



Maeda Corporation

MONTHLY REPORT (DECEMBER 2018)

MTRCL Contract C3840-13C

Tsim Sha Tsui Station Carnarvon Road Subway
and Entrances Modification Works



M A E D A

Maeda Corporation

Monthly EM&A Report (December 2018)

MTRCL Contract C3840-13C

Tsim Sha Tsui Station Carnarvon Road Subway and
Entrances Modification Works

Author Tung Chi Sun



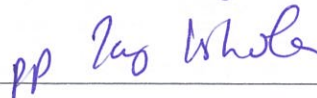
Checker Wong Fu Nam



Proof Reader Raymond Sung



Approver John Berry



Report No EB001340R0792

Your Ref:

Our Ref: 60453136.40032976/2019000019E

By Email and Post

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

Attn.: Mr. Alfa Liu

11 January 2019

Dear Sirs,

**Consultancy Agreement A130-13
Independent Environmental Checker for CRS and LTS
CRS - Verification for 58th Monthly Environmental Monitoring and Audit (EM&A) Report
(December 2018) (Report No.: EB001340R0792)**

We refer to the 58th Monthly EM&A Report (December 2018) received under cover of the email from the Environmental Team, Arcadis Design & Engineering Limited, dated on 10 January 2019.

Further to our comments provided on 10 January 2019 and subsequent revision of the Report by Arcadis Design & Engineering Limited on 10 January 2019, we have no further comment and have verified the captioned report (Report No.: EB001340R0792).

Should you have any queries, please feel free to contact the undersigned at 3922 9366.

Yours faithfully

AECOM Consulting Services Ltd



Y. W. Fung
Independent Environmental Checker

LLMC/wwsc

cc Arcadis Design & Engineering Limited
Maeda Corporation

(Attn.: Mr. F. N. Wong) via email
(Attn.: Mr. Calvin Chan) via email

CONTENTS

- EXECUTIVE SUMMARY 3**
- 1 INTRODUCTION 4**
 - 1.1 The Reporting Period 4
 - 1.2 Project Background 4
 - 1.3 Environmental Status 4
 - 1.4 Construction Activities 5
- 2 EM&A REQUIREMENTS 6**
 - 2.1 Air Quality 6
 - 2.2 Construction Noise 10
- 3 MONITORING RESULTS 12**
 - 3.1 Air Quality 12
 - 3.2 Construction Noise 12
 - 3.3 Conclusions and Recommendations 13
- 4 ENVIRONMENTAL AUDIT 14**
 - 4.1 Site Inspection 14
 - 4.2 Compliance with Legal/Contractual Requirement 15
 - 4.3 Environmental Complaints 15
 - 4.4 Notification of Summons/Successful Prosecutions 15
- 5 CONSTRUCTION WASTE 16**
 - 5.1 Waste Management 16
 - 5.2 Waste Management Status and Record 16
- 6 FUTURE ENVIRONMENTAL ISSUES 16**
 - 6.1 Key Environmental Issues 16
 - 6.2 Mitigation Measures **Error! Bookmark not defined.**
- 7 CONCLUSIONS AND RECOMMENDATIONS 17**
 - 7.1 Conclusions 17
 - 7.2 Recommendations 17

APPENDICES

Appendix A

Site Location Plan

Appendix B

Management Structure

Appendix C

Construction Programme

Appendix D

Implementation Schedule

Appendix E

Status of Environmental Licenses and Permits

Appendix F

Event and Action Plan

Appendix G

Monitoring Schedule

Appendix H

Weather Information Extracted from HK Observatory

Appendix I

Certificate of Laboratory and Equipment Calibration

Appendix J

Sample Data Record Sheet

Appendix K

Monitoring Results and Plots

Appendix L

Flow Chart for Handling Environmental Complaints

Appendix M

Waste Management Record

EXECUTIVE SUMMARY

Breaches of Action and Limit Levels

- ES01 As the environmental monitoring results registered no breaches of Action and Limit Levels of air quality and construction noise during the Reporting Period, neither Notice of Exceedance nor the associated investigation and follow-up actions were required.
- ES02 No major corrective actions were taken 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 Report Period.

Notification of Summons & Successful Prosecutions

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

Reporting Changes

- ES05 Since 21 September 2018, due to outage of the HVS and damage of the HVS during the super typhoon Mangkhut who smashed into Hong Kong on 16 September 2018, the 24-Hr TSP monitoring has been replaced by 3 x 1-Hr TSP monitoring by hand-help dust meter when the highest dust impact occurs upon agreement with the IEC, MTRCL and Contractor .

Future Key Issues

- ES06 Construction under the Project has been substantially completed, including the road reinstatement work for Carnarvon Road and super-structures of Entrance D1 and D2, etc., and Carnarvon Road has been re-opened to public since 30 December 2018.
- ES07 Reinstatement of the north-side pedestrian footpath (Entrance D1 and D2 side) will be carried out from January 2019 and minor internal defect fixing works will also be conducted as necessary.
- ES08 With implementation of the environmental mitigation measures as recommended in the EP, PP and EM&A Plan, the air quality, noise and water quality impacts to be generated from the remaining works are anticipated to be insignificant. No particular corrective or remedial measures are required.

1 INTRODUCTION

1.1 The Reporting Period

1.1.1 This is the 58th monthly EM&A report (hereinafter referred as 'This Report') covering construction period from 1 to 31 December 2018 (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 Project was commenced in March 2014 and is anticipated to be completed by the end of 2018.

1.2.2 The existing TST Station had been in operation before the **Environmental Impact Assessment Ordinance** (hereafter referred as 'EIAO') comes 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 summarised in **Appendix D**, which fine tunes the construction activities and shows inter-relationships with the environmental protection/mitigation measures for the construction period. It is being reviewed and will be updated soon upon availability of more solid information.

1.3 Environmental Status

1.3.1 As required in the EP, AECOM Consulting Services Limited has been appointed as the Independent Environmental Checker under the Project (hereinafter referred as 'the IEC'), whereas Arcadis Design and Engineering Limited (formerly known as 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 summarised 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. 403252, 421293 & 433242 acknowledged on 02 Jun 2016, 18 Sep 2017 & 07 May 2018 respectively
2	Water Pollution Control Ordinance (Discharge License)	The discharge license (Ref No. WT00019722-2014) was granted on 01 Sep 2014 superseding the previous license (Ref No. WT00018229-2014)
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	Construction Noise Permit	GW-RE0635-18 approved on 19 September 2018 for operation of 4 submersible water pump (electric) or 1 drill for 24-hr; 4 drill & 4 grinder for 07:00-23:00 from 1 October 2018 to 30 March 2019.

1.4 Construction Activities

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

Table 1-4-1 Construction Activities

Item	Description
<u>Construction Activities Undertaken during the Reporting Period</u>	
1	BS and ABWF for Entrance D1
2	Asphalt paving for road reinstatement and re-open of Carnarvon Road
3	Southern Pedestrian footpath reinstatement
<u>Construction Activities to be Undertaken in the Up-Coming Month</u>	
1	Defective works for Entrance D1
2	Northern Pedestrian footpath reinstatement

2 EM&A REQUIREMENTS

2.1 Air Quality

Monitoring Parameters and Frequency

- 2.1.1 According to the EM&A Plan, 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. 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**.
- 2.1.2 On 4th September 2018, when collecting filter paper from the HVS, the HVS was found out of service due to continuing wet weather as indicated by zero hour elapsed time in the elapsed time recorder. Before the HVS was inspected and repaired by the HVS specialist, the HVS was blown down and seriously damaged by the super typhoon Mangkhut who smashed into Hong Kong on 16 September 2018. The two (2) rounds of the TSP monitoring for the weeks 2nd to 8th and 9th to 15th September 2018 were hence interrupted due to outage of the HVS, resulted missing of the associated 24-Hour TSP data.
- 2.1.3 Due to uncertainty of time for the HVS inspection and repair, the 24-Hr TSP monitoring has been replaced by 3 x 1-Hr TSP monitoring at K11 by hand-help dust meter when the highest dust impact occurs since 21 September 2018 upon agreement with the IEC and MTRC and MC.
- 2.1.4 Environmental monitoring schedules for air quality 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

- 2.1.5 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.
- 2.1.6 Air quality monitoring location is summarised 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

- 2.1.7 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
High Volume Air Sampler	TE5170 MFC	0462	1785
Sibata Digital Dust Monitor	SITEPAC AM520	5201707005	Not Applicable

- 2.1.8 Weather information including wind speeds and wind directions is obtained from King's Park Weather Station. 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 recognised 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 horizontal platform with appropriate support to secure the samplers against gusty wind will be provided;
 - No two samplers will be placed less than 2 m apart;
 - 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;
 - A minimum of 2 m of separation from walls, parapets and penthouses is required for rooftops samplers;
 - A minimum of 2 m of separation from any supporting structure, measured horizontally is required;
 - No furnace or incinerator flue or building vent is nearby;
 - Airflow around the sampler is unrestricted;
 - The sampler is more than 20 m from the drip line;
 - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;
 - Permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
 - 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 Technetiem (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) Turn on the power.
 - b) Close the air collecting opening cover.
 - c) Set the "TIME SETTING" switch to [BG].
 - d) Press "START/STOP" switch to perform background measurement.
 - e) Turn the knob at SENSI ADJ position.
 - f) Leave the equipment upon "SPAN CHECK" is indicated in the display.
 - g) Press "START/STOP" switch to perform automatic sensitivity adjustment.
 - h) Turn the knob at MEASURE position.
 - i) Set time period of 1 hour for the 1-hour TSP measurement.
 - j) Press "START/STOP" to start the 1-hour TSP measurement.
 - k) Check the time period to ensure monitoring time of 1 hour.
 - l) Record all monitoring information on a Field Data Sheet.

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/m³

Parameter	Action Level	Limit Level
24-Hr TSP	For baseline level ≤200 µg/m ³ , Action level = (130% of baseline level + Limit level)/2	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 Action and Limit levels for 24-Hr TSP established in the Baseline Monitoring Report were 221.6 and 260 respectively.

2.1.22 As the updated 1-Hr TSP baseline levels at the monitoring location are not available, the Action Level for 1-Hr TSP is calculated by adoption of the worst case approach as follows:

According to **Table 2-1-3** (1-Hr TSP):

1-Hr TSP Limit Level = 500

In adopting the worst case approach, let the 1-Hr TSP baseline levels be 0 (and of course ≤384 !):

1-Hr TSP Action Level = (130% of Baseline Level + Limit Level) ÷ 2 = (0 + 500) ÷ 2 = 250

2.1.23 The established A/L Levels for 24-Hr and 1-Hr TSP are summarised 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	221.6	260
1-Hr TSP	250	500

Event and Action Plan

2.1.24 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

2.1.25 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:

- Decking over the excavation areas;
- 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;
- Provision of vehicle washing facilities at the exit points of the site; and

2.1.26 Provision of tarpaulin covering for any dusty materials on a vehicle leaving the site. 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&K2238 (Serial No. 2448529)
2	Acoustic Calibrator	CAL200 (Serial No. 10929)

Monitoring Location

2.2.4 With the same rationale stated in previous **Section 2.1.5** for K11 to be used as the air quality monitoring location, it was agreed among MTRC, IEC and MC to perform the construction noise monitoring at exactly the same location, K11.

2.1.5 **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

2.1.6 Procedures for noise monitoring summarised 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, the measurement time and monitoring frequency are set as follows:
 - i. Frequency weighting: A
 - ii. Time weighting: Fast
 - iii. Time measurement: 30 minutes' intervals (between 0700-1900 on normal weekdays)
 - iv. Monitoring frequency: one set of measurement on a weekly basis
- 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

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

Action and Limit Levels

2.1.8 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: 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

2.1.9 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

2.1.10 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 summarised as follows:

- a) 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;
- b) The statutory and non-statutory requirements and guidelines shall be complied with;
- c) 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;
- d) 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;
- e) Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical;
- f) Unused equipment shall be turned off;
- g) PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;
- h) All plant and equipment shall be maintained regularly; and
- i) Material stockpiles and other structures shall be effectively utilised as noise barriers, whenever practicable.

2.1.11 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 1-Hr TSP monitoring during the Reporting Period was conducted following the agreed monitoring schedule.

