun-16	8d
C3840-TU-100	Excavation, shotcrete & install steel framework support for 1st 6m	70d	02-Feb-15	02-May-15	8d
C3840-TU-110	Excavation, shotcrete & install steel framework support for next 7m	75d	04-May-15	01-Aug-15	8d
C3840-TU-120	Excavation, shotcrete & install steel framework support for last 7m	75d	03-Aug-15	31-Oct-15	8d
C3840-TU-130	Install intermediate portal frame	3d	02-Nov-15	04-Nov-15	8d
C3840-TU-140	Install intermediate horizontal pipe roofing incl. mobilization & demobilization	19d	05-Nov-15	26-Nov-15	8d
C3840-TU-150	Horizontal re-grouting for intermediate section	6d	27-Nov-15	03-Dec-15	8d
C3840-TU-160	Install Support, excavation & shotcret for intermediate section	33d	04-Dec-15	14-Jan-16	8d
C3840-TU-180	Install dowel bars & concrete collar beams	10d	15-Jan-16	26-Jan-16	8d
C3840-TU-210	Breakthrough (core & saw cut) into K11 Lot & associated works	18d	27-Jan-16	19-Feb-16	8d
C3840-TU-220	Construct Slab 2 Bays (2 pours)	12d	20-Feb-16	04-Mar-16	8d
C3840-TU-230	Construct Wall & Roof (incl. removal of struts) 2 Bays (8 pours)	64d	05-Mar-16	25-May-16	8d
C3840-TU-240	Curing	10d	26-May-16	06-Jun-16	8d
C3840-TU-250	Dismantle falsework	10d	31-May-16	11-Jun-16	8d
C3840-TU-260	Grouting into void above	6d	13-Jun-16	18-Jun-16	8d



Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Data Date: 11-Oct-13

Preliminary Master Programme

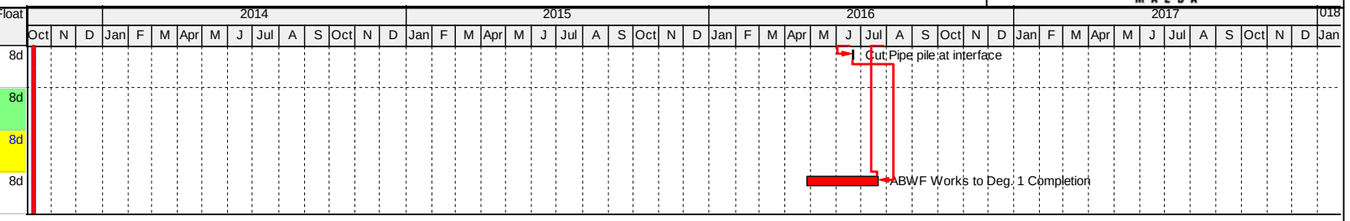
Extract Critical Path 1

Maeda/P/PMP/2

Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-TU-270	Cut Pipe pile at interface	3d	20-Jun-16	22-Jun-16	8d
Building Services & ABWF Works		70d	27-Apr-16	21-Jul-16	8d
BS & ABWF Works at Subway Conc. Level and Plant Room & D3		70d	27-Apr-16	21-Jul-16	8d
C3840-BSS-120	ABWF Works to Deg. 1 Completion	70d	27-Apr-16	21-Jul-16	8d



Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Data Date: 11-Oct-13

Page 3 of 3

Preliminary Master Programme

Extract Critical Path 1

Maeda/P/PMP/2

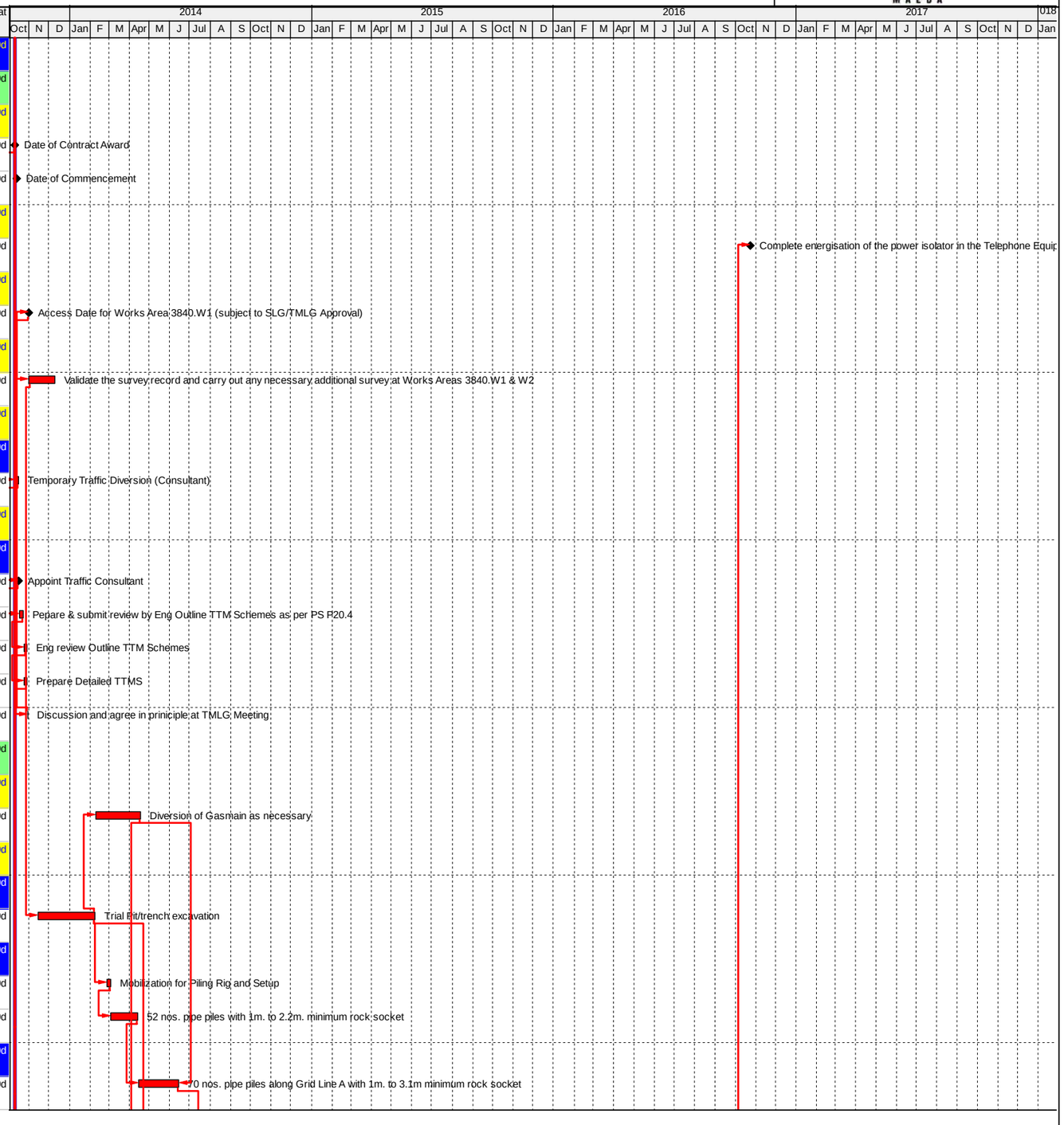
Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
Preliminary Master Programme Revision 2		898d	11-Oct-13	23-Oct-16	0d
Preliminaries		898d	11-Oct-13	23-Oct-16	0d
Contract Key Dates		3d	11-Oct-13	14-Oct-13	0d
C3840-CD-10	Date of Contract Award	0d	11-Oct-13		0d
C3840-CD-20	Date of Commencement	0d	14-Oct-13		0d
Specified Degrees of Completion		0d	23-Oct-16	23-Oct-16	0d
C3840-CD-2C	Complete energisation of the power isolator in the Telephone Equipment Rm (23 Oct 16)	0d		23-Oct-16	0d
Possession of Works Area As PS Clause P8 & PS Appendix G		0d	31-Oct-13	31-Oct-13	0d
C3840-AD-20	Access Date for Works Area 3840.W1 (subject to SLG/TMLG Approval)	0d	31-Oct-13		0d
Initial Site Survey		35d	31-Oct-13	10-Dec-13	0d
C3840-SS-20	Validate the survey record and carry out any necessary additional survey at Works Areas 3840.W1 & W2	35d	31-Oct-13	10-Dec-13	0d
Procurement of Subcontract Packages		4d	11-Oct-13	16-Oct-13	0d
Preliminaries and Utilities Diversion		4d	11-Oct-13	16-Oct-13	0d
C3840-PRC-140	Temporary Traffic Diversion (Consultant)	4d	11-Oct-13	16-Oct-13	0d
Temporary Works Design & Approval Process (Incl. Demolition)		12d	16-Oct-13	30-Oct-13	0d
Temporary Traffic Mangement Scheme (TTM)		12d	16-Oct-13	30-Oct-13	0d
C3840-TTM-100	Appoint Traffic Consultant	0d		16-Oct-13	0d
C3840-TTM-110	Pepare & submit review by Eng Outline TTM Schemes as per PS P20.4	6d	17-Oct-13	23-Oct-13	0d
C3840-TTM-120	Eng review Outline TTM Schemes	4d	24-Oct-13	28-Oct-13	0d
C3840-TTM-130	Prepare Detailed TTMS	5d	24-Oct-13	29-Oct-13	0d
C3840-TTM-140	Discussion and agree in priniciple at TMLG Meeting	1d	30-Oct-13	30-Oct-13	0d
Carnarvon Road Subway and Entrances		774d	14-Nov-13	28-Jun-16	0d
Utility Diversion		57d	10-Feb-14	17-Apr-14	0d
C3840-UTD-290	Diversion of Gasmain as necessary	57d	10-Feb-14	17-Apr-14	0d
Open Cut Sequence 1 (Advance Ground Works & Piling Works)		444d	14-Nov-13	18-May-15	0d
Advance Ground Works		69d	14-Nov-13	08-Feb-14	0d
C3840-AGW-020	Trial Pit/trench excavation	69d	14-Nov-13	08-Feb-14	0d
Piles & Grouting for Vertical Shaft		39d	27-Feb-14	14-Apr-14	0d
C3840-EVS-010	Mobilization for Piling Rig and Setup	4d	27-Feb-14	03-Mar-14	0d
C3840-EVS-020	52 nos. pipe piles with 1m. to 2.2m. minimum rock socket	35d	04-Mar-14	14-Apr-14	0d
Piles & Grouting for Temporary Staricase & C&C Subway		59d	15-Apr-14	28-Jun-14	0d
C3840-ETS-020	70 nos. pipe piles along Grid Line A with 1m. to 3.1m minimum rock socket	47d	15-Apr-14	14-Jun-14	0d



Actual Work ◆ ◆ Milestone
Remaining Work
Critical Remaining Work

Data Date: 11-Oct-13

Preliminary Master Programme

Extract Critical Path 2

Maeda/P/PMP/2

Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-ETS-030	Curtain Grouting along Grid Line A	24d	29-May-14	26-Jun-14	2d
C3840-ETS-070	Type III Sheet PIle, 355m along between Grids A & B	6d	22-Apr-14	28-Apr-14	0d
C3840-ETS-080	Toe Grouting	8d	29-Apr-14	09-May-14	0d
C3840-ETS-090	Mobilization for Piling Rig and Setup	4d	10-May-14	14-May-14	0d
C3840-ETS-110	37 nos. pipe piels along Grid Line B with 1m. to 1.5m. minimum rock socket	25d	15-May-14	13-Jun-14	0d
C3840-ETS-120	Curtain Grouting along Grid Line B	13d	14-Jun-14	28-Jun-14	0d
Piles & Grouting for Remaining Section of Cofferdam at D2		20d	24-Apr-15	18-May-15	0d
C3840-ECD-010	Mobilization for Piling Rig and Setup	4d	24-Apr-15	28-Apr-15	0d
C3840-ECD-020	23 nos. pipe piles along Grid Line B at D2 with 1m. to 3.2m minimum rock socket	16d	29-Apr-15	18-May-15	0d
Open Cut Sequence 2 (Excavation for Temporary Staricase)		209d	30-Jun-14	11-Mar-15	0d
Excavation		93d	30-Jun-14	20-Oct-14	0d
C3840-EXC-100	Pump test prior to excavate for temporary staricase	24d	30-Jun-14	28-Jul-14	0d
C3840-EXC-120	Excavation for 1st layer at D1 208m3	4d	29-Jul-14	01-Aug-14	0d
C3840-EXC-130	Install 1st waling & strut 21ton & temporary support to underground UUs	7d	02-Aug-14	09-Aug-14	0d
C3840-EXC-140	Install Truss for Suport Temp D1	6d	11-Aug-14	16-Aug-14	0d
C3840-EXC-150	Shotcrete 1st layer	2d	18-Aug-14	19-Aug-14	0d
C3840-EXC-160	Demolish D1 4m below GL	6d	20-Aug-14	26-Aug-14	0d
C3840-EXC-170	Excavation for 2nd layer at D1 230m3	5d	27-Aug-14	01-Sep-14	0d
C3840-EXC-180	Install 2nd waling & strut 17ton	7d	02-Sep-14	10-Sep-14	0d
C3840-EXC-190	Shotcrete 2nd layer	2d	11-Sep-14	12-Sep-14	0d
C3840-EXC-200	Excavation for 3rd layer at D1 216m3	5d	13-Sep-14	18-Sep-14	0d
C3840-EXC-210	Install 3rd waling & strut 15ton	6d	19-Sep-14	25-Sep-14	0d
C3840-EXC-220	Shotcrete 3rd layer	4d	26-Sep-14	30-Sep-14	0d
C3840-EXC-230	Excavation for 4th layer at D1 166m3	4d	03-Oct-14	07-Oct-14	0d
C3840-EXC-240	Install channel on opening	3d	08-Oct-14	10-Oct-14	0d
C3840-EXC-250	Shotcrete 4th layer	4d	11-Oct-14	15-Oct-14	0d
C3840-EXC-260	Make formation and Blinding	4d	16-Oct-14	20-Oct-14	0d
RC Structure (Temporary Staricase)		116d	21-Oct-14	11-Mar-15	0d
C3840-TSC-100	Install Dowel bars (130#)	6d	21-Oct-14	27-Oct-14	0d
C3840-TSC-110	Const. Bay1 : 18m3	6d	28-Oct-14	03-Nov-14	0d
C3840-TSC-120	Const. Bay2 : 16m3	9d	04-Nov-14	13-Nov-14	0d
C3840-TSC-130	Const. Bay3 : 6m3	6d	14-Nov-14	20-Nov-14	0d

Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Data Date: 11-Oct-13

Preliminary Master Programme

Extract Critical Path 2

Maeda/P/PMP/2

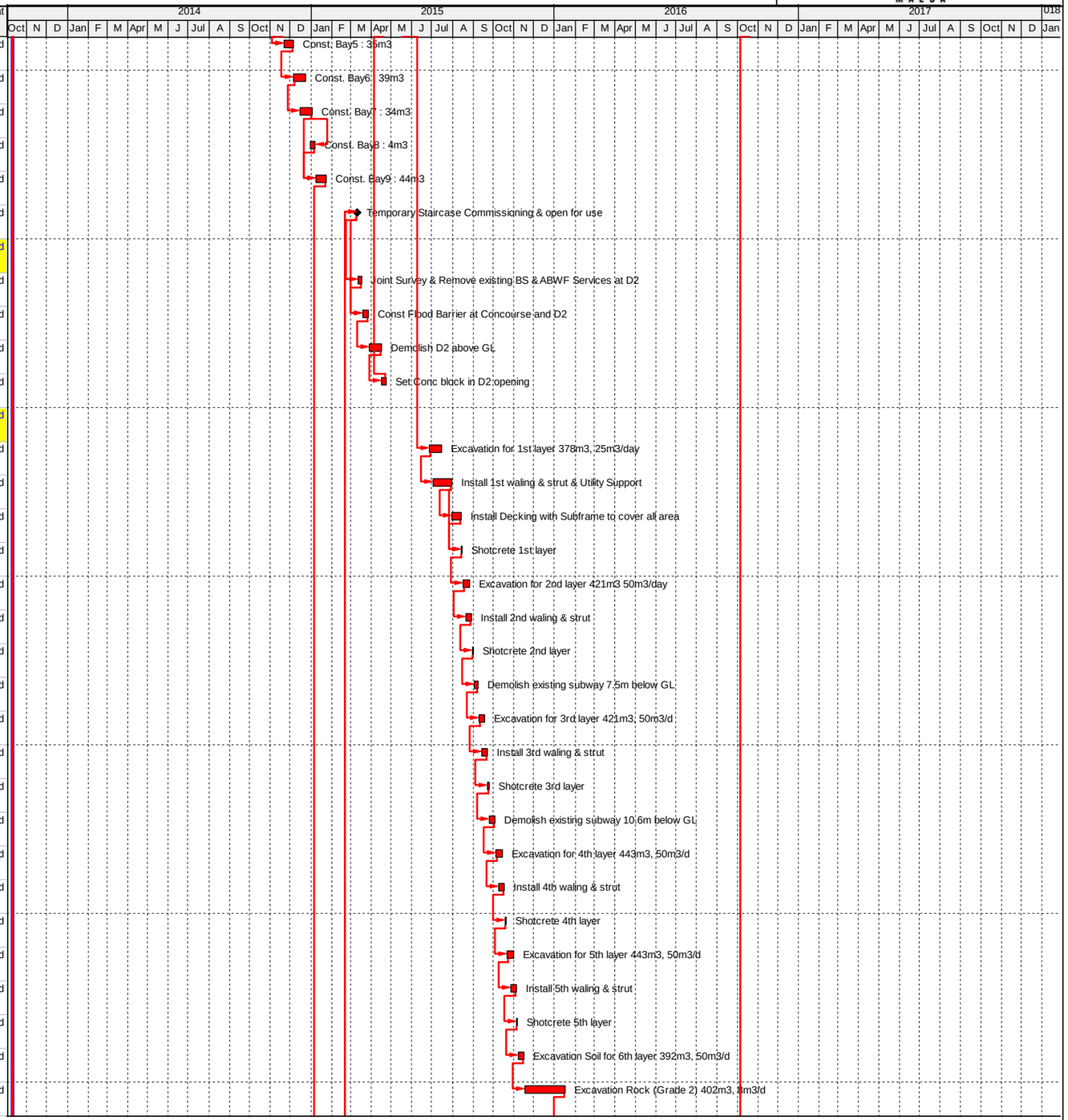
Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-TSC-150	Const. Bay5 : 35m3	13d	21-Nov-14	05-Dec-14	0d
C3840-TSC-160	Const. Bay6 : 39m3	15d	06-Dec-14	23-Dec-14	0d
C3840-TSC-170	Const. Bay7 : 34m3	14d	16-Dec-14	03-Jan-15	0d
C3840-TSC-180	Const. Bay8 : 4m3	6d	31-Dec-14	07-Jan-15	0d
C3840-TSC-190	Const. Bay9 : 44m3	14d	08-Jan-15	23-Jan-15	0d
C3840-TSC-240	Temporary Staircase Commissioning & open for use	0d		11-Mar-15	0d
Open Cut Sequence 3 (Advance Ground Works & Piling Works at D2 & in front of D1)		33d	12-Mar-15	23-Apr-15	0d
C3840-ELS-510	Joint Survey & Remove existing BS & ABWF Services at D2	6d	12-Mar-15	18-Mar-15	0d
C3840-ELS-520	Const Flood Barrier at Concourse and D2	9d	19-Mar-15	28-Mar-15	0d
C3840-ELS-530	Demolish D2 above GL	12d	30-Mar-15	16-Apr-15	0d
C3840-ELS-540	Set Conc block in D2 opening	6d	17-Apr-15	23-Apr-15	0d
Open Cut Sequence 4 (Excavation for Subway in front of D1)		182d	27-Jun-15	02-Feb-16	0d
C3840-ELSD1-100	Excavation for 1st layer 378m3, 25m3/day	15d	27-Jun-15	15-Jul-15	0d
C3840-ELSD1-110	Install 1st waling & strut & Utility Support	24d	03-Jul-15	30-Jul-15	0d
C3840-ELSD1-130	Install Decking with Subframe to cover all area	12d	31-Jul-15	13-Aug-15	0d
C3840-ELSD1-140	Shotcrete 1st layer	2d	14-Aug-15	15-Aug-15	0d
C3840-ELSD1-150	Excavation for 2nd layer 421m3 50m3/day	9d	17-Aug-15	26-Aug-15	0d
C3840-ELSD1-160	Install 2nd waling & strut	8d	21-Aug-15	29-Aug-15	0d
C3840-ELSD1-170	Shotcrete 2nd layer	2d	31-Aug-15	01-Sep-15	0d
C3840-ELSD1-180	Demolish existing subway 7.5m below GL	6d	02-Sep-15	08-Sep-15	0d
C3840-ELSD1-190	Excavation for 3rd layer 421m3, 50m3/d	9d	09-Sep-15	18-Sep-15	0d
C3840-ELSD1-200	Install 3rd waling & strut	8d	14-Sep-15	22-Sep-15	0d
C3840-ELSD1-210	Shotcrete 3rd layer	2d	23-Sep-15	24-Sep-15	0d
C3840-ELSD1-220	Demolish existing subway 10.6m below GL	6d	25-Sep-15	03-Oct-15	0d
C3840-ELSD1-230	Excavation for 4th layer 443m3, 50m3/d	9d	05-Oct-15	14-Oct-15	0d
C3840-ELSD1-240	Install 4th waling & strut	8d	09-Oct-15	17-Oct-15	0d
C3840-ELSD1-250	Shotcrete 4th layer	2d	19-Oct-15	20-Oct-15	0d
C3840-ELSD1-260	Excavation for 5th layer 443m3, 50m3/d	9d	22-Oct-15	31-Oct-15	0d
C3840-ELSD1-270	Install 5th waling & strut	8d	27-Oct-15	04-Nov-15	0d
C3840-ELSD1-280	Shotcrete 5th layer	2d	05-Nov-15	06-Nov-15	0d
C3840-ELSD1-290	Excavation Soil for 6th layer 392m3, 50m3/d	8d	07-Nov-15	16-Nov-15	0d
C3840-ELSD1-300	Excavation Rock (Grade 2) 402m3, 8m3/d	50d	17-Nov-15	16-Jan-16	0d



Actual Work ◆ ◆ Milestone

Remaining Work

Critical Remaining Work

Data Date: 11-Oct-13

Preliminary Master Programme

Extract Critical Path 2

Maeda/P/PMP/2

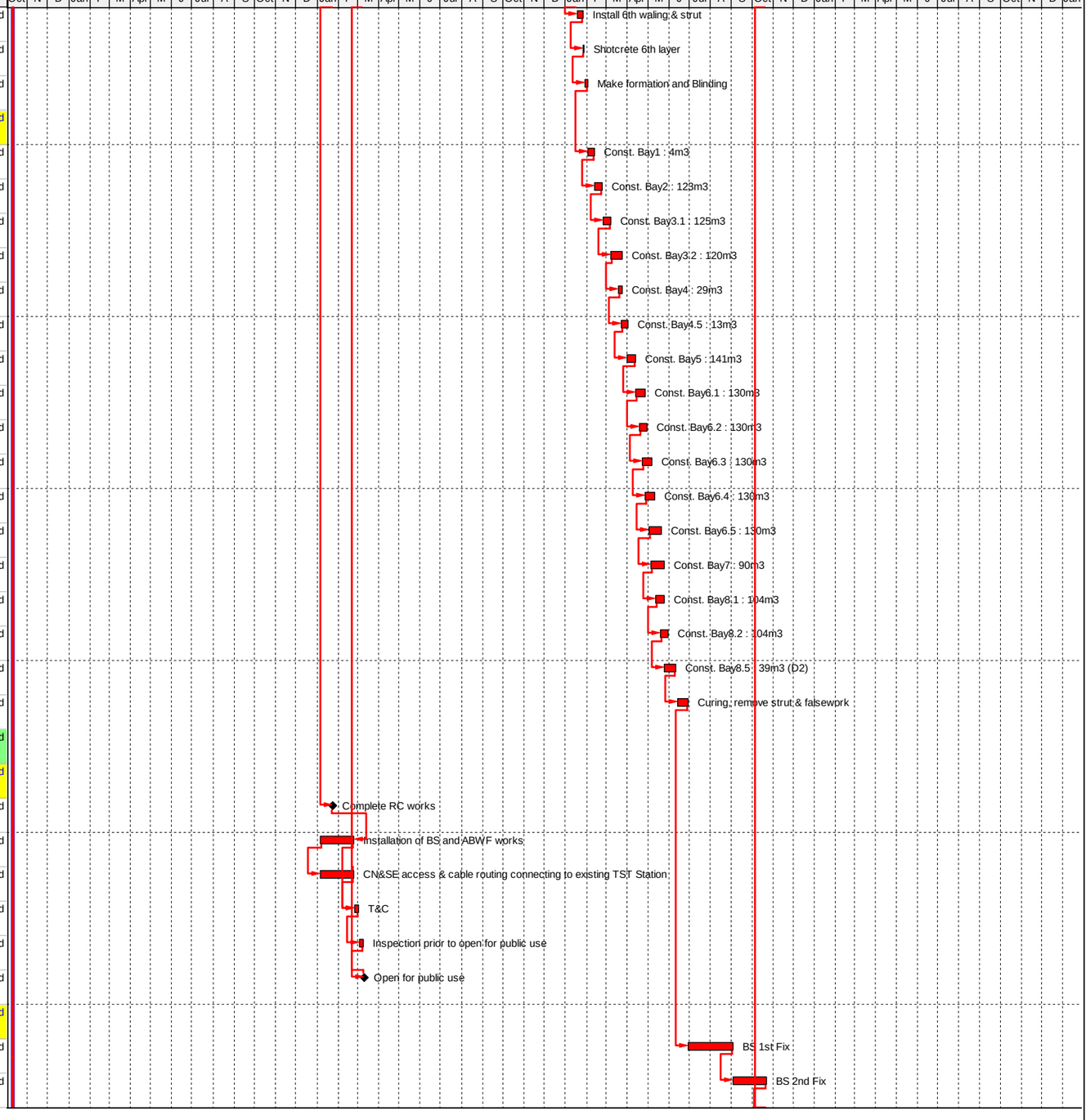
Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