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

Table 3-1-1 Summary of TSP Monitoring Results, $\mu\text{g}/\text{m}^3$

Monitoring Date	1-Hr TSP			Action Level	Limit Level
	Test 1	Test 2	Test 3		
04 December 2018 Average (Min – Max)	66 (62-156)	67 (63-164)	61 (54-228)	250	500
11 December 2018 Average (Min – Max)	57 (52-190)	54 (46-137)	58 (49-379)		
18 December 2018 Average (Min – Max)	61 (56-156)	62 (58-84)	62 (57-179)		
27 December 2018 Average (Min – Max)	52 (50-57)	56 (50-269)	53 (49-191)		

Discussion

3.1.3 **Table 3-1-1** demonstrates that all 1-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'). Therefore, the associated NOE Investigation as well as remedial actions were not 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 summarised 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)	Action Level	Limit Level
04 December 2018	71.3	Any documented complaint against construction noise.	75
11 December 2018	70.5		
18 December 2018	70.5		
27 December 2018	68.1		
Mean (Min – Max), L_{eq} (30 min)	70.3 (68.1 – 71.3)		

Discussion

- 3.2.3 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.
- 3.2.4 Neither NOE nor NOE investigation and the associated remedial actions were required during the Reporting Period.
- 3.2.5 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 1-4-1** under **Section 1.4: Construction Activities Undertaken during the Reporting Period and Up-Coming Month**.
- 3.2.6 Attention is drawn to adequate mitigation measures to be implemented during the noisy construction activities in order to alleviate noise nuisance generated from the Project related construction activities.

Weather Conditions

- 3.2.7 No weather conditions or any other factors were identified to have significant effects on the air and noise monitoring results within the Reporting Period.
- 3.2.8 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**.

3.3 Conclusions and Recommendations

Conclusions

- 3.3.1 No exceedances of A/L Levels of air quality and construction noise were registered during the Reporting Period.
- 3.3.2 No NOE and the associated NOE Investigation and corrected actions were required during the Reporting Period.

Recommendations

- 3.3.3 Full implementation of the environmental mitigation measures, which are required in the EM&A Plan and summarised in Implementation Schedule of **Appendix D**, is recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.
- 3.3.4 Construction dust shall be suppressed during dusty construction activities under dry and windy conditions.
- 3.3.5 In addition, construction noise shall be eliminated to avoid adverse impacts on the nearby sensitive receivers.

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 relevant parties 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 04, 11, 18 and 27 December 2018. A joint site inspection was conducted by IEC, MTRC, MC and ET on 11 December 2018.
- 4.1.4 As the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation has been enforced since December 2015, particular attention was paid to check EPD's Non-Road Mobile Machinery (NRMM) labels demonstrated on the regulated NRMM, except those which application is in progress. Deficiencies or findings of the site audit and the associated follow up actions are summarised in the following **Table 4-1-1**:

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

Date	Deficiencies or findings	Follow-Up Action
04 December 2018	Follow-up item(s)	
	No follow-up item.	Not required.
	Observation(s) on the day of inspection	
11 December 2018	No deficiency was observed on site.	Not required.
	Follow-up item(s)	
	No follow-up item.	Not required.
18 December 2018	Observation(s) on the day of inspection	
	No deficiency was observed on site.	Not required.
	Follow-up item(s)	
27 December 2018	No follow-up item.	Not required.
	Observation(s) on the day of inspection	
	No deficiency was observed on site.	Not required.

- 4.1.1 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 2014 to the Reporting Period
December 2018	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 2014 to the Reporting Period
December 2018	0	6

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 Breach(s)	Cumulative no. from March 2014 to the Reporting Period
December 2018	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

5.2.1 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.

5.2.2 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 Future Key Environmental Issues

6.1.1 Construction under the Project has been substantially completed, including the road reinstatement work for Carnarvon Road and super-structures of Entrance D1 and D2, etc., and Carnarvon Road has been re-opened to public since 30 December 2018.

6.1.2 Reinstatement of the north-side pedestrian footpath (Entrance D1 and D2 side) will be carried out from January 2019 and minor internal defect fixing works will also be conducted as necessary.

6.1.3 With implementation of the environmental mitigation measures as recommended in the EP, PP and EM&A Plan, the air quality, noise and water quality impacts to be generated from the remaining works are anticipated to be insignificant.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

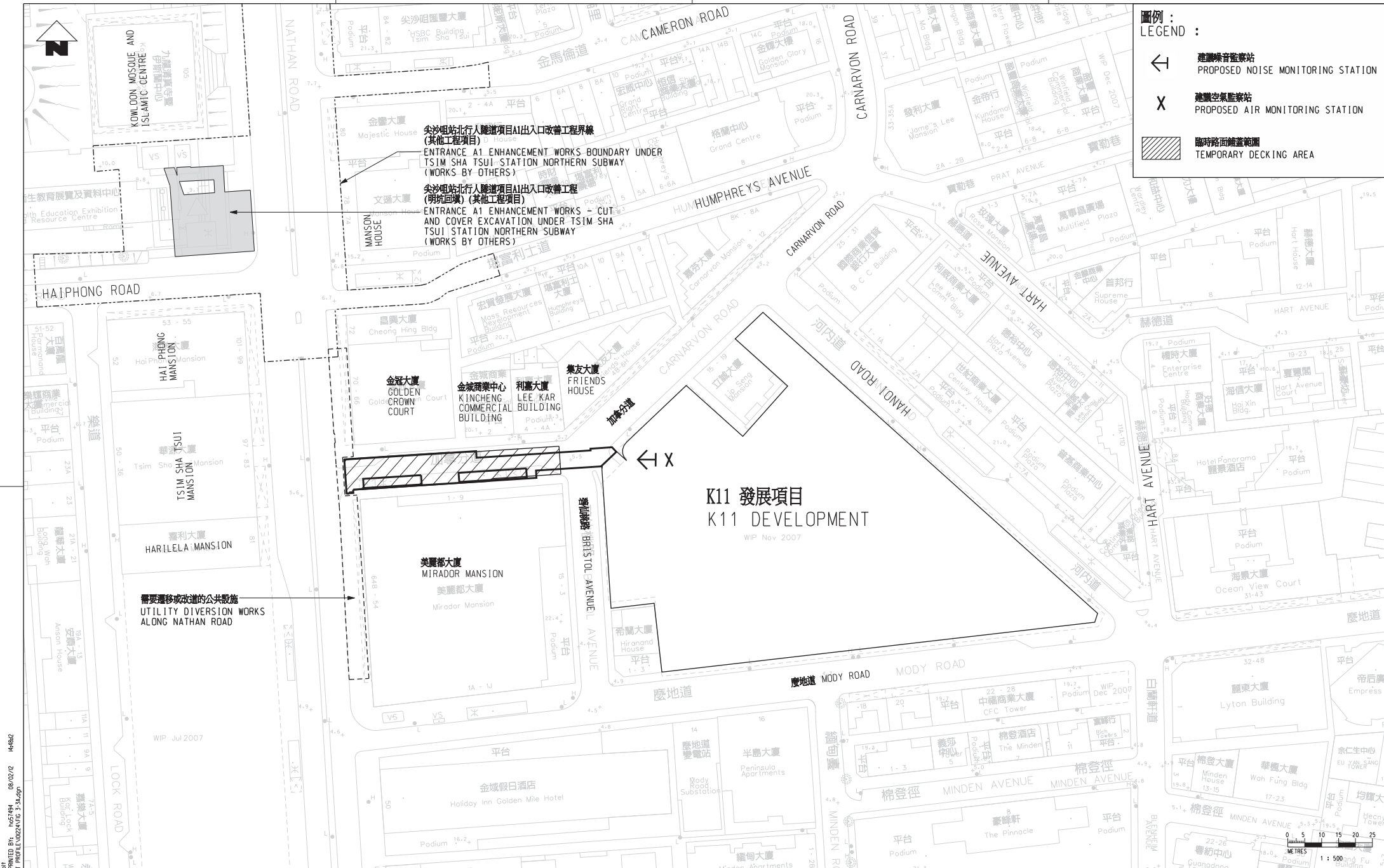
- 7.1.1 Since 21 September 2018, due to outage of the HVS and damage of the HVS during the super typhoon Mangkhut who smashed into Hong Kong on 16 September 2018, the 24-Hr TSP monitoring has been replaced by 3 x 1-Hr TSP monitoring by hand-held dust meter when the highest dust impact occurs upon agreement with the IEC, MTRC and MC.
- 7.1.2 EM&A results during the Reporting Period showed that adverse environmental impacts generated from construction activities under the Project was alleviated to acceptable levels via implementation of the environmental mitigation measures recommended in the EM&A Plan and summarised in the Implementation Schedule.
- 7.1.3 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.
- 7.1.4 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.
- 7.1.5 In addition, no remedial actions were required as no notification of summons and successful prosecutions were reported during the Reporting Period.

7.2 Recommendations

- 7.2.1 Construction under the Project has been substantially completed and Carnarvon Road has been re-opened to public since 30 December 2018.
- 7.2.2 Remaining work include reinstatement of the north-side pedestrian footpath and minor internal defect fixing works as necessary.
- 7.2.3 With implementation of the environmental mitigation measures as recommended in the EP, PP and EM&A Plan, the air quality, noise and water quality impacts to be generated from the remaining works are anticipated to be insignificant. No particular corrective or remedial measures are required.

APPENDIX A

SITE LOCATION PLAN



圖例 :
LEGEND :

- ← 建議噪音監察站
PROPOSED NOISE MONITORING STATION
- X 建議空氣監察站
PROPOSED AIR MONITORING STATION
- ▨ 臨時路面鋪蓋範圍
TEMPORARY DECKING AREA

尖沙咀站北行人隧道項目A1出入口改善工程界線
(其他工程項目)
ENTRANCE A1 ENHANCEMENT WORKS BOUNDARY UNDER
TSM SHA TSUI STATION NORTHERN SUBWAY
(WORKS BY OTHERS)

尖沙咀站北行人隧道項目A1出入口改善工程
(明坑回填) (其他工程項目)
ENTRANCE A1 ENHANCEMENT WORKS - CUT
AND COVER EXCAVATION UNDER TSM SHA
TSUI STATION NORTHERN SUBWAY
(WORKS BY OTHERS)

需要遷移或改道的公共設施
UTILITY DIVERSION WORKS
ALONG NATHAN ROAD

K11 發展項目
K11 DEVELOPMENT
WIP Nov 2007

G:\MTR_A3.BW.COL.dwg 08/02/07 44682
 PLOT 0104: FILENAME: A3202084-KV-PROJECT_PROFILE-02245103_3-1.dgn

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

DRAWN	HO
DESIGNED	--
CHECKED	--
APPROVED	--
DATE	--

MTR

TST STATION CARNARVON ROAD SUBWAY

ORIGINATOR

Mott MacDonald

30/F The Landmark, 100 Hing Fong Street, Hong Kong

In association with Hatched Architect Ltd, 8/F 80 Wing Lok Street, Hong Kong

DO NOT SCALE DIMENSIONS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.

© MTR CORPORATION LIMITED 2008. COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS RESERVED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO PART OF THIS DRAWING / DOCUMENT OR ANY PART THEREOF MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.

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**

APPENDIX B
MANAGEMENT STRUCTURE

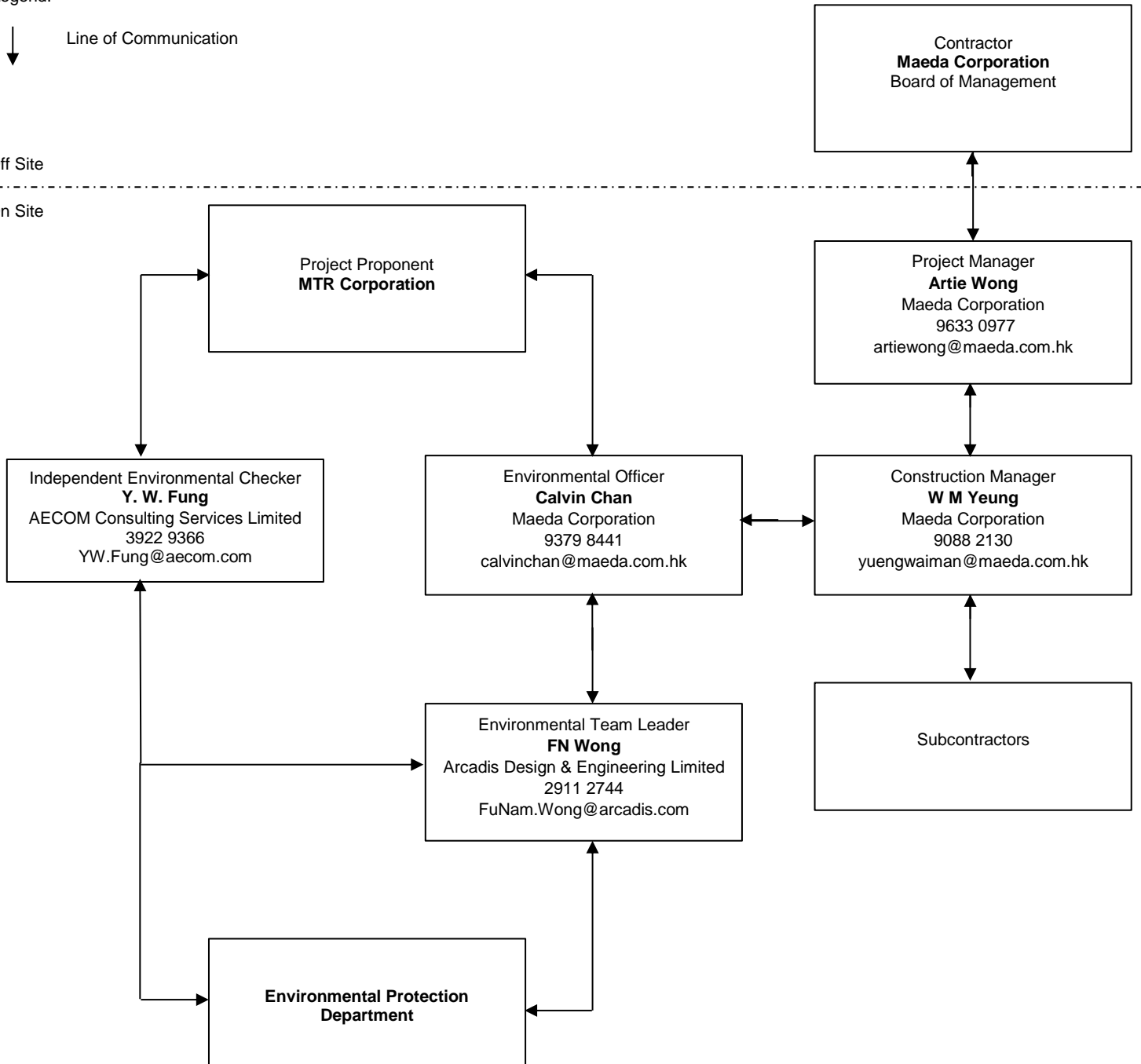
Project Organization Chart in Environmental Management (Rev.05)