MTR

MAEDA

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-ELSD1-310	Install 6th waling & strut	8d	18-Jan-16	26-Jan-16	0d
C3840-ELSD1-320	Shotcrete 6th layer	2d	27-Jan-16	28-Jan-16	0d
C3840-ELSD1-330	Make formation and Blinding	4d	29-Jan-16	02-Feb-16	0d
Open Cut Sequence 5 (Construction of Subway & D2)		116d	03-Feb-16	28-Jun-16	0d
C3840-STR-110	Const. Bay1 : 4m3	6d	03-Feb-16	12-Feb-16	0d
C3840-STR-120	Const. Bay2 : 123m3	10d	13-Feb-16	24-Feb-16	0d
C3840-STR-130	Const. Bay3.1 : 125m3	10d	25-Feb-16	07-Mar-16	0d
C3840-STR-140	Const. Bay3.2 : 120m3	15d	08-Mar-16	24-Mar-16	0d
C3840-STR-150	Const. Bay4 : 29m3	6d	18-Mar-16	24-Mar-16	0d
C3840-STR-160	Const. Bay4.5 : 13m3	6d	23-Mar-16	01-Apr-16	0d
C3840-STR-170	Const. Bay5 : 141m3	10d	31-Mar-16	12-Apr-16	0d
C3840-STR-180	Const. Bay6.1 : 130m3	12d	13-Apr-16	26-Apr-16	0d
C3840-STR-190	Const. Bay6.2 : 130m3	12d	18-Apr-16	30-Apr-16	0d
C3840-STR-200	Const. Bay6.3 : 130m3	12d	22-Apr-16	06-May-16	0d
C3840-STR-210	Const. Bay6.4 : 130m3	12d	27-Apr-16	11-May-16	0d
C3840-STR-220	Const. Bay6.5 : 130m3	15d	03-May-16	20-May-16	0d
C3840-STR-240	Const. Bay7 : 90m3	15d	06-May-16	24-May-16	0d
C3840-STR-260	Const. Bay8.1 : 104m3	10d	12-May-16	24-May-16	0d
C3840-STR-270	Const. Bay8.2 : 104m3	10d	19-May-16	30-May-16	0d
C3840-STR-280	Const. Bay8.5 : 39m3 (D2)	15d	25-May-16	11-Jun-16	0d
C3840-STR-290	Curing, remove strut & falsework	14d	13-Jun-16	28-Jun-16	0d
Building Services & ABWF Works		533d	05-Jan-15	22-Oct-16	0d
BS & ABWF Works at Temporary Staircase		54d	05-Jan-15	11-Mar-15	0d
C3840-TSBA-100	Complete RC works	0d		23-Jan-15	0d
C3840-TSBA-110	Installation of BS and ABWF works	40d	05-Jan-15	23-Feb-15	0d
C3840-TSBA-120	CN&SE access & cable routing connecting to existing TST Station	40d	05-Jan-15	23-Feb-15	1d
C3840-TSBA-130	T&C	6d	25-Feb-15	03-Mar-15	0d
C3840-TSBA-140	Inspection prior to open for public use	6d	04-Mar-15	10-Mar-15	0d
C3840-TSBA-150	Open for public use	0d		11-Mar-15	0d
BS & ABWF Works at Mid Landing Level & Plant Room		96d	29-Jun-16	22-Oct-16	0d
C3840-BSM-100	BS 1st Fix	56d	29-Jun-16	02-Sep-16	0d
C3840-BSM-110	BS 2nd Fix	40d	03-Sep-16	22-Oct-16	0d



Actual Work ◆ Milestone

Remaining Work

Critical Remaining Work

Data Date: 11-Oct-13

Preliminary Master Programme

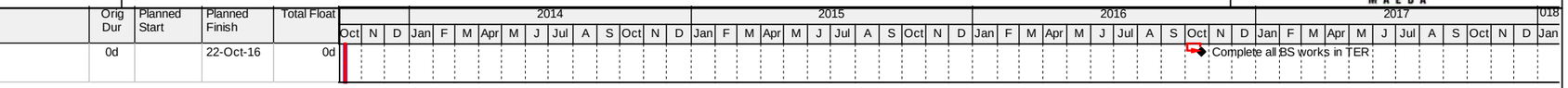
Extract Critical Path 2

Maeda/P/PMP/2

Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway

Activity ID	Activity Name	Orig Dur	Planned Start	Planned Finish	Total Float
C3840-BSM-120	Complete all BS works in TER	0d		22-Oct-16	0d



Actual Work
Remaining Work
Critical Remaining Work
Milestone

Data Date: 11-Oct-13

Page 5 of 5

Preliminary Master Programme

Extract Critical Path 2

Maeda/P/PMP/2

Date	Revision	Checked	Approved
27-Feb-14	REV 2	BG	AW

Appendix D

Implementation Schedule

Appendix VIII

Implementation Schedule

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	Noise Impact					
S.3.1	Use of quieter plant	To minimise construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control Ordinance
S.3.1	Use of noise enclosure and movable barrier • movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME; • noise enclosure can achieve 15dB(A) reduction for PME; • 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/m^2 shall be required to achieve the maximum screening effect (and minimum 10kg/m^2 for noise enclosure); • The length of barrier should generally be at least five times greater than its height and the minimum height of a barrier should be such that no part of the noise source will be visible from the noise sensitive receiver being protected.	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93, Noise Control Ordinance and EIAO Guidance Note NO. 9/2010
S.3.1	General Construction Noise Control Measures • The Code of Practice on Good Management Practice	To minimize construction noise	Contractor	Work site	Construction Stage	ProPECC PN2/93 and Noise Control

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
	to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted; • The statutory and non-statutory requirements and guidelines shall be complied with; • Approval for the method of working, equipment and noise mitigation measures intended to be used at the site shall be granted from the Project Engineer before commencing any work; • 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.	emissions				Ordinance
	Air Quality Impact					
S.3.2	Construction Dust Control Measures • Decking will be provided subsequent to the completion of surface excavation works. The duration	To minimise the dust impacts arising from the	Contractor	Work site	Construction Stage	Air Pollution Control (Construction

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
	of decking is around 13 months after surface excavation works; • Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Cover all excavated or stockpile of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet; • Provision of vehicle washing facilities at the exit points of the site; and • Provision of tarpaulin covering of any dusty materials on a vehicle leaving the site.	construction works				Dust) Regulation
	Water Quality Impact					
S.3.3	Construction Water Quality Impact Measures • The Contractor should design and implement all the mitigation measures and practices specified in the ProPECC PN 1/94 "Construction Site Drainage" and "Recommended Pollution Control Clauses for Construction Contracts" issued by EPD. • All runoffs arising from the construction site should be properly collected and treated to ensure the discharge standards as stipulated in WPCO are met. Silt trap and oil interceptor should be provided to remove the oil, lubricants, grease, silt, grit and debris from the wastewater before being pumped to the public stormwater drainage system. The silt traps and oil interceptors should be cleaned and maintained regularly.	To reduce water quality impact induced by the construction work	Contractor	Work Site	Construction Stage	ProPECC PN1/94; Water Pollution Control Ordinance

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	• 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. • Site toilet facilities, if needed, should be chemical toilets or should have the foul water effluent directed to a foul sewer.					
	Waste Management					
S.3.4	Construction Waste Management Measures • Excavated material should be reused on site as far as possible to minimise off-site disposal. Scrap metals or abandoned equipment should be recycled if possible. • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner. • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill. Independent audits of the Contractor and resident site staff will be undertaken to ensure that the correct procedures are being followed. • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. • All general refuse should be segregated and stored in enclosed bins or compaction units and waste separation facilities for paper, aluminium cans, plastic bottles etc. should be provided to facilitate reuse or	To adopt waste management measures in the way of avoiding, minimising, reusing and recycling so as to reduce waste generation	Contractor	Work Site	Construction Stage	Waste Disposal Ordinance (Cap. 54); Waste Disposal (Chemical Waste) (General) Regulation; ETWB TCW No. 31/2004; ETWB TCW No. 19/2005.

Project Profile Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Parties	Location of the measure	When to implement the measure	Relevant requirements or standards for the measure to achieve
	recycling of materials and their proper disposal.					
	Landscape and Visual Impact					
S.3.5	Landscape and Visual Measures • Screening of construction works by hoardings/noise barriers around works area with visually unobtrusive colours	To reduce visual impact by construction works.	Contractor	Temporary Storage Area at Salisbury Road	Construction Stage	EIAO
S.3.5	• Reinstating the affected amenity planting area at Salisbury Road after the completion of works	To prevent loss of planter after construction	Contractor	Temporary Storage Area at Salisbury Road	Operation Stage	ETWB TCW No. 2/2004

Appendix E

Status of Environmental Licenses and Permits

Maeda Corporation

Contract No. C3840-13C
Tsim Sha Tsui Station Carnarvon Road Subway

Last Update: 31-August-2014

Licence Summary

Item No.	Our Ref.	Govt. Ord.	Type? (License / Permit / Account / Notification / Registration & etc.)	Description	Submission	Ref. No	Date of Submission (to EPD) (DD-MM-YYYY)	Date of Approval / Receipt (from EPD) (DD-MM-YYYY)	Date of Activation (DD-MM-YYYY)	Date of Expiry (DD-MM-YYYY) Green = expire next mth; Yellow = expire this wk; Red = Expired	Description	Remarks
000	000	EIAO	Permit	Environmental Permit	N/A	AEP-440/2012	N/A	N/A	18 - 07 - 2012	N/A	Baseline, Air & Noise Impact Monitoring	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 11 - 2013	01 - 12 - 2014	Site Formation	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 02 - 2014	01 - 10 - 2016	Demolition of a Building	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 08 - 2014	01 - 08 - 2016	Work carried out in any part of a tunnel that is within 100m of any exit to the open air	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 01 - 2016	01 - 03 - 2017	Construction of the Superstructure of a Building	
001	001	APCO	Notification	Construction Dust Notification	Form NA – Notification S3(1) of APCO (Construction Dust)	365953	18 - 10 - 2013	21 - 10 - 2013	01 - 11 - 2016	10 - 09 - 2017	Road Construction Work	
002	002	WDO	Account	Construction Waste Billing Account	EPD-211 (Form 1) Application for a Billing Account for Disposal of Construction Waste	7018523	18 - 10 - 2013	25 - 10 - 2013	25 - 10 - 2013	N/A	Disposal of C&D Waste	Application No. WFG12765
003	003 WPCO #001	WPCO	Licence	Water Discharge Licence	EPD-117 (Form A) Application for a Licence of Water Discharge	WT00018229-2014	09 - 01 - 2014	04 - 03 - 2014	04 - 03 - 2014	31 - 03 - 2019	Self Monitoring Only FlowRate 9m3/d, pH 6-9, SS 50mg/L, COD 100mg/L	
004	004 CWP#001	WDO	Registration	Chemical Waste Producer	EPD-129 Application for Registration as a Chemical Waste Producer	5213-2214-M2446-16	15 - 01 - 2014	04 - 03 - 2014	04 - 03 - 2014	N/A	Surplus paint, spent lubrucating oil, spent battery	
005	005 CNP#001	NCO	Permit	Construction Noise Permit	EPD74A(s) Form 1 - Application for a Construction Noise Permit	377352	29 - 07 - 2014	07 - 08 - 2014	11 - 08 - 2014	10 - 02 - 2015	Apply for 4nos Submersible Water pump (Electric)	

Appendix F

Event and Action Plan

Event and Action Plan for Air Quality

In case the Action and Limit Levels are not complied during construction stage, the Event and Action Plan shown below should be followed.

Event / Action	ET	IEC	ER	Contractor
Action Level				
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.	1. Check monitoring data submitted by ET; 2. 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 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. Supervise 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	1. Check monitoring 2. data submitted by ET; 3. Check Contractor's working	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC

Event / Action	ET	IEC	ER	Contractor
	monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	method; 4. Discuss with ET and the Contractor on possible remedial measures; 5. Advise the ER on the effectiveness of the proposed remedial measures; 6. Supervise implementation of remedial measures.	measures properly implemented.	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 the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the	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.

Event / Action	ET	IEC	ER	Contractor
	results; 8. If exceedance stops, cease additional monitoring.			

Event and Action Plan for Construction Noise

In case the Action and Limit Levels are not complied during the construction stage, the Event and Action Plan shown below should be followed.

Event / Action	ET	IEC	ER	Contractor
Action Level	1. Notify IEC and Contractor. 2. Carry out investigation. 3. Report the results of investigation to the IEC and Contractor. 4. Discuss with the Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analyzed result submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC 2. Implement noise mitigation proposals
Limit Level	1. Notify IEC, ER, EPD and Contractor, and follow other actions 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Check Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's	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 / Action	ET	IEC	ER	Contractor
	remedial actions and keep IEC, EPD, ER informed of the results 8. If exceedance stops, cease additional monitoring			

Appendix G

Monitoring Schedule

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works
Tentative Monitoring Schedule for August 2014

AUGUST 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Noise	2
3	4 24-hr TSP	5 Noise Weekly Site Audit	6	7	8	9
10	11 24-hr TSP	12 Weekly Site Audit	13	14 Noise	15	16
17	18 24-hr TSP	19 Noise Weekly Site Audit	20	21	22	23
24	25 24-hr TSP	26 Noise Weekly Site Audit	27	28	29	30
31						

August 2014

S	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

October 2014

S	M	T	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Monthly Calendar

This schedule may be subject to change due to unexpected circumstances (e.g. adverse weather)

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works
Tentative Monitoring Schedule for September 2014

SEPTEMBER 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 24-hr TSP	2 Noise Weekly Site Audit	3	4	5	6
7	8	9 The day following the Chinese Mid-Autumn Festival	10 24-hr TSP Noise Weekly Site Audit	11	12	13
14	15 24-hr TSP	16 Noise Weekly Site Audit	17	18	19	20
21	22 24-hr TSP	23 Noise Weekly Site Audit	24	25	26	27
28	29 24-hr TSP	30 Noise Weekly Site Audit				

Monthly Calendar

This schedule may be subject to change due to unexpected circumstances (e.g. adverse weather)

Appendix H

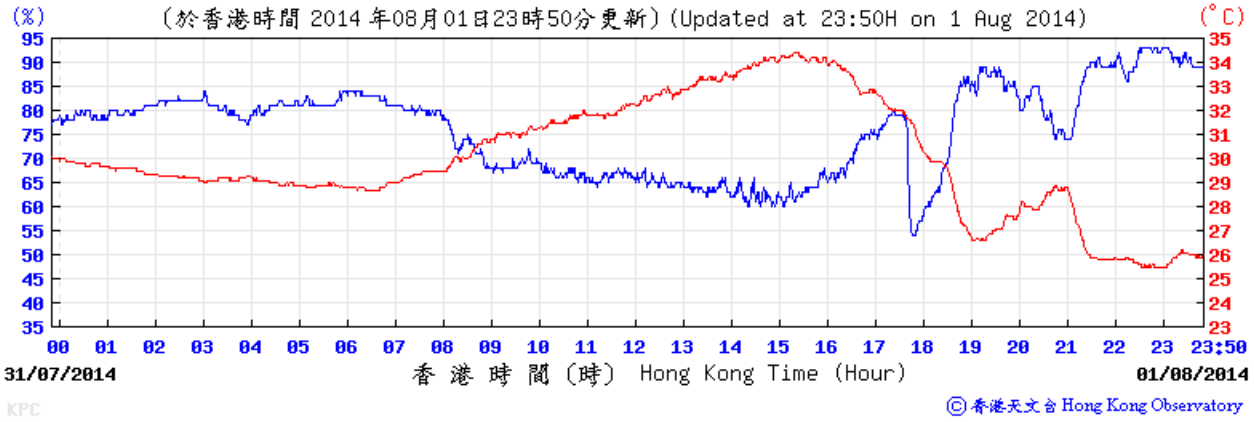
Weather Information Extracted from HK Observatory

Daily Total Rainfall (mm) at King's Park HKO Weather Monitoring Station in August 2014

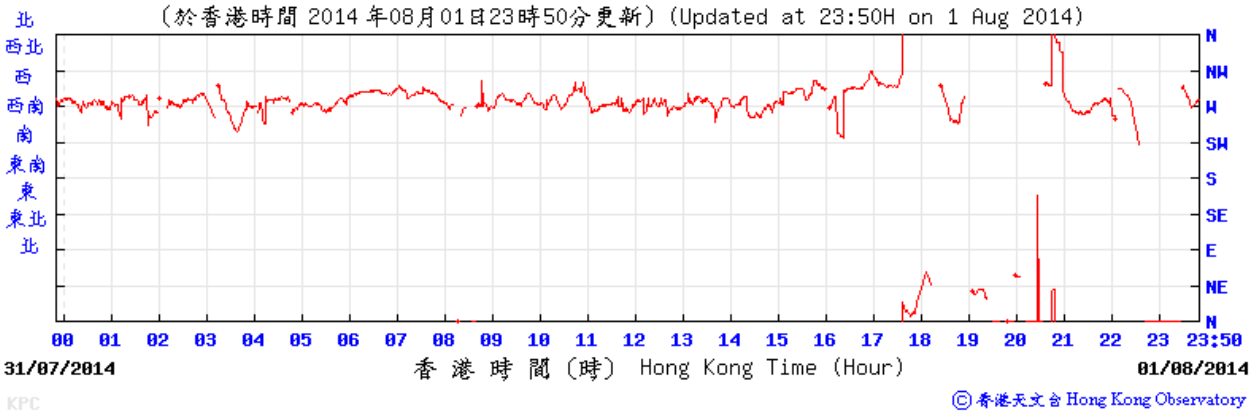
Day	Aug	24-hr TSP	Noise	Remarks
1	7.9		✓	No rainfall recorded on site during Noise Monitoring
2	3.2			
3	48.3			
4	7.2			
5	16.8	✓	✓	No rainfall recorded on site during Noise Monitoring
6	39.5			
7	20.8			
8	-			
9	-			
10	3.1			
11	-			
12	98.1	✓		
13	177.4			
14	1.9		✓	No rainfall recorded on site during Noise Monitoring
15	-			
16	-			
17	-			
18	-			
19	49.8	✓	✓	No rainfall recorded on site during Noise Monitoring
20	105.0			
21	0.3			
22	0.1			
23	-			
24	-			
25	-			
26	-	✓	✓	No rainfall recorded on site during Noise Monitoring
27	1.2			
28	0.3			
29	-			
30	-			
31	1.7			
Total	**582.6**			

King's Park Weather Station – 01 August 2014

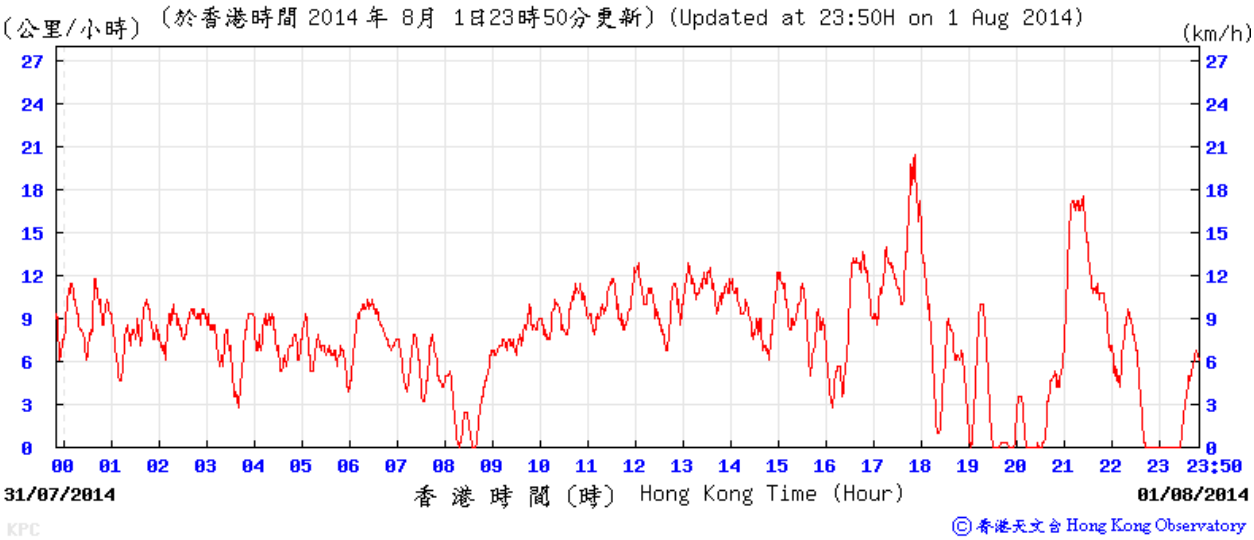
Temperature and Humidity:



Wind Direction:

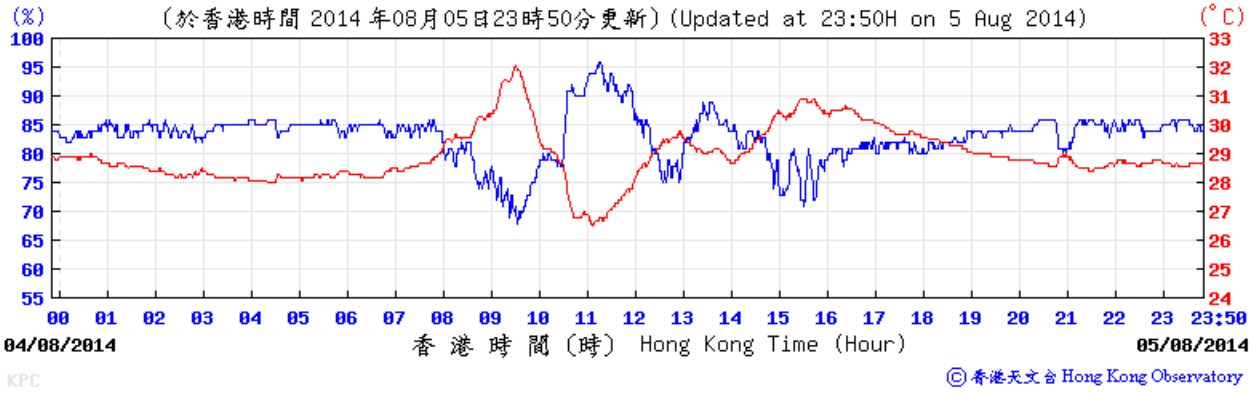


Wind Speed:

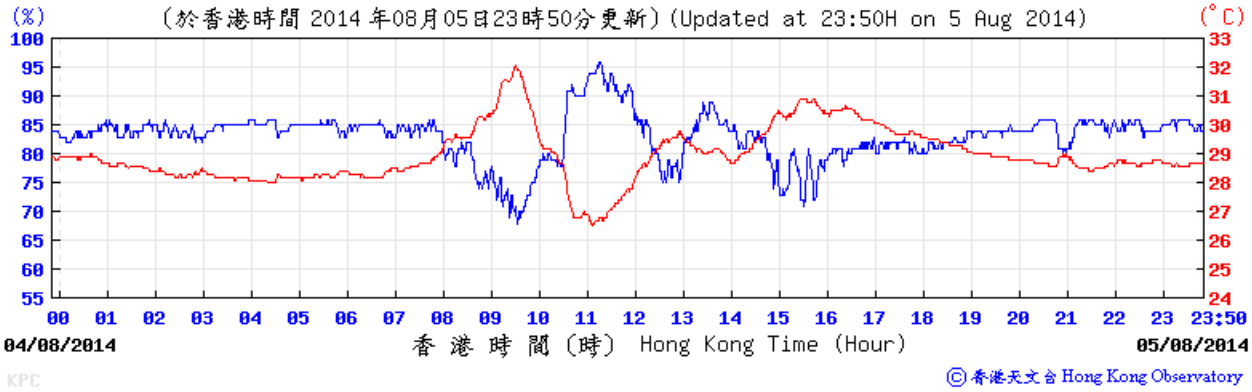


King's Park Weather Station – 05 August 2014

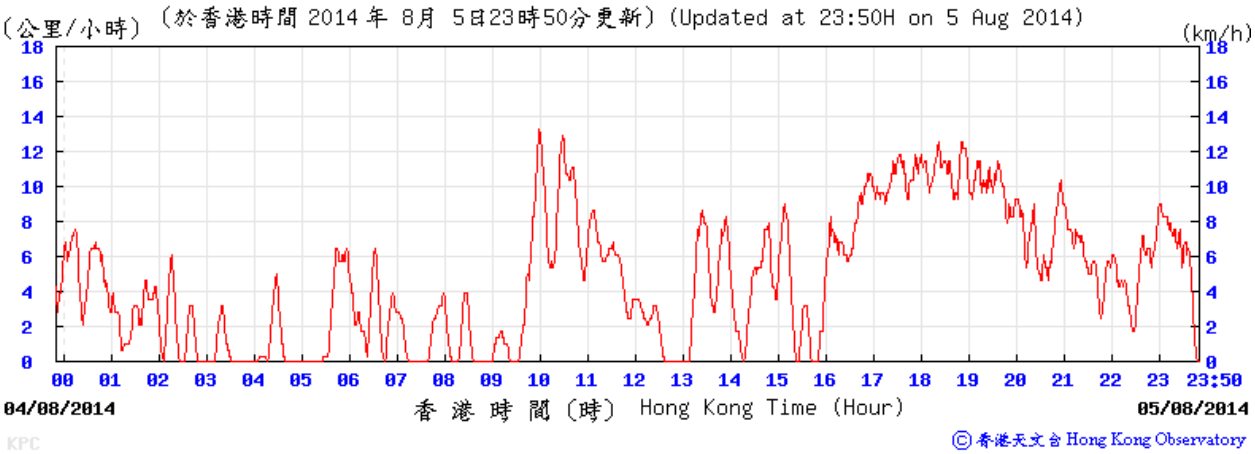
Temperature and Humidity:



Wind Direction:

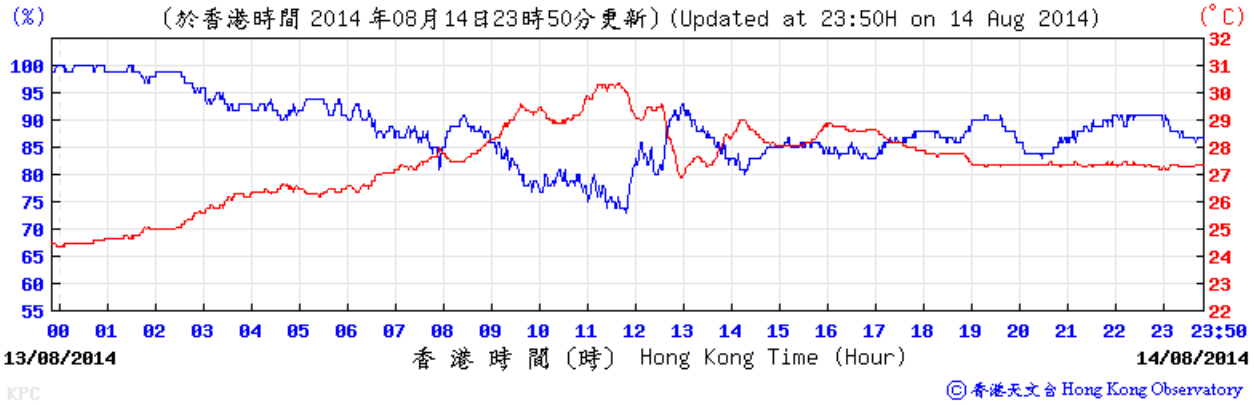


Wind Speed:

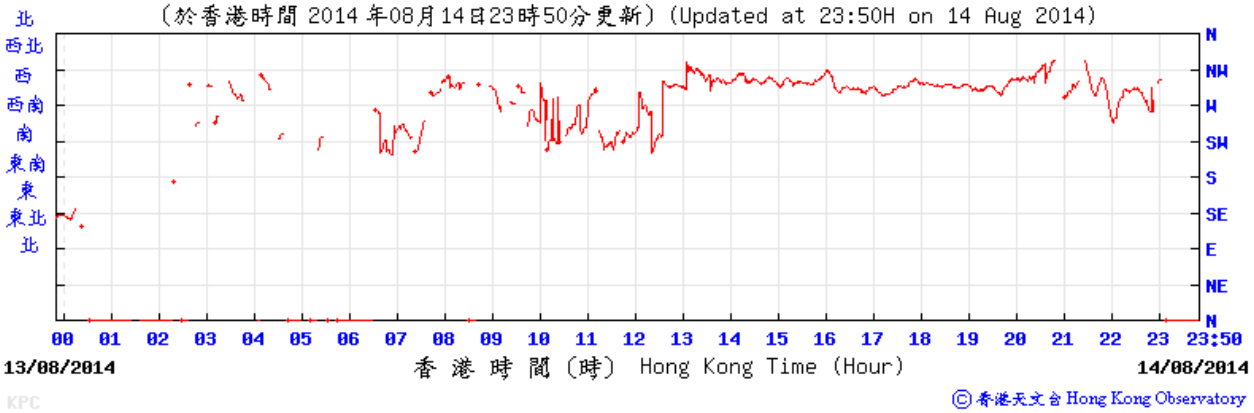


King's Park Weather Station – 14 August 2014

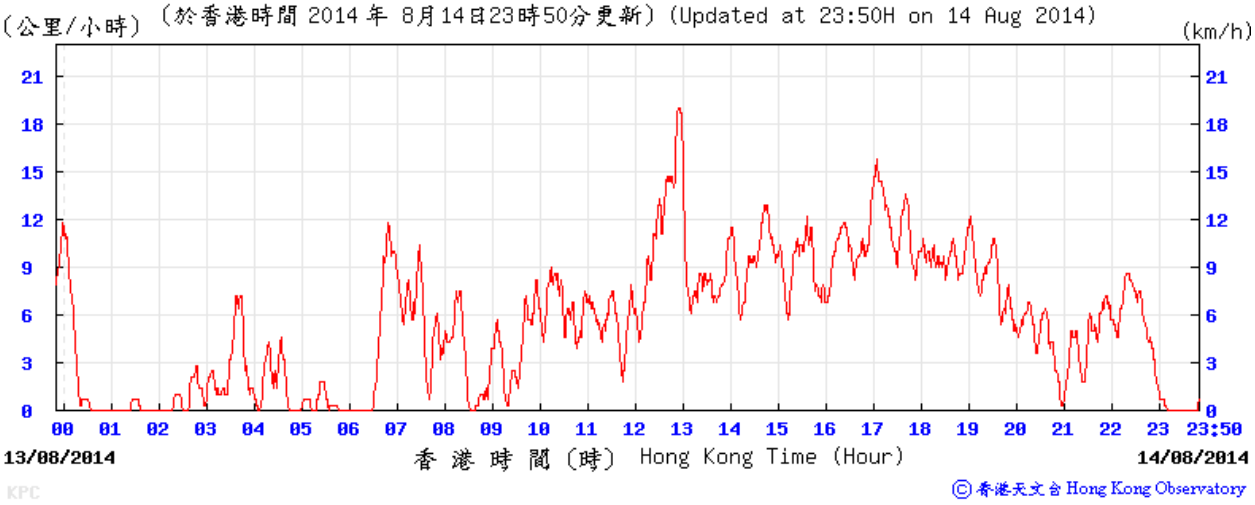
Temperature and Humidity:



Wind Direction:

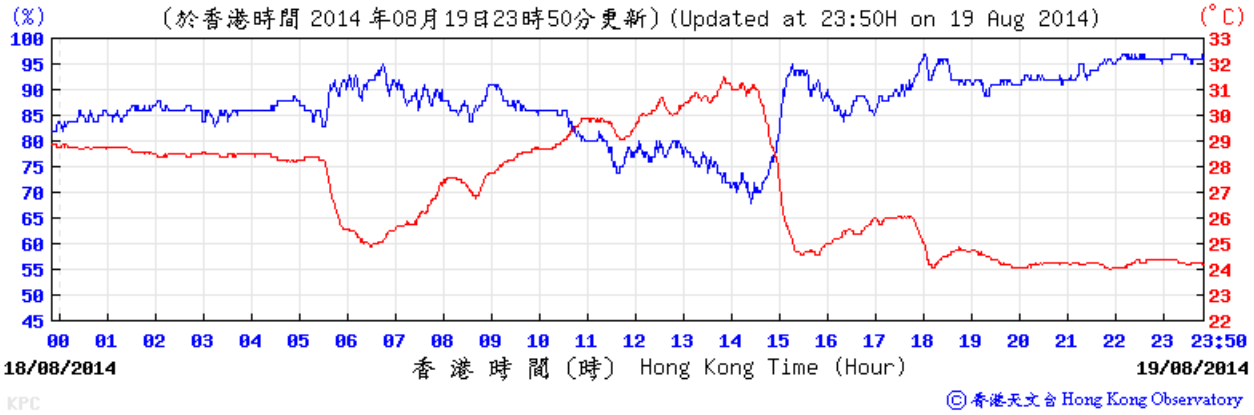


Wind Speed:

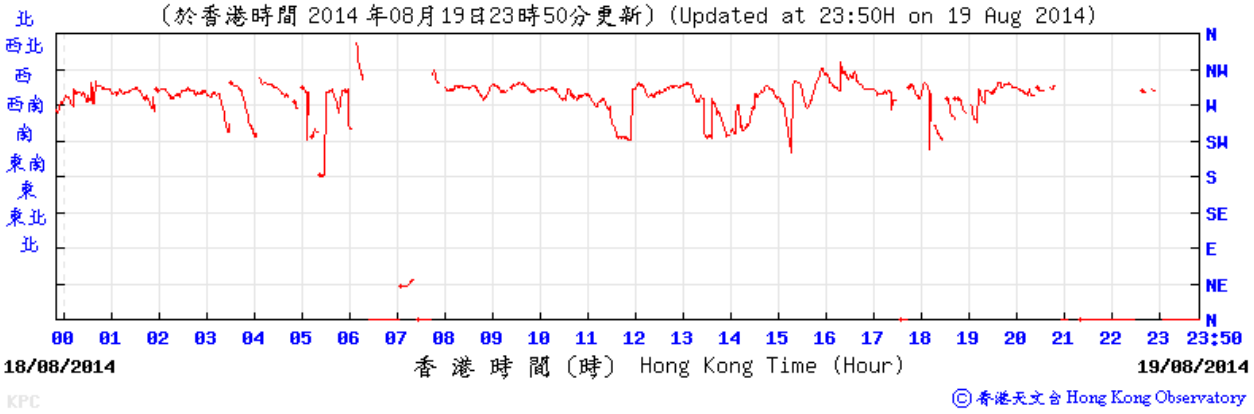


King's Park Weather Station – 19 August 2014

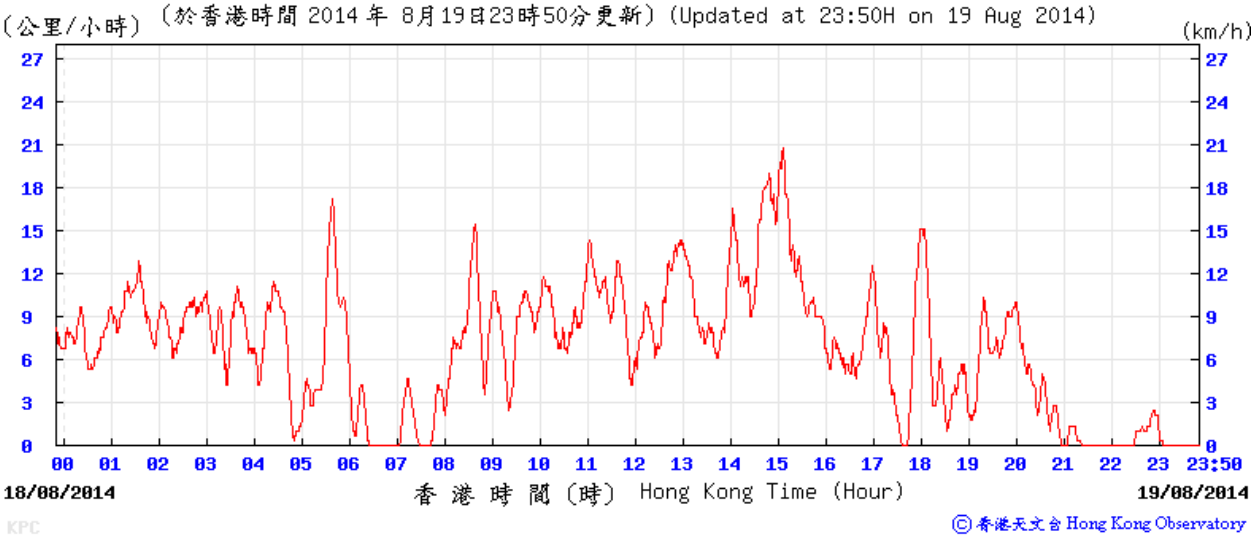
Temperature and Humidity:



Wind Direction:

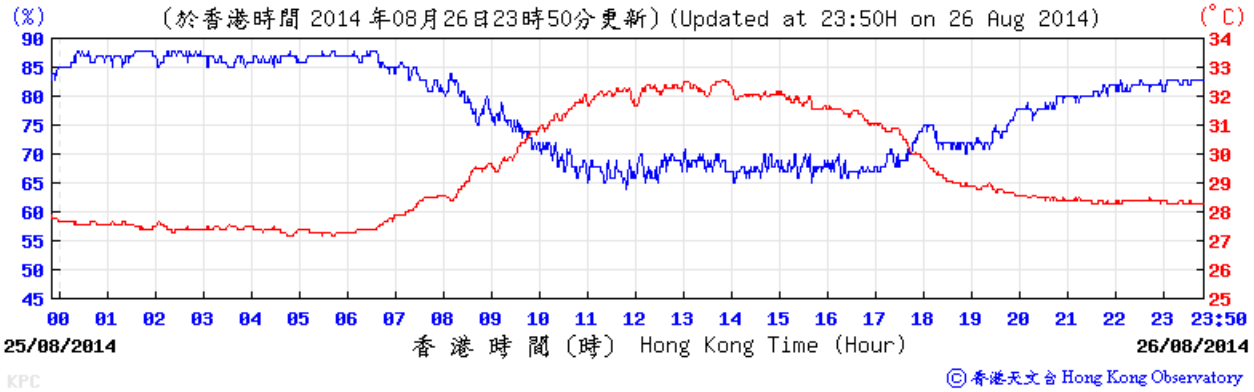


Wind Speed:

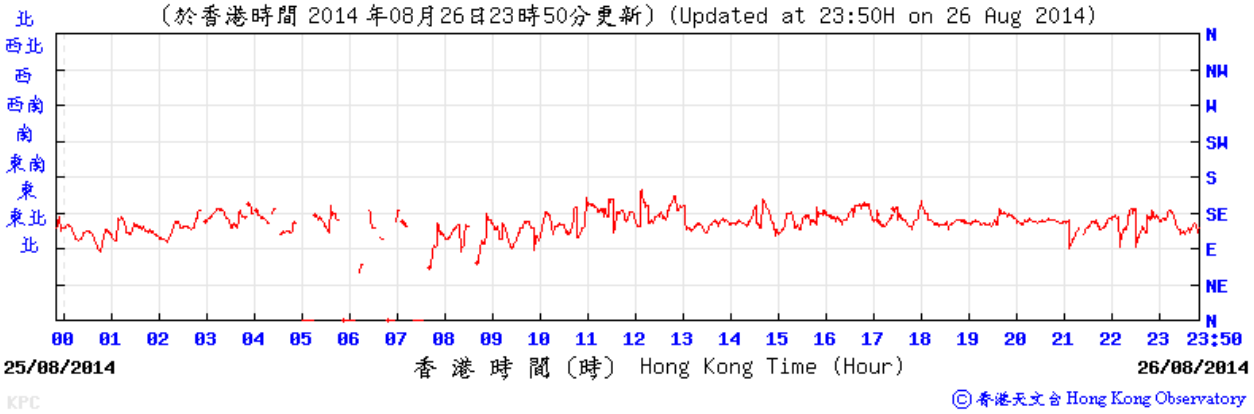


King's Park Weather Station – 26 August 2014

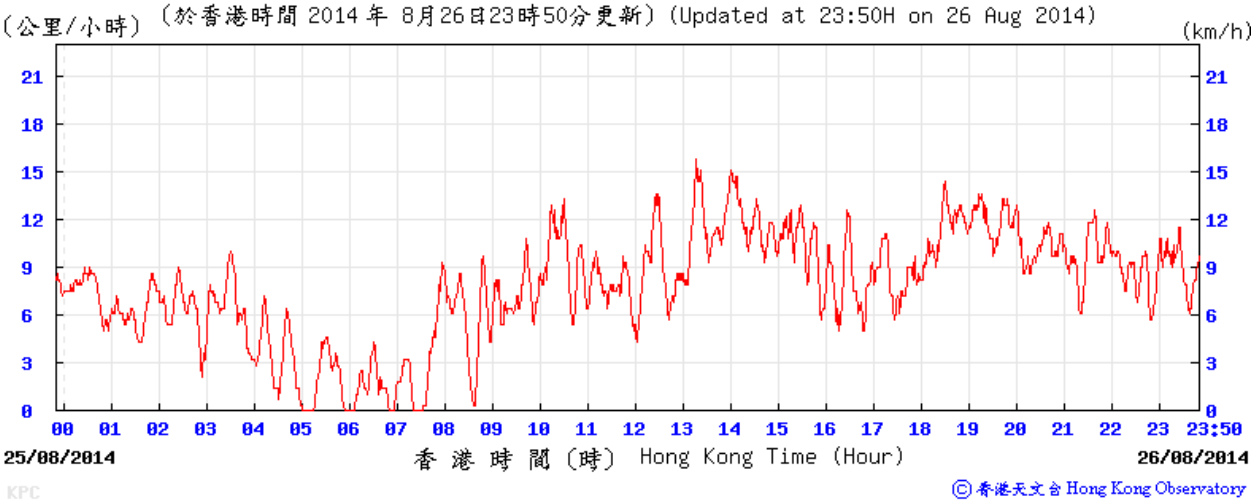
Temperature and Humidity:



Wind Direction:



Wind Speed:



Appendix I

Certificate of Laboratory and Equipment Calibration

TISCH Environmental

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

Date - Mar 24, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 1785 Pa (mm) - 758.19

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	1.4150	3.2	2.00
2	NA	NA	1.00	0.9940	6.4	4.00
3	NA	NA	1.00	0.8890	7.9	5.00
4	NA	NA	1.00	0.8490	8.7	5.50
5	NA	NA	1.00	0.7020	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0103	0.7140	1.4245
1.0061	1.0122	2.0146
1.0040	1.1293	2.2524
1.0030	1.1814	2.3623
0.9977	1.4213	2.8491
Qstd slope (m) =		2.01484
intercept (b) =		-0.01898
coefficient (r) =		0.99991

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9958	0.7037	0.8791
0.9916	0.9976	1.2433
0.9895	1.1130	1.3900
0.9885	1.1643	1.4579
0.9833	1.4008	1.7583
Qa slope (m) =		1.26166
intercept (b) =		-0.01171
coefficient (r) =		0.99991

y axis = SQRT[H2O(Ta/Pa)]

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}

TSP Sampler Calibration

SITE

Location: Tsim Sha Tsui
Sampler:
Date: January 10, 2014
Tech: Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	40.35	Corrected Pressure (mm Hg):	1025
Temperature (deg F):	59	Temperature (deg K):	288
Average Press. (in Hg):	40.35	Corrected Average (mm Hg):	1025
Average Temp. (deg F):	59	Average Temp. (deg K):	288

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.00979
Model:	TE-5025A	Qstd Intercept:	-0.01403
Serial#:	1785	Date Certified:	April 9, 2013

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.60	2.093	56.0	66.15
2	9.80	1.847	50.0	59.06
3	7.30	1.595	44.0	51.98
4	4.60	1.268	35.0	41.34
5	2.90	1.008	28.0	33.08

LINEAR REGRESSION

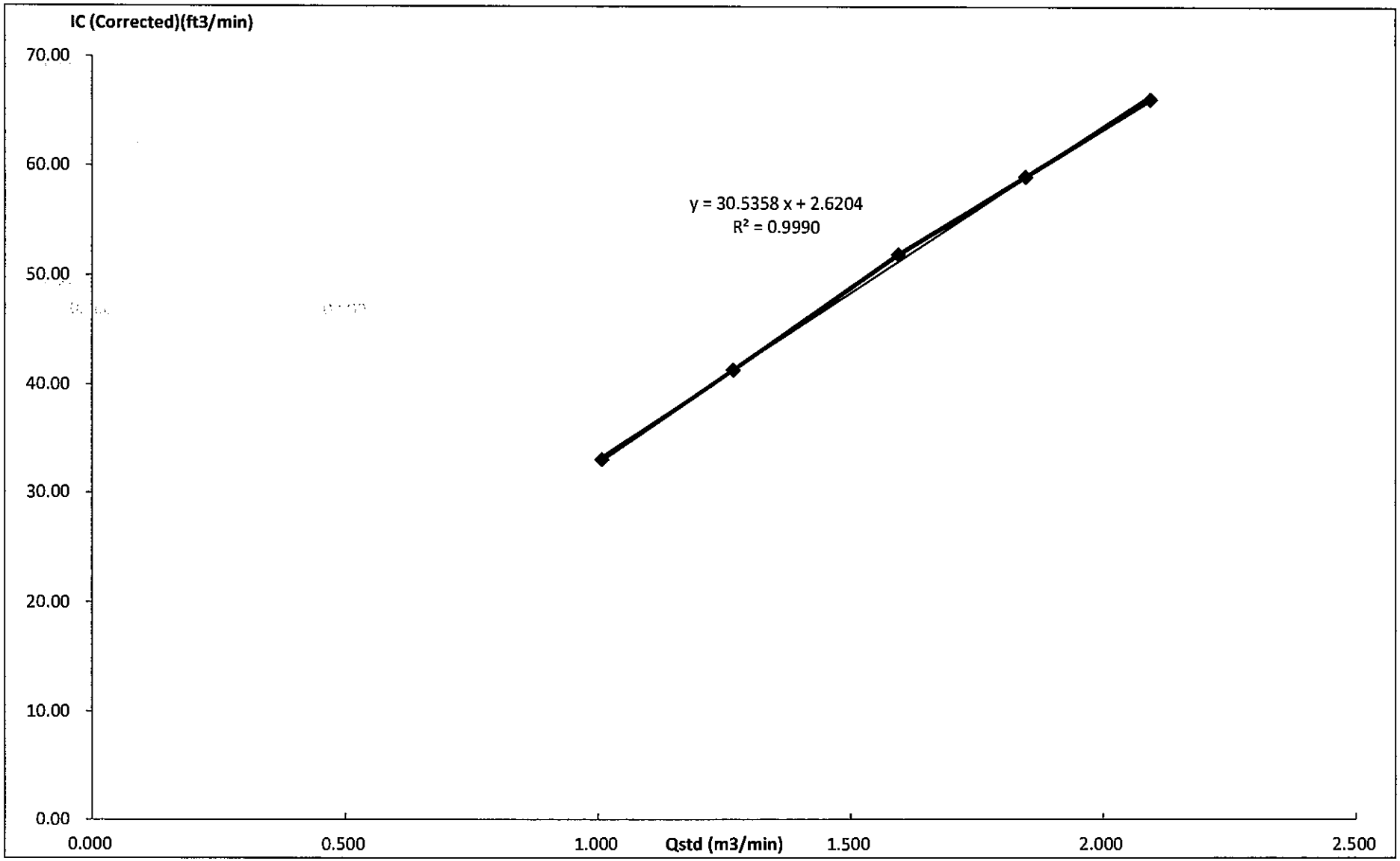
Slope =	30.5358
Intercept =	2.6204
Corr. coeff.=	0.9995
# of Observations:	5

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 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


IC (Corrected)(ft3/min)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
y = 30.5358 x + 2.6204
R² = 0.9990
0.000
0.500
1.000
Qstd (m3/min)
1.500
2.000
2.500

High Volume Air Sampler Calibration Worksheet

Project Title: **MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works**
Monitoring Location: **K11 Commercial Complex**
Calibration Date: **11-Jul-14**
Calibration Due Date **11-Sep-14**
Time: **15:30**

Sampler Model:	TE5005X
Serial No.:	1713
Calibrator Orifice no.:	1785
Slope (m):	2.01484
Intercept (b):	-0.01898
Correction coeff. (r)	0.99991

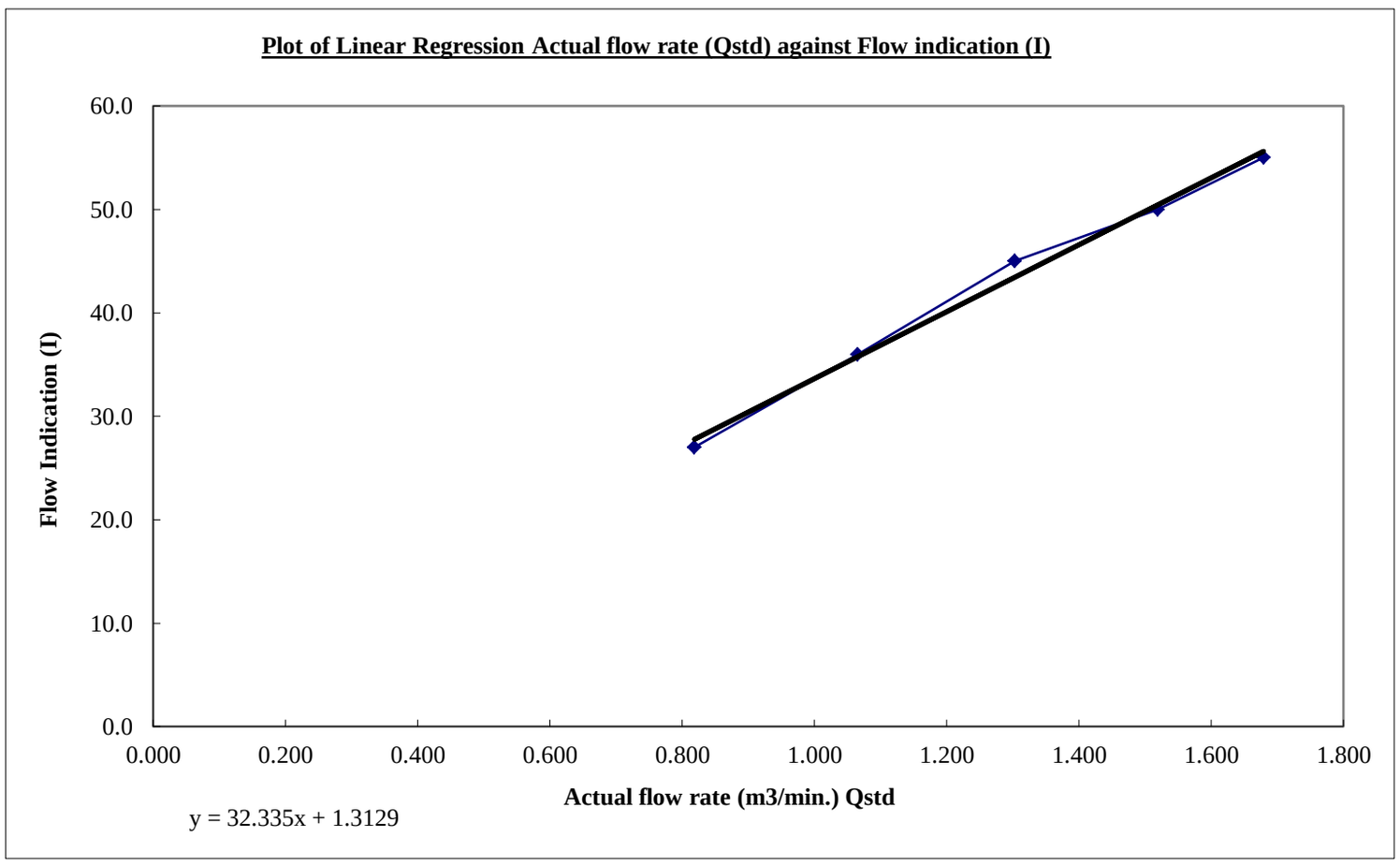
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	752.3
Standard temp. (K) Tstd:	302.1
Calibration pressure (mmHg) Pa:	753.1
Calibration temp. (K) Ta:	303.2

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrected), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	11.5	3.364	1.679	55.0
2	9.4	3.041	1.519	50.0
3	6.9	2.606	1.303	45.0
4	4.6	2.128	1.065	36.0
5	2.7	1.630	0.818	27.0

Correlation Coefficient : 0.9963



Remark
1 hPa = 0.750062 mmHg

Calibrated by: **Kelvin Chiang** **Date: 11 Jul 2014**
(**)**

Checked by: **F.N. Wong** **Date: 11 Jul 2014**
(**)**

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 37521 Page 1 of 2 Pages

Customer : Enovative Environmental Service Limited

Address : Room 3, 12/F., New City Centre, 2 Lei Yue Mun Road, Kwun Tong, Kowloon, H.K.