Legend:

↓ Line of Communication

Off Site

On Site



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

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	2014												2015												2016												2017												2018												2019											
								O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
C3840-TD-170	Prepare Temporary Work Design	24d	0d	01-Dec-13 A	06-Jan-14 A	100%		■ Prepare Temporary Work Design																																																																							
C3840-TD-180	Design review & endorse by ICE	40d	0d	02-Jan-14 A	04-Feb-14 A	100%		■ Design review & endorse by ICE																																																																							
C3840-TD-190	Design review & comment by Eng/MTRC	28d	0d	07-Jan-14 A	21-Jan-14 A	100%		■ Design review & comment by Eng/MTRC																																																																							
C3840-TD-210	Design review & approve by Eng/MTRC	28d	0d	05-Feb-14 A	18-Mar-14 A	100%		■ Design review & approve by Eng/MTRC																																																																							
C3840-TD-220	Obtain Final Approval	0d	0d		18-Mar-14 A	100%		◆ Obtain Final Approval																																																																							
Temporary Works Design for Temporary Traffic Decking		129d	0d	18-Dec-13 A	23-Jun-14 A																																																																										
C3840-TD-230	Prepare Temporary Work Design	24d	0d	18-Dec-13 A	09-Jan-14 A	100%		■ Prepare Temporary Work Design																																																																							
C3840-TD-240	Design review & endorse by ICE	40d	0d	27-Mar-14 A	11-Jun-14 A	100%		■ Design review & endorse by ICE																																																																							
C3840-TD-250	Design review and comment by Eng/MTRC	28d	0d	10-Jan-14 A	14-Apr-14 A	100%		■ Design review and comment by Eng/MTRC																																																																							
C3840-TD-260	Design re-submission	18d	0d	01-Mar-14 A	26-Mar-14 A	100%		■ Design re-submission																																																																							
C3840-TD-270	Design review and approve by Eng/MTRC	28d	0d	27-Mar-14 A	23-Jun-14 A	100%		■ Design review and approve by Eng/MTRC																																																																							
C3840-TD-310	Obtain Final Approval	0d	0d		23-Jun-14 A	100%		◆ Obtain Final Approval																																																																							
Temporary Work Design for Utilities Supports		118d	0d	16-Dec-13 A	23-Jun-14 A																																																																										
C3840-TD-320	Prepare Temporary Work Design	24d	0d	16-Dec-13 A	09-Jan-14 A	100%		■ Prepare Temporary Work Design																																																																							
C3840-TD-330	Design review & endorse by ICE	24d	0d	27-Mar-14 A	11-Jun-14 A	100%		■ Design review & endorse by ICE																																																																							
C3840-TD-340	Design review & comment by Eng/MTRC	28d	0d	10-Jan-14 A	14-Apr-14 A	100%		■ Design review & comment by Eng/MTRC																																																																							
C3840-TD-350	Design re-submission	18d	0d	01-Mar-14 A	26-Mar-14 A	100%		■ Design re-submission																																																																							
C3840-TD-360	Design review & approve by Eng/MTRC	28d	0d	27-Mar-14 A	23-Jun-14 A	100%		■ Design review & approve by Eng/MTRC																																																																							
C3840-TD-370	Obtain Final Approval	0d	0d		23-Jun-14 A	100%		◆ Obtain Final Approval																																																																							
Demolition Plan for Existing D1, D2 and Subway		89d	0d	15-Nov-13 A	18-Mar-14 A																																																																										
C3840-DMD-100	Develop Demolition Plan, Temporary Works Design, Risk Assessment & Method Statement	24d	0d	15-Nov-13 A	24-Dec-13 A	100%		■ Develop Demolition Plan, Temporary Works Design, Risk Assessment & Method Statement																																																																							
C3840-DMD-110	Demolition plan review & endorse by ICE	24d	0d	01-Feb-14 A	06-Mar-14 A	100%		■ Demolition plan review & endorse by ICE																																																																							
C3840-DMD-120	Demolition plan review & comment by Eng/MTRC/ BD consultation	28d	0d	25-Dec-13 A	13-Jan-14 A	100%		■ Demolition plan review & comment by Eng/MTRC/ BD consultation																																																																							
C3840-DMD-130	Demolition plan re-submission	18d	0d	14-Jan-14 A	08-Mar-14 A	100%		■ Demolition plan re-submission																																																																							
C3840-DMD-140	Demolition plan review & approve by Eng/MTRC/ BD consultation	28d	0d	09-Mar-14 A	18-Mar-14 A	100%		■ Demolition plan review & approve by Eng/MTRC/ BD consultation																																																																							
C3840-DMD-190	Final approval for demolition to commence granted	0d	0d		18-Mar-14 A	100%		◆ Final approval for demolition to commence granted																																																																							
Submission/Approval for Demolition & Modification Works at Basement Wall of K11		99d	0d	18-Aug-14 A	27-Jul-15 A																																																																										
C3840-DMD-400	Develop & submit Demolition Plan	24d	0d	18-Aug-14 A	18-Sep-14 A	100%		■ Develop & submit Demolition Plan																																																																							
C3840-DMD-430	Review & comment by Eng/MTRC	28d	0d	19-Sep-14 A	23-Oct-14 A	100%		■ Review & comment by Eng/MTRC																																																																							
C3840-DMD-440	Demolition Plan re-submission	18d	0d	24-Oct-14 A	31-Oct-14 A	100%		■ Demolition Plan re-submission																																																																							
C3840-DMD-450	Review & approve by Eng/MTRC	28d	0d	01-Nov-14 A	27-Jul-15 A	100%		■ Review & approve by Eng/MTRC																																																																							
ELS Design for Tunnel (Vertical Shaft)		118d	0d	15-Oct-13 A	26-May-14 A																																																																										
C3840-ED-100	Prepare Temporary Work Design	55d	0d	15-Oct-13 A	12-Nov-13 A	100%		■ Prepare Temporary Work Design																																																																							
C3840-ED-110	Design review & endorse by ICE	40d	0d	22-Jan-14 A	12-May-14 A	100%		■ Design review & endorse by ICE																																																																							

- Current Bar
- Critical Remaining Work
- Actual Work
- Remaining Work
- Milestone

Data Date: 01-Jun-18

Master Programme Revision RMPRSA1

RMPSA1

Date	Revision	Checked	Approved
01-Jun-18		BG	AW



Contract C3840-13C

Tsim Sha Tsui Station, Carnarvon Road Subway



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	Gantt Chart (2014-2019)																																																																					
								2014													2015													2016													2017													2018													2019				
C3840-TTM-150	Final TTMS Drawings	4d	0d	31-Oct-13 A	04-Nov-13 A	100%		■ Final TTMS Drawings																																																																					
C3840-TTM-160	Eng endorse TTMS Drawings	2d	0d	05-Nov-13 A	06-Nov-13 A	100%		■ Eng endorse TTMS Drawings																																																																					
C3840-TTM-170	TTMs endorse by HKP & TD and obtain road work advice from RMO	18d	0d	07-Nov-13 A	24-Nov-13 A	100%		■ TTMs endorse by HKP & TD and obtain road work advice from RMO																																																																					
C3840-TTM-180	Obtain Gazette Notice	18d	0d	07-Nov-13 A	14-Nov-13 A	100%		■ Obtain Gazette Notice																																																																					
C3840-TTM-190	Notification to Bus Company	28d	0d	07-Nov-13 A	04-Dec-13 A	100%		■ Notification to Bus Company																																																																					
C3840-TTM-210	Relocate bus stop, trial run & TTMs implementation (road closure)	5d	0d	05-Dec-13 A	10-Dec-13 A	100%		■ Relocate bus stop, trial run & TTMs implementation (road closure)																																																																					
C3840-TTM-220	Application & Approval of TTM Schemes for Piling work for TS and C&C	42d	0d	24-Jan-14 A	13-Jun-14 A	100%		■ Application & Approval of TTM Schemes for Piling work for TS and C&C																																																																					
Excavation Permit (XP)		1581d	175d	15-Oct-13 A	30-Dec-18		0d																																																																						
C3840-XP-100	XP in hand of MTR	0d	0d	15-Oct-13 A	15-Oct-13 A	100%		◆ XP in hand of MTR																																																																					
C3840-XP-110	Transfer XP permit holder from MTR to Maeda & XP payment arrangement	15d	0d	15-Oct-13 A	31-Oct-13 A	100%		■ Transfer XP permit holder from MTR to Maeda & XP payment arrangement																																																																					
C3840-XP-130	Implement 1st XP	0d	0d	01-Nov-13 A	01-Nov-13 A	100%		◆ Implement 1st XP																																																																					
C3840-XP-140	Implement Period 1st XP	1422d	0d	01-Nov-13 A	22-Sep-17 A	100%		■ Implement Period 1st XP																																																																					
C3840-XP-150	Re-application and issue 2nd XP	180d	0d	20-Apr-17 A	09-Aug-17 A	100%		■ Re-application and issue 2nd XP																																																																					
C3840-XP-160	Implement 2nd XP	0d	0d	23-Sep-17 A	23-Sep-17 A	100%		◆ Implement 2nd XP																																																																					
C3840-XP-170	Implement Period for 2nd XP	464d	213d	23-Sep-17 A	30-Dec-18	40.95%	0d	■ Implement Period for 2nd XP																																																																					
Milestones for Cost Centre A - Preliminaries		1525d	45d	29-Aug-14 A	03-Oct-18		88d																																																																						
C3840-MS-A01	A1-Approval of PMP, S. P., ICE, ELS design for Cofferdam & temp decking	0d	0d	29-Aug-14 A	29-Aug-14 A	100%		◆ A1-Approval of PMP, S. P., ICE, ELS design for Cofferdam & temp decking																																																																					
C3840-MS-A02	A2-Approval of ELS design of mined tunnel & Eng's confirmation of satisfactory implem. of P. M.Syt.	0d	0d	28-Oct-14 A	28-Oct-14 A	100%		◆ A2-Approval of ELS design of mined tunnel & Eng's confirmation of satisfactory implem. of P. M.Syt.																																																																					
C3840-MS-A03	A3-Approval for method for demolition of K11 Diag. Wall & Eng's confirmation of satisf. implem. of S. P.	0d	0d	13-Nov-14 A	13-Nov-14 A	100%		◆ A3-Approval for method for demolition of K11 Diag. Wall & Eng's confirmation of satisf. implem. of S. P.																																																																					
C3840-MS-A04	A4- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	30-Nov-14 A	30-Nov-14 A	100%		◆ A4- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A05	A5- Eng's confirmation of satisfactory implementation of Specified Plans	0d	0d	16-Mar-15 A	16-Mar-15 A	100%		◆ A5- Eng's confirmation of satisfactory implementation of Specified Plans																																																																					
C3840-MS-A06	A6- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	19-May-15 A	19-May-15 A	100%		◆ A6- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A07	A7- Eng's confirmation of satisfactory implementation of Specified Plans	0d	0d	12-Aug-15 A	12-Aug-15 A	100%		◆ A7- Eng's confirmation of satisfactory implementation of Specified Plans																																																																					
C3840-MS-A08	A8- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	04-Jan-16 A	04-Jan-16 A	100%		◆ A8- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A09	A9- Eng's confirmation of satisfactory implementation of Specified Plans	0d	0d	15-Mar-16 A	15-Mar-16 A	100%		◆ A9- Eng's confirmation of satisfactory implementation of Specified Plans																																																																					
C3840-MS-A10	A10- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	29-May-16 A	29-May-16 A	100%		◆ A10- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A11	A11- Eng's conf. of satisf. implem. of S. P. and approval of all procedures for T&C of BS & ABWF works	0d	0d	26-May-17 A	26-May-17 A	100%		◆ A11- Eng's conf. of satisf. implem. of S. P. and approval of all procedures for T&C of BS & ABWF works																																																																					
C3840-MS-A12	A12- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	27-Nov-16 A	27-Nov-16 A	100%		◆ A12- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A13	A13- Eng's confirmation of satisfactory implementation of Specified Plans	0d	0d	26-Feb-17 A	26-Feb-17 A	100%		◆ A13- Eng's confirmation of satisfactory implementation of Specified Plans																																																																					
C3840-MS-A14	A14- Eng's confirmation of satisfactory implementation of Programming Management System	0d	0d	28-May-17 A	28-May-17 A	100%		◆ A14- Eng's confirmation of satisfactory implementation of Programming Management System																																																																					
C3840-MS-A15	A15- Approval in principle of draft O&M Manuals and draft As-built Drwgs. for Whole of the Works	0d	0d	19-Aug-18	19-Aug-18	0%	133d	◆ A15- Approval in principle of draft O&M Manuals and draft As-built Drwgs. for Whole of the Works																																																																					
C3840-MS-A16	A16- Approval in principle of O&M Manuals and As-built Drwgs. for Whole of the Works	0d	0d	03-Oct-18	03-Oct-18	0%	88d	◆ A16- Approval in principle of O&M Manuals and As-built Drwgs. for Whole of the Works																																																																					
Carnarvon Road Subway and Entrances		1352d	122d	14-Oct-13 A	26-Oct-18		53d																																																																						
Instrumentation		52d	0d	16-Dec-13 A	02-Apr-14 A																																																																								

- Current Bar
- Critical Remaining Work
- Actual Work
- Remaining Work
- ◆ Milestone

Data Date: 01-Jun-18

Page 6 of 26

Master Programme Revision RMPRSA1

RMPRSA1			
Date	Revision	Checked	Approved
01-Jun-18		BG	AW



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



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	Gantt Chart (2014-2019)																																																																					
								2014													2015													2016													2017													2018													2019				
C3840-INS-10	Prepare & submit instrumentation/monitoring plan for approval of Eng	28d	0d	16-Dec-13 A	28-Jan-14 A	100%		■ Prepare & submit instrumentation/monitoring plan for approval of Eng																																																																					
C3840-INS-20	Eng approve instrumentation/monitoring plan	7d	0d	29-Jan-14 A	05-Feb-14 A	100%		■ Eng approve instrumentation/monitoring plan																																																																					
C3840-INS-30	Installation of instrumentations	12d	0d	07-Jan-14 A	25-Feb-14 A	100%		■ Installation of instrumentations																																																																					
C3840-INS-40	Initial reading and agreement with Eng	14d	0d	24-Feb-14 A	30-Mar-14 A	100%		■ Initial reading and agreement with Eng																																																																					
C3840-INS-50	Commence regular monitoring	0d	0d	02-Apr-14 A		100%		◆ Commence regular monitoring																																																																					
Utility Diversion		1292d	0d	14-Oct-13 A	12-Dec-15 A																																																																								
C3840-UTD-010	Utility Detection Survey incl. prepare survey report	12d	0d	02-Nov-13 A	11-Dec-13 A	100%		■ Utility Detection Survey incl. prepare survey report																																																																					
C3840-UTD-030	Notification to Utility Companies and 1st ULG meeting	46d	0d	14-Oct-13 A	28-Nov-13 A	100%		■ Notification to Utility Companies and 1st ULG meeting																																																																					
C3840-UTD-040	Relocation of mail box	8d	0d	29-Nov-13 A	06-Dec-13 A	100%		■ Relocation of mail box																																																																					
C3840-UTD-110	Relocation of Telephone Kiosk by PCCW	40d	0d	23-Dec-13 A	08-Jan-14 A	100%		■ Relocation of Telephone Kiosk by PCCW																																																																					
C3840-UTD-290	Diversion of Gasmain crossing tunnel shaft	57d	0d	13-Feb-14 A	26-Mar-14 A	100%		■ Diversion of Gasmain crossing tunnel shaft																																																																					
C3840-UTD-295	Exposure & temporary support to underground gasmain and cable duct at TS	64d	0d	11-Mar-15 A	30-Jun-15 A	100%		■ Exposure & temporary support to underground gasmain and cable duct at TS																																																																					
C3840-UTD-320	Exposure & slewing of underground utilities for driving pipe piles except D2 area	57d	0d	13-Feb-14 A	31-Oct-14 A	100%		■ Exposure & slewing of underground utilities for driving pipe piles except D2 area																																																																					
C3840-UTD-335	Temporary Diversion of existing watermain that clash with temp. staircase	40d	0d	28-May-15 A	17-Jul-15 A	100%		■ Temporary Diversion of existing watermain that clash with temp. staircase																																																																					
C3840-UTD-360	Removal of Street Lighting Post near D2	57d	0d	13-Feb-14 A	23-May-14 A	100%		■ Removal of Street Lighting Post near D2																																																																					
C3840-UTD-455	Exposure & slewing of underground utilities for driving pipe piles at D2 area	51d	0d	07-Oct-15 A	12-Dec-15 A	100%		■ Exposure & slewing of underground utilities for driving pipe piles at D2 area																																																																					
Remove Existing Escalator by Specialist Contractor		109d	0d	01-Mar-16 A	05-Aug-16 A																																																																								
C3840-ESC-110	Appoint Specialist Contractor	0d	0d		11-Mar-16 A	100%		◆ Appoint Specialist Contractor																																																																					
C3840-ESC-120	Prepare method statement & delivery route for removal of exist. Escalator	6d	0d	01-Mar-16 A	11-Mar-16 A	100%		■ Prepare method statement & delivery route for removal of exist. Escalator																																																																					
C3840-ESC-130	Eng review and approve method statement & delivery route for removal of exist. Escalator	21d	0d	12-Mar-16 A	02-Jun-16 A	100%		■ Eng review and approve method statement & delivery route for removal of exist. Escalator																																																																					
C3840-ESC-140	Liaise with maintenance Contractor via. Eng and submit Form EL3 to EMSD	6d	0d	06-Apr-16 A	06-Jul-16 A	100%		■ Liaise with maintenance Contractor via. Eng and submit Form EL3 to EMSD																																																																					
C3840-ESC-150	EMSD/MTRC decommission existing escalator	3d	0d	06-Jul-16 A	06-Jul-16 A	100%		■ EMSD/MTRC decommission existing escalator																																																																					
C3840-ESC-152	MTR's testing on Existing Escalator	2d	0d	07-Jul-16 A	08-Jul-16 A	100%		■ MTR's testing on Existing Escalator																																																																					
C3840-ESC-160	Remove existing escalator	14d	0d	11-Jul-16 A	05-Aug-16 A	100%		■ Remove existing escalator																																																																					
Open Cut Sequence 1 (Advance Ground Works & Piling Works)		778d	0d	13-Nov-13 A	30-Sep-16 A																																																																								
Advance Ground Works		113d	0d	13-Nov-13 A	24-Jul-14 A																																																																								
C3840-AGW-010	Site clearance	24d	0d	13-Nov-13 A	10-Dec-13 A	100%		■ Site clearance																																																																					
C3840-AGW-020	Trial Pit/trench excavation	69d	0d	14-Nov-13 A	31-Mar-14 A	100%		■ Trial Pit/trench excavation																																																																					
C3840-AGW-030	Temporary Hoarding Erection	15d	0d	11-Dec-13 A	30-Dec-13 A	100%		■ Temporary Hoarding Erection																																																																					
C3840-AGW-040	Pre-drilling works	24d	0d	30-Dec-13 A	24-Jan-14 A	100%		■ Pre-drilling works																																																																					
C3840-AGW-050	Permanent Hoarding Erection	25d	0d	28-Feb-14 A	08-Apr-14 A	100%		■ Permanent Hoarding Erection																																																																					
C3840-AGW-070	Joint Survey & Remove existing BS & ABWF Services	6d	0d	01-Feb-14 A	22-Feb-14 A	100%		■ Joint Survey & Remove existing BS & ABWF Services																																																																					
C3840-AGW-080	Close D1 & Construct Flood Barrier at D1	9d	0d	23-Feb-14 A	27-Feb-14 A	100%		■ Close D1 & Construct Flood Barrier at D1																																																																					
C3840-AGW-100	Demolish D1 above GL	12d	0d	18-Mar-14 A	24-Apr-14 A	100%		■ Demolish D1 above GL																																																																					

■ Current Bar ■ Critical Remaining Work
■ Actual Work ◆ Milestone
■ Remaining Work