Order No. : Q32432 **Date of receipt :** 16-Oct-13

Item Tested

Description : Sound Level Calibrator
Manufacturer : B&K
Model : Type 4231 **Serial No.** : 2685684

Test Conditions

Date of Test : 31-Oct-13 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	35730	NIM-PRC & SCL-HKSAR
S205	Ref. Sound Level Calibrator	PHCO40002	SCL-HKSAR
S041	Universal Counter	34621	SCL-HKSAR
S206	Sound Level Meter	36203	SCL-HKSAR
S031	6½ dgt. Multimeter	30128	NIM-PRC

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : Dorothy Cheuk **Approved by :** Steve Kwan

Date: 31-Oct-13

This Certificate is issued by.
Hong Kong Calibration Ltd
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.08	± 0.3 dB
114	114.07	

Uncertainty : ± 0.1 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.002 kHz	± 2 %

Uncertainty : ± 3.6 x 10^{-6}

3. Level Stability : 0.0 dB
IEC 942 Class I Spec. : ± 0.1 dB
Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.7 %
IEC 942 Class 1 Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1014 hPa.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 401114 Page 1 of 3 Pages

Customer : Hyder Consulting Limited

Address : 47/F., Hopewell Centre, 183 Queens Road East, Wanchai, Hong Kong

Order No. : Q40515 **Date of receipt :** 25-Feb-14

Item Tested

Description : Sound Level Meter

Manufacturer : B&K

Model : 2238 **Serial No. :** 2562782

Test Conditions

Date of Test : 6-Mar-14 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01, IEC 651, IEC 804.

Test Results

All results were within the IEC 651 Type 1, IEC 804 Type 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C127181	SCL-HKSAR
S205	Ref. Sound Level Calibrator	PHCO40002	SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : Dorothy Cheuk

Approved by : Alan Chu

Date: 6-Mar-14

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8601 Fax: 2425 8646

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Freq. Wgt.	Bandwith	Center Freq.		
20 ~ 100	A	BB/F	--	94.0	94.1
	A	BB/S	--		94.1
	C	BB/F	--		94.1
40 ~ 120	A	BB/F	--	94.0	94.1
	A	BB/F	--	114.0	114.1

IEC 651 Type 1 Spec. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	114.1	0.0	± 0.7 dB
130	104.0	104.1	0.0	
120	94.0	94.1 (Ref.)	- -	
110	84.0	84.1	0.0	
100	74.0	74.1	0.0	
90	64.0	64.1	0.0	
80	54.0	54.1	0.0	

Uncertainty : ± 0.1 dB

Calibration Certificate

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	-0.1	± 0.4 dB
	94.0	94.1 (Ref.)	- -	
	95.0	95.0	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.4	- 39.4 dB, ± 1.5 dB
63 Hz	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.3	- 16.1 dB, ± 1 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.3	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1 dB
4 kHz	+0.9	+ 1.0 dB, ± 1 dB
8 kHz	-1.2	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.7	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	40.0	± 0.5 dB
$1/10^2$	40.0	39.9	
$1/10^3$	40.0	40.0	± 1.0 dB
$1/10^4$	40.0	40.0	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric pressure : 1 007 hPa.

---------- END ----------

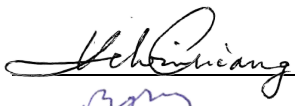
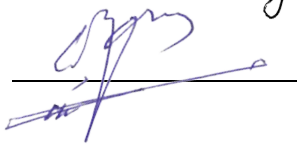
Appendix J

Field Record Sheets

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Data Sheet for TSP Monitoring

Monitoring Location		K11
Details of Location		4/F Roof Top, K11
Sampler Identification		1713
Date & Time of Sampling		05/08/2014, 13:27 p.m.
Elapsed-time Meter Reading	Start (min.)	7119.02
	Stop (min.)	7143.02
Total Sampling Time (min.)		1440 (24 hours)
Weather Conditions		Sunny
Site Conditions		Nil
Initial Flow Rate, Qsi	Pi (mm Hg)	752.9
	Ti (°C)	29
	Hi (in.)	
	Qsi (Std. m^3)	1.16
Final Flow Rate, Qsf	Pf (mm Hg)	752.1
	Tf (°C)	29
	Hf (in.)	
	Qsf (Std. m^3)	1.16
Average Flow Rate (Std. m^3)		1.16
Total Volume (Std. m^3)		1663.49
Filter Identification No.		034048
Initial Weight. of Filter (g)		2.6551
Final Weight of Filter (g)		2.7206
Measured TSP Level (μg/m^3)		39.4

		Name & Designation	Signature	Date
Field Operator	:	Kelvin Chiang		06-08-2014
Checked by	:	F. N. Wong		06-08-2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Data Sheet for TSP Monitoring

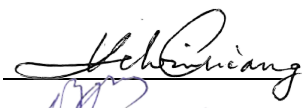
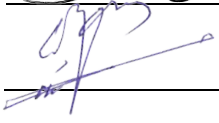
Monitoring Location		K11
Details of Location		4/F Roof Top, K11
Sampler Identification		1713
Date & Time of Sampling		12/08/2014, 13:39 p.m.
Elapsed-time Meter Reading	Start (min.)	7143.02
	Stop (min.)	7167.02
Total Sampling Time (min.)		1440 (24 hours)
Weather Conditions		Sunny
Site Conditions		Nil
Initial Flow Rate, Qsi	Pi (mm Hg)	750.9
	Ti (°C)	30
	Hi (in.)	
	Qsi (Std. m^3)	1.04
Final Flow Rate, Qsf	Pf (mm Hg)	753.1
	Tf (°C)	24
	Hf (in.)	
	Qsf (Std. m^3)	1.04
Average Flow Rate (Std. m^3)		1.04
Total Volume (Std. m^3)		1494.18
Filter Identification No.		034049
Initial Weight. of Filter (g)		2.6774
Final Weight of Filter (g)		2.7352
Measured TSP Level (μg/m^3)		38.7

		Name & Designation	Signature	Date
Field Operator	:	Kelvin Chiang		13-08-2014
Checked by	:	F. N. Wong		13-08-2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Data Sheet for TSP Monitoring

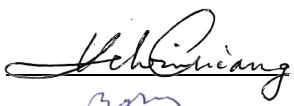
Monitoring Location		K11
Details of Location		4/F Roof Top, K11
Sampler Identification		1713
Date & Time of Sampling		19/08/2014, 13:21 p.m.
Elapsed-time Meter Reading	Start (min.)	7167.02
	Stop (min.)	7191.02
Total Sampling Time (min.)		1440 (24 hours)
Weather Conditions		Sunny
Site Conditions		Nil
Initial Flow Rate, Qsi	Pi (mm Hg)	755.4
	Ti (°C)	31
	Hi (in.)	
	Qsi (Std. m^3)	1.12
Final Flow Rate, Qsf	Pf (mm Hg)	758.1
	Tf (°C)	25
	Hf (in.)	
	Qsf (Std. m^3)	1.12
Average Flow Rate (Std. m^3)		1.12
Total Volume (Std. m^3)		1607.05
Filter Identification No.		034050
Initial Weight. of Filter (g)		2.6518
Final Weight of Filter (g)		2.7062
Measured TSP Level (μg/m^3)		33.9

		Name & Designation	Signature	Date
Field Operator	:	Kelvin Chiang		20-08-2014
Checked by	:	F. N. Wong		20-08-2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Data Sheet for TSP Monitoring

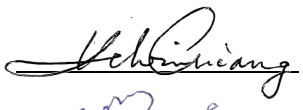
Monitoring Location		K11
Details of Location		4/F Roof Top, K11
Sampler Identification		1713
Date & Time of Sampling		26/08/2014, 12:29 p.m.
Elapsed-time Meter Reading	Start (min.)	7191.02
	Stop (min.)	7215.02
Total Sampling Time (min.)		1440 (24 hours)
Weather Conditions		Overcast
Site Conditions		Nil
Initial Flow Rate, Qsi	Pi (mm Hg)	758.0
	Ti (°C)	32
	Hi (in.)	
	Qsi (Std. m^3)	1.16
Final Flow Rate, Qsf	Pf (mm Hg)	757.8
	Tf (°C)	30
	Hf (in.)	
	Qsf (Std. m^3)	1.16
Average Flow Rate (Std. m^3)		1.16
Total Volume (Std. m^3)		1663.49
Filter Identification No.		034051
Initial Weight. of Filter (g)		2.6532
Final Weight of Filter (g)		2.7175
Measured TSP Level (μg/m^3)		38.7

		Name & Designation	Signature	Date
Field Operator	:	Kelvin Chiang		27-08-2014
Checked by	:	F. N. Wong		27-08-2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Noise Monitoring Field Record Sheet

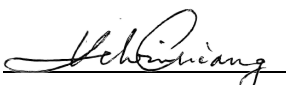
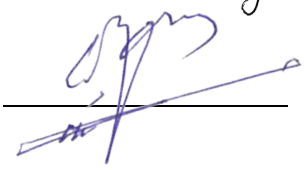
Monitoring Location		K11
Description of Location		4/F Roof Top, K11
Date of Monitoring		01/08/2014
Measurement Start Time (hh:mm)		16:40
Measurement Time Length (min.)		30
Noise Meter Model / Identification		B&K 2238
Calibrator Model / Identification		Larson Davis CAL200
Measurement Results	L_{90} (dB (A))	65.5
	L_{10} (dB (A))	68.5
	L_{eq} (dB (A))	67.3
Major Construction Noise Source(s) during Monitoring		On-site powered mechanical equipment
Other Noise Source(s) during Monitoring		Traffic Noise
Remarks		Wind Speed: 0.3 m/s

	Name & Designation	Signature	Date
Recorded By :	Kelvin Chiang		01/08/2014
Checked by :	F. N. Wong		01/08/2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Noise Monitoring Field Record Sheet

Monitoring Location		K11
Description of Location		4/F Roof Top, K11
Date of Monitoring		05/08/2014
Measurement Start Time (hh:mm)		13:25
Measurement Time Length (min.)		30
Noise Meter Model / Identification		B&K 2238
Calibrator Model / Identification		Larson Davis CAL200
Measurement Results	L_{90} (dB (A))	68.5
	L_{10} (dB (A))	70.5
	L_{eq} (dB (A))	69.8
Major Construction Noise Source(s) during Monitoring		On-site powered mechanical equipment
Other Noise Source(s) during Monitoring		Traffic Noise
Remarks		Wind Speed: 0.9 m/s

	Name & Designation	Signature	Date
Recorded By :	Kelvin Chiang		05/08/2014
Checked by :	F. N. Wong		05/08/2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Noise Monitoring Field Record Sheet

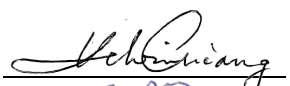
Monitoring Location		K11
Description of Location		4/F Roof Top, K11
Date of Monitoring		14/08/2014
Measurement Start Time (hh:mm)		16:00
Measurement Time Length (min.)		30
Noise Meter Model / Identification		B&K 2238
Calibrator Model / Identification		Larson Davis CAL200
Measurement Results	L_{90} (dB (A))	71.5
	L_{10} (dB (A))	77.5
	L_{eq} (dB (A))	74.6
Major Construction Noise Source(s) during Monitoring		On-site powered mechanical equipment
Other Noise Source(s) during Monitoring		Traffic Noise
Remarks		Wind Speed: 1.1 m/s

	Name & Designation	Signature	Date
Recorded By :	Kelvin Chiang		14/08/2014
Checked by :	F. N. Wong		14/08/2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Noise Monitoring Field Record Sheet