Data Date: 01-Jun-18

Page 7 of 26

Master Programme Revision RMPRSA1

RMPRSA1

Date	Revision	Checked	Approved
01-Jun-18		BG	AW



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



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	Gantt Chart (2014-2019)																																																			
								2014	2015	2016	2017	2018	2019																																														
C3840-ETS-099	Mobilization: Curtain Grouting Rig	1d	0d	13-Dec-14 A	13-Dec-14 A	100%		I Mobilization: Curtain Grouting Rig																																																			
C3840-ETS-101	Demobilization: Curtain Grouting Rig	1d	0d	14-Dec-14 A	14-Dec-14 A	100%		I Demobilization: Curtain Grouting Rig																																																			
C3840-ETS-102	Demobilization: Piling Rig	1d	0d	25-Feb-15 A	25-Feb-15 A	100%		I Demobilization: Piling Rig																																																			
C3840-ETS-110	56 nos. pipe piles along Grid Line B	25d	0d	24-Jul-14 A	11-Dec-14 A	100%		■ 56 nos. pipe piles along Grid Line B																																																			
C3840-ETS-120	Curtain Grouting along Grid Line B	13d	0d	30-Sep-14 A	26-Jan-15 A	100%		■ Curtain Grouting along Grid Line B																																																			
Piles & Grouting for Remaining Section of Cofferdam at D2		63d	0d	17-Aug-16 A	30-Sep-16 A																																																						
C3840-ECD-010	Mobilization for Piling Rig and Setup	4d	0d	17-Aug-16 A	18-Aug-16 A	100%		I Mobilization for Piling Rig and Setup																																																			
C3840-ECD-012	Construct 2 nos. king posts	2d	0d	19-Aug-16 A	23-Aug-16 A	100%		■ Construct 2 nos. king posts																																																			
C3840-ECD-020	Construct 22 nos. pipe piles at D2	22d	0d	25-Aug-16 A	17-Sep-16 A	100%		■ Construct 22 nos. pipe piles at D2																																																			
C3840-ECD-021	Construct 5 nos. pipe piles between Grids 1 & 2	7d	0d	19-Sep-16 A	26-Sep-16 A	100%		■ Construct 5 nos. pipe piles between Grids 1 & 2																																																			
C3840-ECD-022	Demobilize piling rig and mobilize & setup curtain grouting rig	2d	0d	19-Sep-16 A	20-Sep-16 A	100%		I Demobilize piling rig and mobilize & setup curtain grouting rig																																																			
C3840-ECD-030	Curtain Grouting along Grid Line B at D2	8d	0d	21-Sep-16 A	30-Sep-16 A	100%		■ Curtain Grouting along Grid Line B at D2																																																			
Open Cut Sequence 2 (Excavation for Temporary Staircase)		1281d	0d	26-Jan-14 A	01-Aug-18		124d																																																				
Excavation		209d	0d	12-Feb-15 A	02-Nov-15 A																																																						
C3840-EXC-100	Pump test prior to excavate for temporary staircase	24d	0d	12-Feb-15 A	18-Feb-15 A	100%		■ Pump test prior to excavate for temporary staircase																																																			
C3840-TSE-10	Demolish temporary D1 & investigation of extent and nature of artificial obstruction	66d	0d	26-Feb-15 A	19-May-15 A	100%		■ Demolish temporary D1 & investigation of extent and nature of artificial obstruction																																																			
C3840-TSE-12	Excavate (+5.5mPD to +4.7mPD), install waling/strut (L1), traffic deck & partially remove unknown obstruction	35d	0d	26-Feb-15 A	11-Apr-15 A	100%		■ Excavate (+5.5mPD to +4.7mPD), install waling/strut (L1), traffic deck & partially remove unknown obstruction																																																			
C3840-TSE-14	Excavate 2nd layer (+4.7mPD to +1.7mPD) install waling L1A/L1B & partially remove unknown obstruction	23d	0d	13-Apr-15 A	09-May-15 A	100%		■ Excavate 2nd layer (+4.7mPD to +1.7mPD) install waling L1A/L1B & partially remove unknown obstruction																																																			
C3840-TSE-16	Flame cut existing encasing sheetpiles up to +1.7mPD	16d	0d	06-May-15 A	23-May-15 A	100%		■ Flame cut existing encasing sheetpiles up to +1.7mPD																																																			
C3840-TSE-18	Lagging between pipe piles and preparation works for waterproofing to +1.7mPD	18d	0d	14-May-15 A	05-Jun-15 A	100%		■ Lagging between pipe piles and preparation works for waterproofing to +1.7mPD																																																			
C3840-TSE-20	Existing concrete infill removal up to +1.7mPD	12d	0d	21-May-15 A	04-Jun-15 A	100%		■ Existing concrete infill removal up to +1.7mPD																																																			
C3840-TSE-22	Waling & strut installation L2	9d	0d	01-Jun-15 A	10-Jun-15 A	100%		■ Waling & strut installation L2																																																			
C3840-TSE-24	Excavation from +1.7mPD to -0.87mPD	13d	0d	05-Jun-15 A	19-Jun-15 A	100%		■ Excavation from +1.7mPD to -0.87mPD																																																			
C3840-TSE-26	Flame cut existing encasing sheetpiles up to -0.87mPD	7d	0d	09-Jun-15 A	16-Jun-15 A	100%		■ Flame cut existing encasing sheetpiles up to -0.87mPD																																																			
C3840-TSE-28	Existing concrete infill & RC wall removal up to -0.87mPD	13d	0d	12-Jun-15 A	27-Jun-15 A	100%		■ Existing concrete infill & RC wall removal up to -0.87mPD																																																			
C3840-TSE-30	Lagging between pipe piles and preparation works for waterproofing to -0.87mPD	23d	0d	16-Jun-15 A	14-Jul-15 A	100%		■ Lagging between pipe piles and preparation works for waterproofing to -0.87mPD																																																			
C3840-TSE-31	Excavate up to +4.2mPD at C&C (grid 2-4) & install traffic deck	34d	0d	22-Jun-15 A	31-Jul-15 A	100%		■ Excavate up to +4.2mPD at C&C (grid 2-4) & install traffic deck																																																			
C3840-TSE-32	Excavation from -0.87mPD to -2.2mPD	18d	0d	16-Jul-15 A	05-Aug-15 A	100%		■ Excavation from -0.87mPD to -2.2mPD																																																			
C3840-TSE-34	Flame cut existing encasing sheetpiles up to -3.3mPD	15d	0d	20-Jul-15 A	05-Aug-15 A	100%		■ Flame cut existing encasing sheetpiles up to -3.3mPD																																																			
C3840-TSE-36	Existing concrete infill & RC wall removal up to -3.3mPD	12d	0d	30-Jul-15 A	12-Aug-15 A	100%		■ Existing concrete infill & RC wall removal up to -3.3mPD																																																			
C3840-TSE-38	Lagging between pipe piles and preparation works for waterproofing to -3.3mPD	9d	0d	10-Aug-15 A	19-Aug-15 A	100%		■ Lagging between pipe piles and preparation works for waterproofing to -3.3mPD																																																			
C3840-TSE-40	Waling & strut installation L3	6d	0d	13-Aug-15 A	19-Aug-15 A	100%		■ Waling & strut installation L3																																																			
C3840-TSE-42	Excavation (grid 1-2) up to -3.3mPD	8d	0d	25-Aug-15 A	02-Sep-15 A	100%		■ Excavation (grid 1-2) up to -3.3mPD																																																			
C3840-TSE-44	Flame cut existing encasing sheetpiles up to -3.3mPD	6d	0d	28-Aug-15 A	04-Sep-15 A	100%		■ Flame cut existing encasing sheetpiles up to -3.3mPD																																																			

■ Current Bar ■ Critical Remaining Work
■ Actual Work ◆ Milestone
■ Remaining Work

Data Date: 01-Jun-18

Page 9 of 26

Master Programme Revision RMPRSA1

RMPRSA1

Date	Revision	Checked	Approved
01-Jun-18		BG	AW



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



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	2014												2015												2016												2017												2018												2019																							
								O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S
Bay 15 (Walls up to +1.25mPD)																																																																																											
C3840-TSR-580	Remove platform & strike fwk, propping, water proofing, re-bar fixing, fwk suttering & concreting (20m3)	13d	0d	23-Dec-15 A	07-Jan-16 A	100%		■ Remove platform & strike fwk, propping, water proofing, re-bar fixing, fwk suttering & concreting (20m3)																																																																																			
Bay 16 (Walls & Roof Slab)																																																																																											
C3840-TSR-590	Remove fwk, form cj, install WPS, remove L2, re-propping & erect falsework	5d	0d	08-Jan-16 A	16-Jan-16 A	100%		■ Remove fwk, form cj, install WPS, remove L2, re-propping & erect falsework																																																																																			
C3840-TSR-595	Construct wall & roof slab (31.5m3)	14d	0d	18-Jan-16 A	23-Jan-16 A	100%		■ Construct wall & roof slab (31.5m3)																																																																																			
C3840-TSR-600	Concrete curing, coring, saw cut & breakthrough, removal of scaffold/falsework/fw, repropping	13d	0d	25-Jan-16 A	13-Feb-16 A	100%		■ Concrete curing, coring, saw cut & breakthrough, removal of scaffold/falsework/fw, repropping																																																																																			
Bays 17 and 18b (Stairs up to 2nd Landing)																																																																																											
C3840-TSR-585	Construct staircase (8.0m3)	7d	0d	15-Feb-16 A	20-Feb-16 A	100%		■ Construct staircase (8.0m3)																																																																																			
Construction of Refuse Bin																																																																																											
C3840-TSR-604	Construct Refuse Bin	7d	0d	03-Mar-16 A	12-Mar-16 A	100%		■ Construct Refuse Bin																																																																																			
Milestones for Cost Centre D - Temporary Entrance																																																																																											
C3840-MS-D01	D1 - Comp. removal of all overhead signs affecting Works for the Temp. Entrance	0d	0d	26-Jan-14 A	01-Aug-18	100%	151d	◆ D1 - Comp. removal of all overhead signs affecting Works for the Temp. Entrance																																																																																			
C3840-MS-D02	D2-Comp. 20% of cofferdam for T. E. and all U/G UU diversion/protection for T.E. cofferdam	0d	0d	06-Sep-14 A		100%		◆ D2-Comp. 20% of cofferdam for T. E. and all U/G UU diversion/protection for T.E. cofferdam																																																																																			
C3840-MS-D03	D3 - Comp. temp. cofferdam and grouting (excl. satisf. comp. of pump test)	0d	0d	18-Feb-15 A		100%		◆ D3 - Comp. temp. cofferdam and grouting (excl. satisf. comp. of pump test)																																																																																			
C3840-MS-D04	D4-Comp. 66% const. of temp. stair measured by vol. of conc. poured & comp. form. open. into TST Stn	0d	0d	13-Feb-16 A		100%		◆ D4-Comp. 66% const. of temp. stair measured by vol. of conc. poured & comp. form. open. into TST Stn																																																																																			
C3840-MS-D05	D5-Open Temporary Entrance for use	0d	0d	06-Jul-16 A		100%		◆ D5-Open Temporary Entrance for use																																																																																			
C3840-MS-D06	D6-Comp. demolition of Temp. Entrance and disposal of all C&D waste arising there from	0d	0d	01-Aug-18		0%	151d	◆ D6-Comp. demolition of																																																																																			
Open Cut Sequence 3 (Advance Ground Works at D2 & in front of D1)																																																																																											
C3840-ELS-400	Expose underground UUs and provide support to UUs; at grid 1-4	132d	0d	17-Nov-15 A	30-Apr-16 A	100%		■ Expose underground UUs and provide support to UUs; at grid 1-4																																																																																			
C3840-ELS-410	Expose existing sewer & strom drainage/trim concrete surround for PCCW cable ducts & 1st lift of PCCW cable ducts	36d	0d	03-May-16 A	16-Jun-16 A	100%		■ Expose existing sewer & strom drainage/trim concrete surround for PCCW cable ducts & 1st lift of PCCW cable ducts																																																																																			
C3840-ELS-420	Re-arrange existing sewer & strom drainage/ 2nd lift of PCCW cable ducts & provide support to cable ducts	50d	0d	17-Jun-16 A	09-Sep-16 A	100%		■ Re-arrange existing sewer & strom drainage/ 2nd lift of PCCW cable ducts & provide support to cable ducts																																																																																			
C3840-ELS-430	Partial demolition of existing subway slab and coring through for two nos. king posts	12d	0d	28-Jul-16 A	18-Aug-16 A	100%		■ Partial demolition of existing subway slab and coring through for two nos. king posts																																																																																			
C3840-ELS-450	Partial demolition of existing subway slab and coring through existing subway for piling PP175 to PP179	12d	0d	12-Sep-16 A	17-Sep-16 A	100%		■ Partial demolition of existing subway slab and coring through existing subway for piling PP175 to PP179																																																																																			
C3840-ELS-510	Joint Survey & Remove existing BS & ABWF Services at D2	6d	0d	07-Jul-16 A	16-Jul-16 A	100%		■ Joint Survey & Remove existing BS & ABWF Services at D2																																																																																			
C3840-ELS-520	Erect FRP hoarding and flood gate/scaffolding platform for demolish D2	9d	0d	12-Jul-16 A	26-Jul-16 A	100%		■ Erect FRP hoarding and flood gate/scaffolding platform for demolish D2																																																																																			
C3840-ELS-530	Demolish D2 above GL	12d	0d	14-Jul-16 A	09-Aug-16 A	100%		■ Demolish D2 above GL																																																																																			
C3840-ELS-540	Erect piling platform and shift hoarding	6d	0d	10-Aug-16 A	20-Aug-16 A	100%		■ Erect piling platform and shift hoarding																																																																																			
Open Cut Sequence 4 (Excavation for Subway in front of D1)																																																																																											
C3840-ELSD1-102	Install support beam, load transfer & remove concrete support at grid 2	8d	0d	31-Jul-16 A	14-Sep-16 A	100%		■ Install support beam, load transfer & remove concrete support at grid 2																																																																																			
C3840-ELSD1-115	Complete excavation up to +1.0mPD including vertical blinding/install L2 & struts	74d	0d	03-Oct-16 A	11-Jan-17 A	100%		■ Complete excavation up to +1.0mPD including vertical blinding/install L2 & struts																																																																																			
C3840-ELSD1-145	Remove existing subway 7.5m below G.L. and excavate to L3 (-2.0mPD) with unforeseen infill	29d	0d	28-Dec-16 A	04-Mar-17 A	100%		■ Remove existing subway 7.5m below G.L. and excavate to L3 (-2.0mPD) with unforeseen infill																																																																																			
C3840-ELSD1-155	Vertical blinding up to L3	8d	0d	09-Jan-17 A	27-Feb-17 A	100%		■ Vertical blinding up to L3																																																																																			
C3840-ELSD1-165	Install waling and strut for L3	6d	0d	25-Jan-17 A	17-Mar-17 A	100%		■ Install waling and strut for L3																																																																																			
C3840-ELSD1-175	Remove existing subway 10.6m below G.L. and excavate to L4 (-5.3mPD) with unforeseen infill	29d	0d	14-Feb-17 A	31-Mar-17 A	100%		■ Remove existing subway 10.6m below G.L. and excavate to L4 (-5.3mPD) with unforeseen infill																																																																																			

■ Current Bar ■ Critical Remaining Work
■ Actual Work ◆ Milestone
■ Remaining Work

Data Date: 01-Jun-18

Page 12 of 26

Master Programme Revision RMPRSA1

RMPRSA1			
Date	Revision	Checked	Approved
01-Jun-18		BG	AW

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	2014 2015 2016 2017 2018 2019																											
								2014							2015							2016							2017						
C3840-PWDC-230	Detailed design review & comment by Eng/MTRC	28d	0d	23-Jun-17 A	16-Oct-17 A	100%		Detailed design review & comment by Eng/MTRC																											
C3840-PWDC-240	Detailed design submission to BD Consultation	6d	0d	11-Oct-17 A	11-Oct-17 A	100%		Detailed design submission to BD Consultation																											
C3840-PWDC-250	Detailed design review & approve by Eng/MTRC/BD	44d	0d	12-Oct-17 A	05-Feb-18 A	100%		Detailed design review & approve by Eng/MTRC/BD																											
C3840-PWDC-270	Issue Working Drawings for Construction	6d	0d	13-Nov-17 A	05-Feb-18 A	100%		Issue Working Drawings for Construction																											
BS Works at TST Station		234d	0d	19-Dec-14 A	31-May-18 A																														
C3840-BST-140	Cable containment work for Substation #4 inside TST Station (Night Time Work)	7d	0d	19-Dec-14 A	30-Dec-14 A	100%		Cable containment work for Substation #4 inside TST Station (Night Time Work)																											
C3840-BST-150	Cable containment & pipe work for SCR inside Station (Night Time Work)	114d	0d	18-Jul-17 A	08-Dec-17 A	100%		Cable containment & pipe work for SCR inside Station (Night Time Work)																											
C3840-BST-180	Cable laying inside Station (Night Time Work)	24d	0d	26-Jan-18 A	09-Feb-18 A	100%		Cable laying inside Station (Night Time Work)																											
C3840-BST200	Submit T&C Record	2d	0d	20-Nov-17 A	31-May-18 A	100%		Submit T&C Record																											
BS & ABWF Works at D2 Entrance including at By Pass Corridor		47d	0d	02-Jan-18 A	26-May-18 A																														
C3840-BSD2-110	BS 1st Fix	24d	0d	08-Jan-18 A	07-Apr-18 A	100%		BS 1st Fix																											
C3840-BSD2-120	BS 2nd Fix	24d	0d	05-Feb-18 A	30-Apr-18 A	100%		BS 2nd Fix																											
C3840-BSD2-130	ABWF Works to Deg. 1 & 2 Completion including installation for SS steelwork	24d	0d	02-Jan-18 A	14-Apr-18 A	100%		ABWF Works to Deg. 1 & 2 Completion																											
C3840-BSD2-135	ABWF Works to Deg. 3 Completion	24d	0d	15-Jan-18 A	26-May-18 A	100%		ABWF Works to Deg. 3 Completion																											
BS & ABWF Works at Subway Conc. Level, including at Plant Room & D3		180d	11d	23-Oct-17 A	13-Jun-18		2d																												
C3840-BSS-100	BS 1st Fix	90d	0d	02-Nov-17 A	14-Apr-18 A	100%		BS 1st Fix																											
C3840-BSS-110	BS 2nd Fix	40d	5d	01-Feb-18 A	06-Jun-18	99%	5d	BS 2nd Fix																											
C3840-BSS-120	ABWF Works to Deg. 1 & 2 Completion	80d	0d	23-Oct-17 A	24-Apr-18 A	100%		ABWF Works to Deg. 1 & 2 Completion																											
C3840-BSS-125	ABWF Works to Deg. 3 Completion	40d	11d	02-Jan-18 A	13-Jun-18	98%	2d	ABWF Works to Deg. 3 Completion																											
BS & ABWF Works at Mid Landing Level including TER Rooms		120d	0d	18-Dec-17 A	31-May-18 A																														
C3840-BSM-100	BS 1st Fix	56d	0d	02-Jan-18 A	21-Apr-18 A	100%		BS 1st Fix																											
C3840-BSM-110	BS 2nd Fix	40d	0d	01-Feb-18 A	30-Apr-18 A	100%		BS 2nd Fix																											
C3840-BSM-120	Complete all BS works in TER	0d	0d		18-Apr-18 A	100%		Complete all BS works in TER																											
C3840-BSM-130	Complete all BS works in Electrical Room & Power On for New MCB Board	0d	0d		08-May-18 A	100%		Complete all BS works in Electrical Room																											
C3840-BSM-140	ABWF Works to Deg. 1 & 2 Completion	40d	0d	18-Dec-17 A	14-Apr-18 A	100%		ABWF Works to Deg. 1 & 2 Completion																											
C3840-BSM-150	ABWF Works to Deg. 3 Completion	40d	0d	15-Jan-18 A	31-May-18 A	100%		ABWF Works to Deg. 3 Completion																											
T&C and Statutory Inspections Prior to Open Entrances D2/D3 for Public Use		25d	24d	05-Feb-18 A	29-Jun-18		0d																												
C3840-BSM-160	Testing & Commissioning including issuance of FSD Form 501 for completion of FSD works	24d	8d	05-Feb-18 A	09-Jun-18	50%	4d	Testing & Commissioning including issuance of FSD Form 501																											
C3840-BSM-170	Operational Team and all Statutory inspections / obtain compliance certificates	24d	24d	15-May-18 A	29-Jun-18	20%	0d	Operational Team and all Statutory inspections / obtain compliance certificates																											
BS & ABWF Works at D1 Entrance		38d	38d	01-Sep-18	18-Oct-18		60d																												
C3840-BSD1-130	BS 1st Fix	24d	24d	11-Sep-18	10-Oct-18	0%	0d	BS 1st Fix																											
C3840-BSD1-140	BS 2nd Fix	18d	18d	26-Sep-18	18-Oct-18	0%	0d	BS 2nd Fix																											
C3840-BSD1-150	ABWF Works to Deg. 1 & 2 Completion including installation of SS steelwork	24d	24d	01-Sep-18	29-Sep-18	0%	0d	ABWF Works to Deg. 1 & 2 Completion																											
C3840-BSD1-155	ABWF Works to Deg. 3 Completion	18d	18d	22-Sep-18	15-Oct-18	0%	62d	ABWF Works to Deg. 3 Completion																											

█ Current Bar
█ Actual Work
█ Remaining Work
█ Critical Remaining Work
◆ Milestone

Data Date: 01-Jun-18

RMPSA1

Date	Revision	Checked	Approved
01-Jun-18		BG	AW



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



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	% Complete	Total Float	2014												2015												2016												2017												2018												2019																																																																																									
								O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D																																																																											
T&C and Statutory Inspection Prior to Open Entrance D1 for Public Use								24d	24d	26-Sep-18	25-Oct-18		0d																																																																																																																																																
C3840-BSD1-170	T&C With Operation Inspection	24d	24d	26-Sep-18	25-Oct-18	0%	0d																																																																																																																																																						
Operational & Maintenance Manuals, As-built Drawings, Design Data								114d	103d	02-May-18 A	03-Oct-18		19d																																																																																																																																																
C3840-OD-1000	Prepare and submit 1st draft of O&M Manuals as per PS 18	30d	0d	02-May-18 A	22-May-18 A	100%																																																																																																																																																							
C3840-OD-1010	Eng review, comment & approve draft O&M Manuals as per PS 18	56d	40d	23-May-18 A	10-Jul-18	20%	43d																																																																																																																																																						
C3840-OD-1020	Prepare and submit final version of O&M Manuals as per PS 18	15d	15d	11-Jul-18	25-Jul-18	0%	43d																																																																																																																																																						
C3840-OD-1030	Eng approve final version of O&M Manuals as per PS 18	50d	50d	26-Jul-18	13-Sep-18	0%	43d																																																																																																																																																						
C3840-OD-1040	Prepare and submit draft as-built Drawings as per PS 18	30d	30d	14-Jun-18	20-Jul-18	0%	19d																																																																																																																																																						
C3840-OD-1050	Eng review, comment & approve draft as-built Drawings as per PS 18	30d	30d	21-Jul-18	19-Aug-18	0%	23d																																																																																																																																																						
C3840-OD-1060	Prepare and submit final as-built Drawings as per PS 18	15d	15d	20-Aug-18	03-Sep-18	0%	23d																																																																																																																																																						
C3840-OD-1070	Eng approve As-built Drawings as per PS 18	30d	30d	04-Sep-18	03-Oct-18	0%	23d																																																																																																																																																						
Milestones for Cost Centre C - Building Services								1304d	0d	10-Nov-14 A	29-Jun-18		184d																																																																																																																																																
C3840-MS-C01	C1- Approval of detailed designs for BS works, suppliers/models/types of BS equip./mat. & SD for T. E.	0d	0d		10-Nov-14 A	100%		◆ C1- Approval of detailed designs for BS works, suppliers/models/types of BS equip./mat. & SD for T. E.																																																																																																																																																					
C3840-MS-C02	C2- Approval in principle of all BS Shop Drwgs	0d	0d		10-Nov-14 A	100%		◆ C2- Approval in principle of all BS Shop Drwgs																																																																																																																																																					
C3840-MS-C03	C3- Comp. placing all orders for all major BS equipment & materials	0d	0d		16-Mar-15 A	100%		◆ C3- Comp. placing all orders for all major BS equipment & materials																																																																																																																																																					
C3840-MS-C04	C4- Comp. all factory acceptance testing	0d	0d		22-Jan-18 A	100%		◆ C4- Comp. all factory acceptance testing																																																																																																																																																					
C3840-MS-C05	C5- Comp. delivery to site of all major equipment for the basement E&M plant room	0d	0d		29-Jan-18 A	100%		◆ C5- Comp. delivery to site of all major equipm																																																																																																																																																					
C3840-MS-C06	C6- Comp. T&C/all statutory & operational team inspections for New Entrance D2	0d	0d		29-Jun-18	0%	184d	◆ C6- Comp. T&C/all statutor																																																																																																																																																					
C3840-MS-C07	C7- Comp. T&C/all statutory & operanal team inspection for new Entrance D3 and Subway	0d	0d		29-Jun-18	0%	184d	◆ C7- Comp. T&C/all statutor																																																																																																																																																					
DSD Entrusted Drainage Works - Option								1119d	44d	20-Dec-13 A	24-Jul-18		131d																																																																																																																																																
Submissions								1368d	0d	20-Dec-13 A	14-May-18 A																																																																																																																																																		
C3840-ENT-010	Engineer Exercise Option 1 (Assume 1 year after Contract Commence)	0d	0d		08-Oct-14 A	100%		◆ Engineer Exercise Option 1 (Assume 1 year after Contract Commence)																																																																																																																																																					
C3840-ENT-020	Material submission & get approval from MTRC	60d	0d	18-Apr-18 A	14-May-18 A	100%		■ Material submission & get approv																																																																																																																																																					
C3840-ENT-030	Proposed procedures for diversion agreed during meeting held on 20 Dec 13	0d	0d		20-Dec-13 A	100%		◆ Proposed procedures for diversion agreed during meeting held on 20 Dec 13																																																																																																																																																					
DSD Entrusted Sewage Works								604d	44d	26-Jul-16 A	24-Jul-18		78d																																																																																																																																																
C3840-ENT-070	Temporary diversion of existing flows	18d	0d	26-Jul-16 A	09-Nov-16 A	100%		■ Temporary diversion of existing flows																																																																																																																																																					
C3840-ENT-080	Construct 4 nos. manholes and pipe laying in between 4 nos. manholes (85%)	13d	0d	26-Apr-18 A	31-May-18 A	100%		■ Construct 4 nos. manholes and																																																																																																																																																					
C3840-ENT-082	Inspection & Diversion of sewer flow from temporary sewer pipeline to newly constructed sewer pipeline	18d	18d	01-Jun-18 A	22-Jun-18	0%	78d	■ Inspection & Diversion of sei																																																																																																																																																					
C3840-ENT-090	Consturct remaining section of entrusted sewage works (15%)	8d	8d	23-Jun-18	03-Jul-18	0%	78d	■ Consturct remaining sectio																																																																																																																																																					
C3840-ENT-160	CCTV Inspection including report	12d	12d	04-Jul-18	17-Jul-18	0%	78d	■ CCTV Inspection includin																																																																																																																																																					
C3840-ENT-170	Backfill & Install manhole cover	12d	12d	04-Jul-18	17-Jul-18	0%	78d	■ Backfill & Install manhole																																																																																																																																																					
C3840-ENT-180	Handover Inspection	6d	6d	18-Jul-18	24-Jul-18	0%	78d	■ Handover, Inspection																																																																																																																																																					
C3840-ENT-190	Handover to DSD	0d	0d		24-Jul-18	0%	78d	◆ Handover to DSD																																																																																																																																																					
Milestones for Cost Centre E - DSD Entrusted Drainage Works - Option								21d	21d	03-Jul-18	24-Jul-18		159d																																																																																																																																																

- Current Bar
- Critical Remaining Work
- Actual Work
- ◆ Milestone
- Remaining Work

Data Date: 01-Jun-18

Master Programme Revision RMPRSA1

RMPRSA1			
Date	Revision	Checked	Approved
01-Jun-18		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 <ul style="list-style-type: none"> • movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME; • noise enclosure can achieve 15dB(A) reduction for PME; • A typical design barrier with a steel frame of vertical / cantilever type would be adopted and located close to the noise generating part of PME; • Barrier material of surface mass in excess of 7kg/m² shall be required to achieve the maximum screening effect (and minimum 10kg/m² for noise enclosure); • The length of barrier should generally be at least five times greater than its height and the minimum height of a barrier should be such that no part of the noise source will be visible from the noise sensitive receiver being protected. 	To minimize construction noise emissions	Contractor	Work site	Construction Stage	ProPECC PN2/93, Noise Control Ordinance and EIAO Guidance Note NO. 9/2010
S.3.1	General Construction Noise Control Measures <ul style="list-style-type: none"> • 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
	<p>to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted;</p> <ul style="list-style-type: none"> • 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	<p>Construction Dust Control Measures</p> <ul style="list-style-type: none"> • 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
	<p>of decking is around 13 months after surface excavation works;</p> <ul style="list-style-type: none"> • Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • 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	<p>Construction Water Quality Impact Measures</p> <ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> 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	<p>Construction Waste Management Measures</p> <ul style="list-style-type: none"> 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.