Monitoring Location		K11
Description of Location		4/F Roof Top, K11
Date of Monitoring		19/08/2014
Measurement Start Time (hh:mm)		13:29
Measurement Time Length (min.)		30
Noise Meter Model / Identification		B&K 2238
Calibrator Model / Identification		Larson Davis CAL200
Measurement Results	L_{90} (dB (A))	67.0
	L_{10} (dB (A))	72.0
	L_{eq} (dB (A))	69.7
Major Construction Noise Source(s) during Monitoring		On-site powered mechanical equipment
Other Noise Source(s) during Monitoring		Traffic Noise
Remarks		Wind Speed: 0.9 m/s

	Name & Designation	Signature	Date
Recorded By :	Kelvin Chiang		19/08/2014
Checked by :	F. N. Wong		19/08/2014

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works

Noise Monitoring Field Record Sheet

Monitoring Location		K11
Description of Location		4/F Roof Top, K11
Date of Monitoring		26/08/2014
Measurement Start Time (hh:mm)		13:51
Measurement Time Length (min.)		30
Noise Meter Model / Identification		B&K 2238
Calibrator Model / Identification		Larson Davis CAL200
Measurement Results	L_{90} (dB (A))	67.0
	L_{10} (dB (A))	70.0
	L_{eq} (dB (A))	68.7
Major Construction Noise Source(s) during Monitoring		On-site powered mechanical equipment
Other Noise Source(s) during Monitoring		Traffic Noise
Remarks		Wind Speed: 1.6 m/s

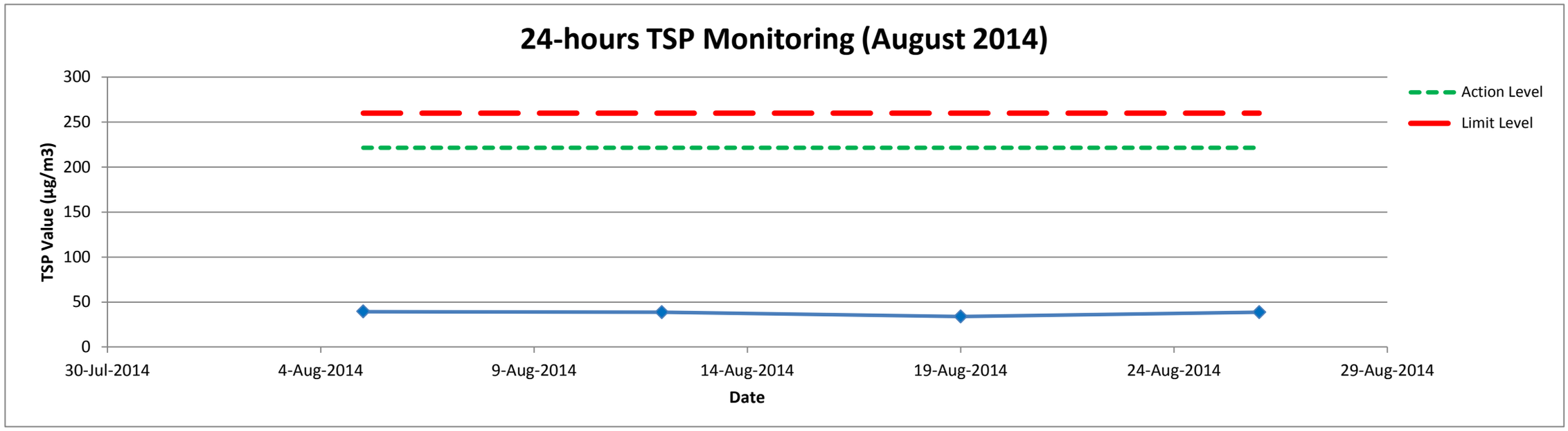
	Name & Designation	Signature	Date
Recorded By :	Kelvin Chiang		26/08/2014
Checked by :	F. N. Wong		26/08/2014

Appendix K

Monitoring Results and Plots

Impact Air Quality Monitoring : 24-hour TSP at K11

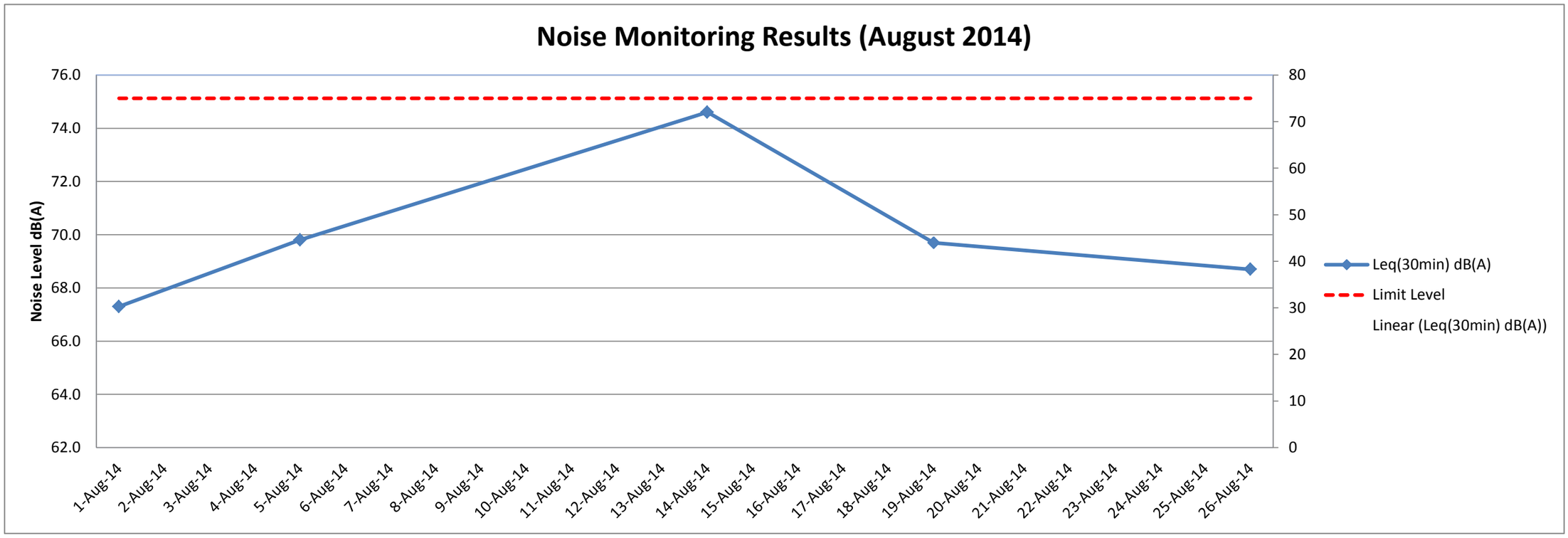
Location	Monitoring Date	Start Time	Weather Conditions	Temperature	Elapse Time			Flow Rate (CFM)			TSP Concentration (µg/m3)	Action/Limit Levels
					Initial	Final	Sampling Hours	Initial	Final	Average Flow Rate		
K11 Art Mall	5-Aug-14	13:27	Sunny	29	711902	714302	24	40	40	40	39.4	221.6/260
	12-Aug-14	13:39	Sunny	30	714302	716702	24	37	37	37	38.7	221.6/260
	19-Aug-14	13:21	Sunny	31	716702	719102	24	39	39	39	33.9	221.6/260
	26-Aug-14	12:01	Overcast	32	719102	721502	24	40	40	40	38.7	221.6/260



Noise Impact Monitoring Results at K11

Monitoring Locations	Date	Weather Conditions	Wind Speed (m/s)	Start Time	End Time	Background Level dB(A)	Limit Level dB(A)	Leq(30min) dB(A)	L10(30min) dB(A)	L90(30min) dB(A)
11 Art Mall	1-Aug-14	Overcast	2.0	16:40	17:10	65.3	75	67.3	68.5	65.5
	5-Aug-14	Fine	1.0	13:25	13:55	65.3	75	69.8	70.5	68.5
	14-Aug-14	Sunny	1.8	16:00	16:30	65.3	75	74.6	77.5	71.5
	19-Aug-14	Fine	2.2	13:29	13:59	65.3	75	69.7	72.0	67.0
	26-Aug-14	Overcast	2.2	13:51	14:21	65.3	75	68.7	70.0	67.0

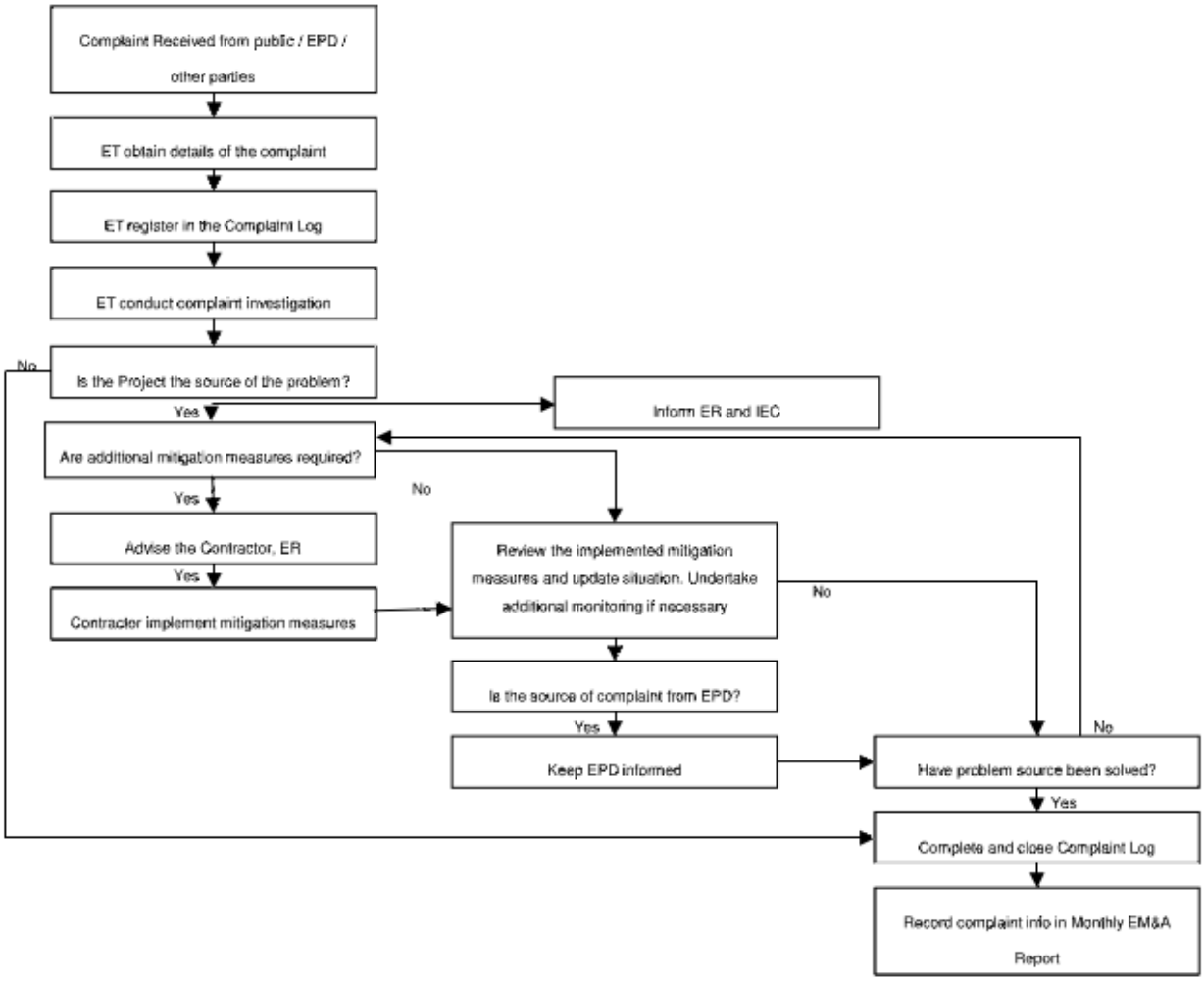
Note:
The limit level of NSR1 is 65dB(A) during school examination period.
Red Bold indicates an exceedance of Limit Level



Appendix L

Flow Chart for Handling Environmental Complaints

Complaint Response Procedure



Appendix M

Waste Management Records

Monthly Summary Waste Flow Table for 2014 (year)

Contract No: C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway
Date Reported: 2-September-2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m³/tonne)
Jan	0.0206	-	-	-	0.0206	-	-	-	-	-	-
Feb	0.0233	-	-	-	0.0233	-	-	-	-	-	-
Mar	0.0120	-	-	-	0.0120	-	-	-	-	-	-
Apr	0.0281	-	-	-	0.0281	-	-	-	-	-	0.0035
May	0.0059	-	-	-	0.0059	-	-	-	-	-	-
June	0.0322	-	-	-	0.0322	-	-	-	-	-	-
Sub-total	0.1221	-	-	-	0.1221	-	-	-	-	-	0.0035
July	0.0250	-	-	-	0.0250	-	-	-	-	-	-
Aug	0.0515	-	-	-	0.0515	-	-	-	-	-	-
Sept	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-
Total	0.1986	-	-	-	0.1986	-	-	-	-	-	0.0035

Notes:

(1) The performance targets are given below:
- All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
- All metallic waste to be recovered for collection by recycling contractors;
- All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
- All chemical wastes to be collected and properly disposed of by specialist contractors; and
- All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

(4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.