APPENDIX E

STATUS OF ENVIRONMENTAL LICENSES AND PERMITS



Maeda Corporation

Contract No. C3840-13C

Tsim Sha Tsui Station Carnarvon Road Subway

Last Update: 02-January-2019

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	APCO #004	APCO	Notification	Construction Dust Notification	Form NB – Notification S3(3) of APCO (Construction Dust)	433242	04 - 05 - 2018	07 - 05 - 2018	01 - 01 - 2016	31 - 12 - 2018	Construction of the Superstructure of a Building	Change of anticipated date of completion is notified
001	APCO #002	APCO	Notification	Construction Dust Notification	Form NB – Notification S3(3) of APCO (Construction Dust)	403252	27 - 05 - 2016	02 - 06 - 2016	01 - 11 - 2016	28 - 02 - 2019	Road Construction Work	Change of anticipated date of completion is notified
002	APCO #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	WPCO #002	WPCO	Licence	Water Discharge Licence	EPD-117 (Form A) Application for a Licence of Water Discharge	WT00019722-2014	24 - 07 - 2014	01 - 09 - 2014	01 - 09 - 2014	31 - 03 - 2019	Quarterly Report FlowRate 25m3/d, pH 6-9, SS 30mg/L, COD 80mg/L	
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 lubricating oil, spent battery	
006	CNP#011	NCO	Permit	Construction Noise Permit	EPD74A(s) Form 1 - Application for a Construction Noise Permit	OSS Ref: 002069312 Permit: GW-RE0635-18	05 - 09 - 2018	19 - 09 - 2018	01 - 10 - 2018	30 - 03 - 2019	4nos Submersible Water pump (Electric) or 1 drill for 24-hr; 4 drill & 4 grinder for 07:00-23:00	Working Area includes the underground area

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	<ol style="list-style-type: none"> 1. Identify source; 2. If valid, inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and EPD; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial action required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measure properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial action to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source; 2. Inform ER and EPD; 3. Repeat measurement to confirm finding; 4. Increase 	<ol style="list-style-type: none"> 1. Check monitoring 2. data submitted by ET; 3. Check Contractor's working 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC

Event / Action	ET	IEC	ER	Contractor
	<p>monitoring frequency to daily;</p> <p>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</p>	<p>method;</p> <p>4. Discuss with ET and the Contractor on possible remedial measures;</p> <p>5. Advise the ER on the effectiveness of the proposed remedial measures;</p> <p>6. Supervise implementation of remedial measures.</p>	<p>measures properly implemented.</p>	<p>within 3 working days of notification;</p> <p>3. Implement the agreed proposals;</p> <p>4. Amend proposal if appropriate.</p>
Exceedance for two or more consecutive samples	<p>1. Notify IEC, ER, Contractor and EPD;</p> <p>2. Identify sources;</p> <p>3. Repeat measurement to confirm findings;</p> <p>4. Increase monitoring frequency to daily;</p> <p>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</p> <p>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</p> <p>7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the</p>	<p>1. Discuss amongst ER, ET and Contractor on the potential remedial actions;</p> <p>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly.</p> <p>3. Supervise the implementation of remedial measures.</p>	<p>1. Confirm receipt of notification of failure in writing;</p> <p>2. Notify Contractor;</p> <p>3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented;</p> <p>4. Ensure remedial measures properly implemented;</p> <p>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.</p>	<p>1. Take immediate action to avoid further exceedance;</p> <p>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</p> <p>3. Implement the agreed proposals;</p> <p>4. Resubmit proposals if problem still not under control;</p> <p>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</p>

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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of 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. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of 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

Environmental Monitoring & Audit Schedule
December 2018

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

Note: * 1-Hr TSP has replaced the 24-Hr TSDP since 21st September 2018 due to HVS outage

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
Environmental Monitoring & Audit Schedule
January 2019 (Tentative)

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

Note: * 1-Hr TSP has replaced the 24-Hr TSDP since 21st September 2018 due to HVS outage
This schedule may be subject to change due to unexpected circumstances (e.g. adverse weather)

APPENDIX H

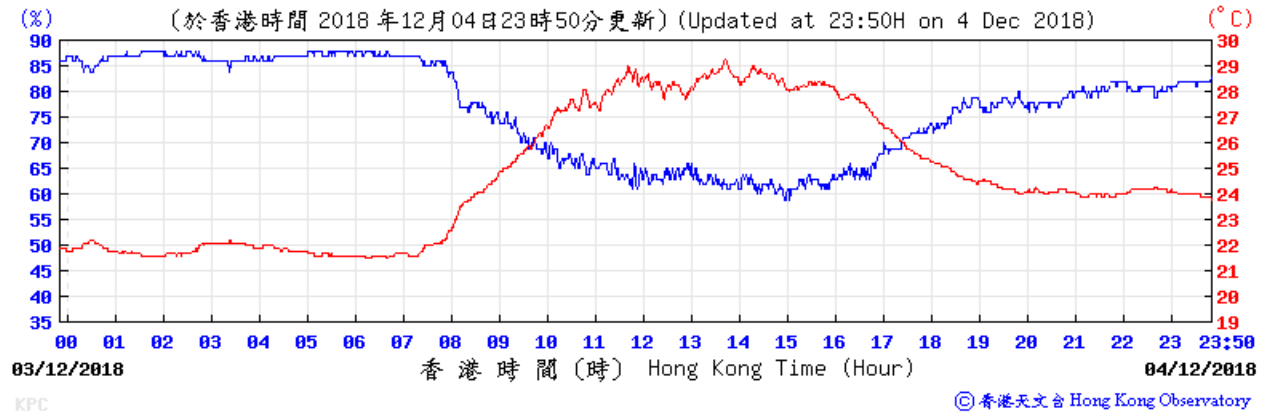
WEATHER INFORMATION EXTRACTED FROM HK OBSERVATORY

Daily Total Rainfall at King's Park HKO Weather Monitoring Station - December 2018

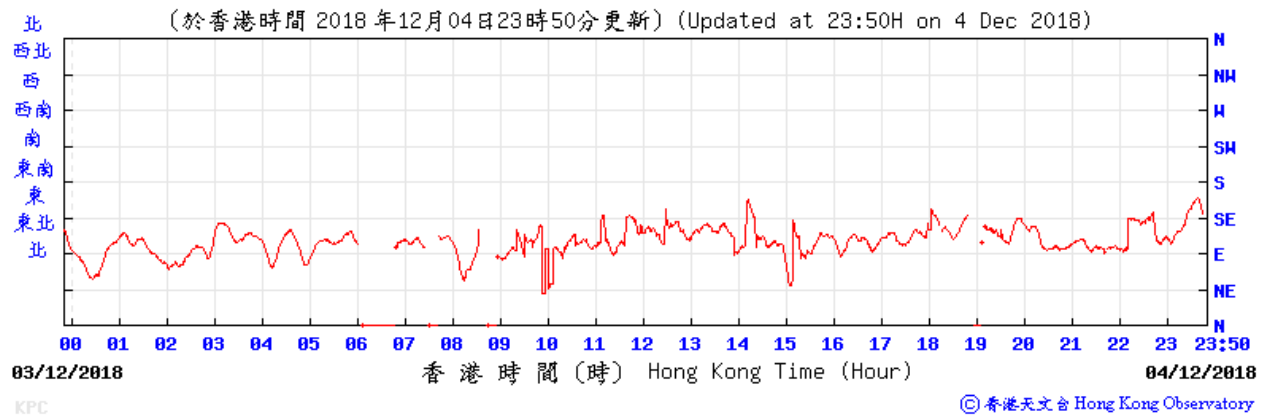
Day	Total Rainfall, mm	1-hr TSP	Noise	Remarks
1	0.0			
2	0.0			
3	0.0			
4	0.0	✓	✓	No significant rainfall during noise measurement
5	Trace			
6	0.1			
7	1.0			
8	0.0			
9	Trace			
10	0.2			
11	Trace	✓	✓	No significant rainfall during noise measurement
12	0.0			
13	0.0			
14	0.0			
15	0.0			
16	Trace			
17	0.0			
18	0.0	✓	✓	No significant rainfall during noise measurement
19	0.0			
20	0.0			
21	0.0			
22	0.0			
23	10.5			
24	0.1			
25	0.0			
26	0.0			
27	Trace	✓	✓	No significant rainfall during noise measurement
28	Trace			
29	Trace			
30	Trace			
31	0.0			
Mean/Total	11.9			

King's Park Weather Station – 04 December 2018

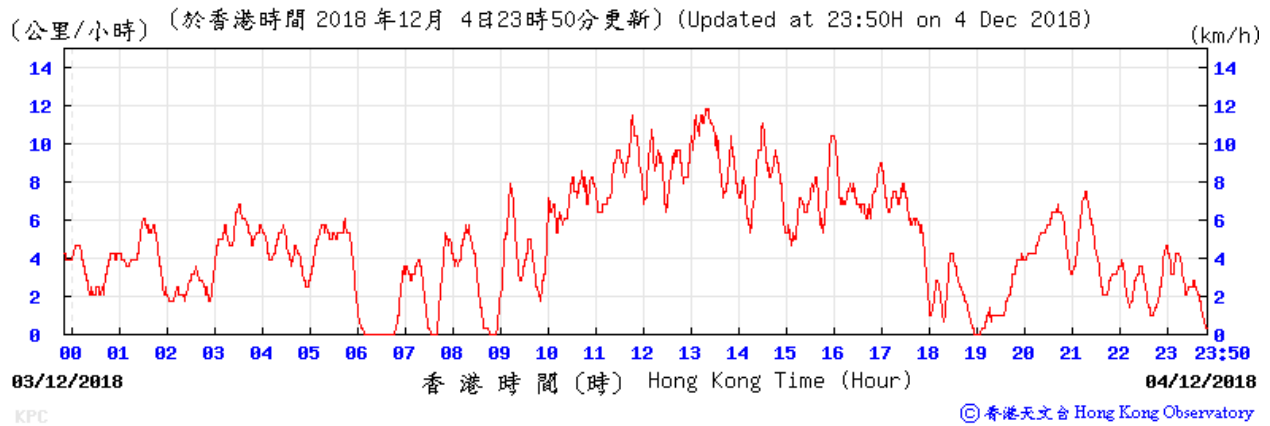
Temperature/Humidity:



Wind Direction:

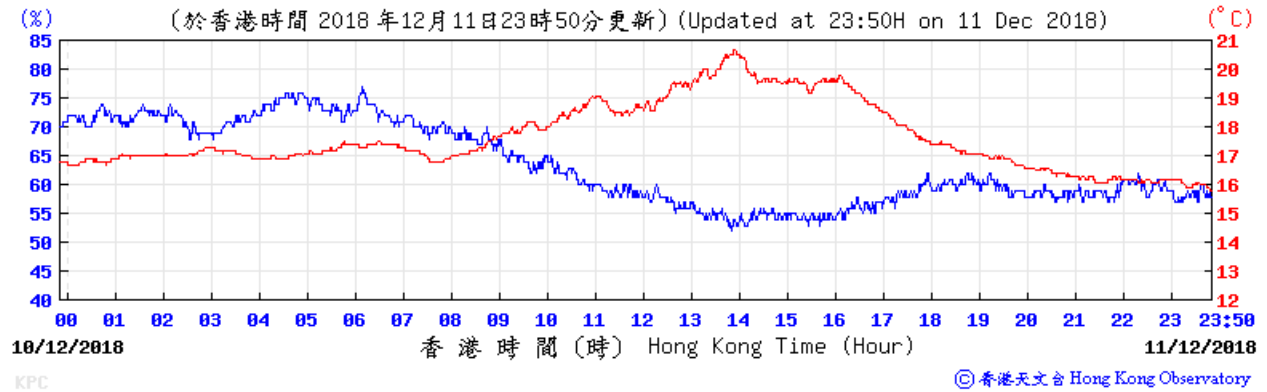


Wind Speed:

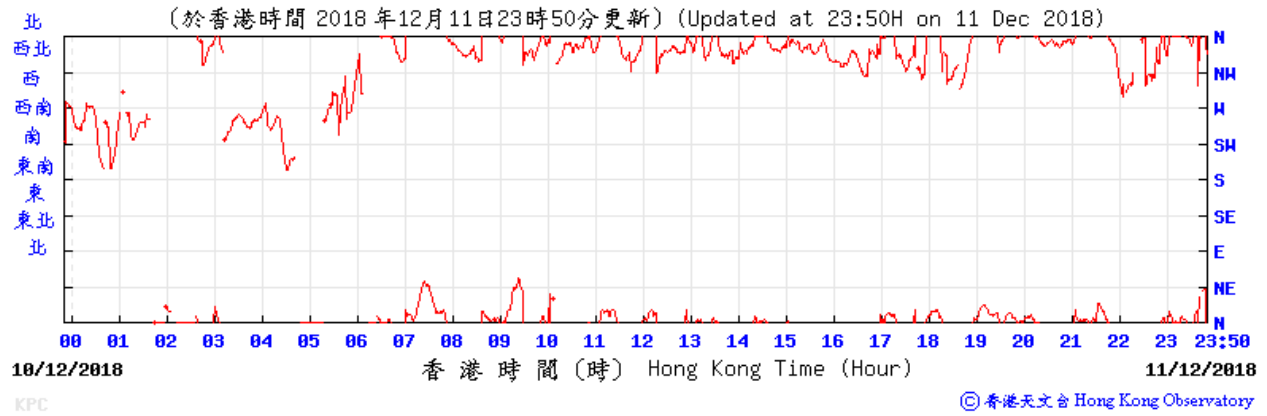


King's Park Weather Station – 11 December 2018

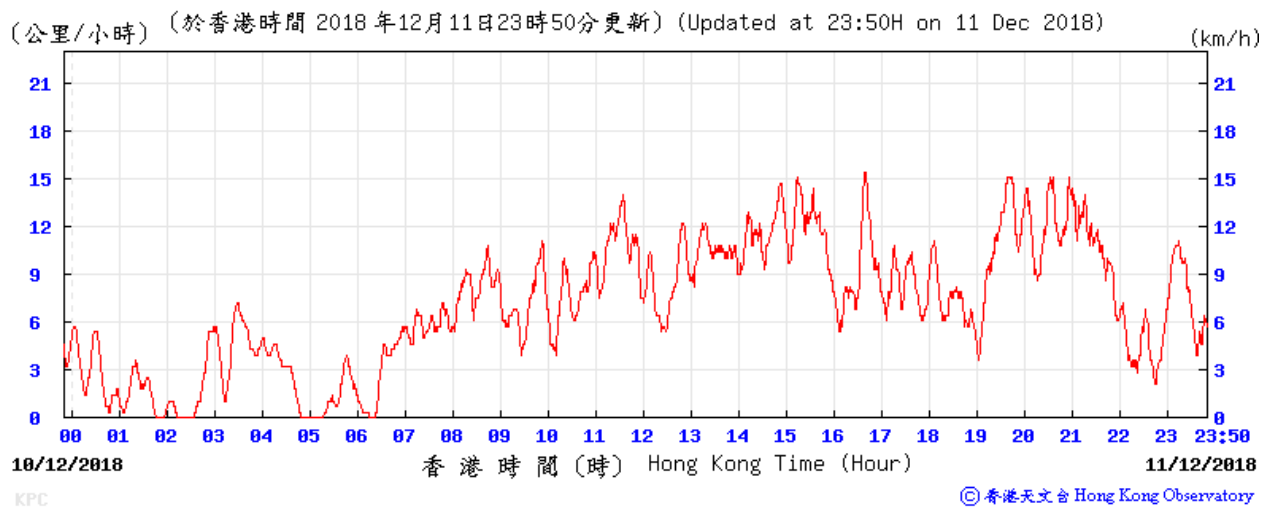
Temperature/Humidity:



Wind Direction:

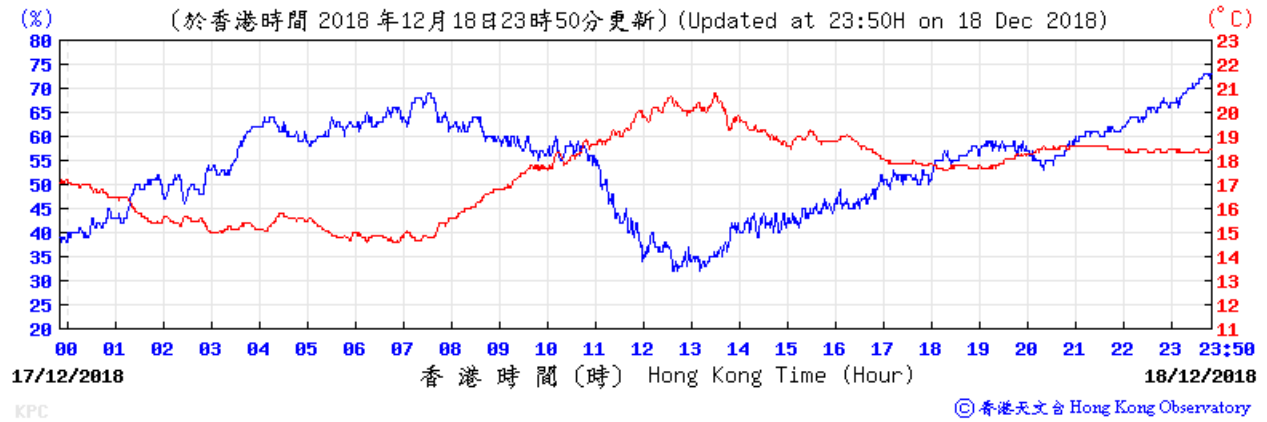


Wind Speed:

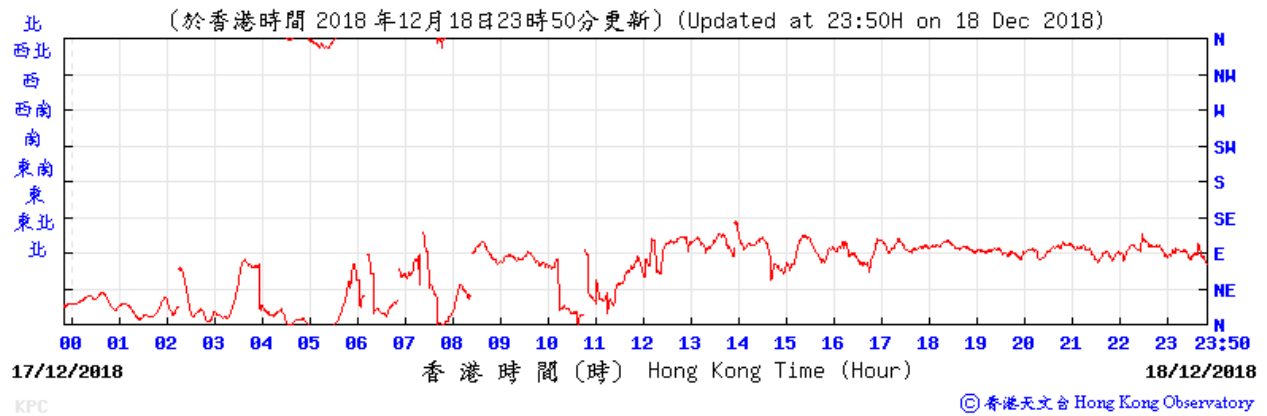


King's Park Weather Station – 18 December 2018

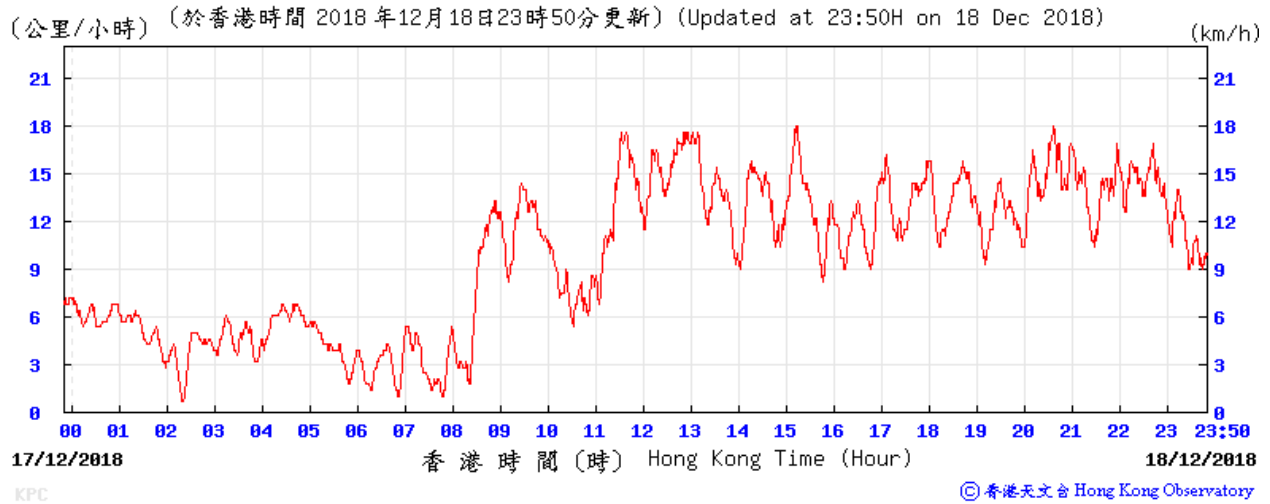
Temperature/Humidity:



Wind Direction:

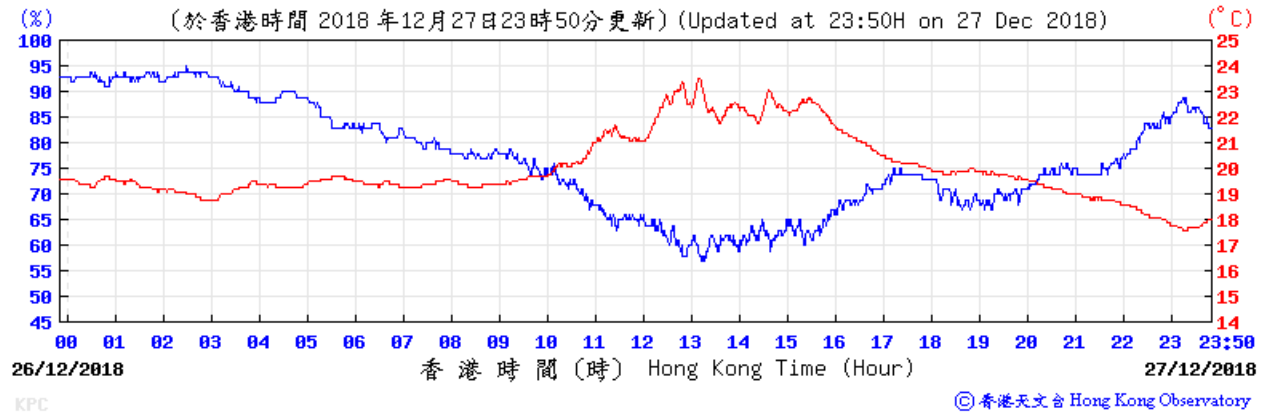


Wind Speed:

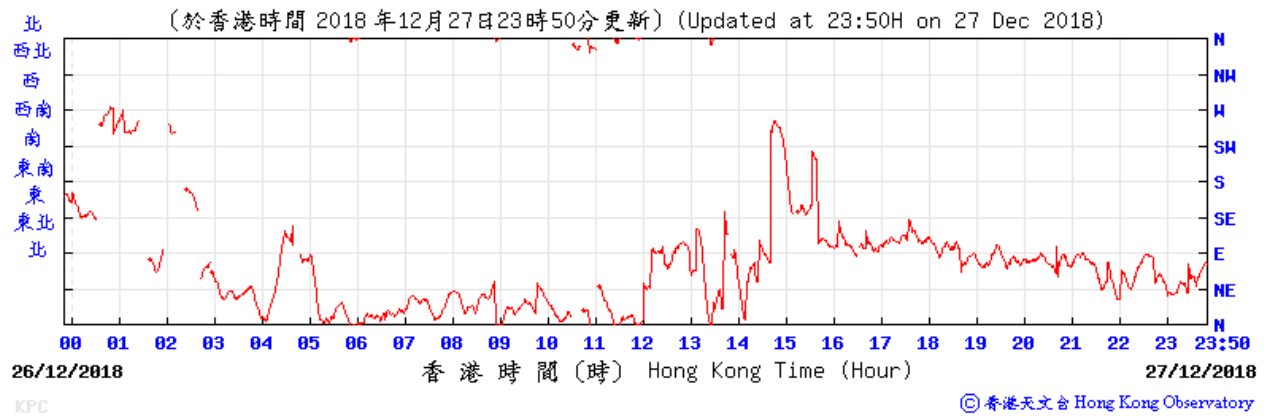


King's Park Weather Station – 27 December 2018

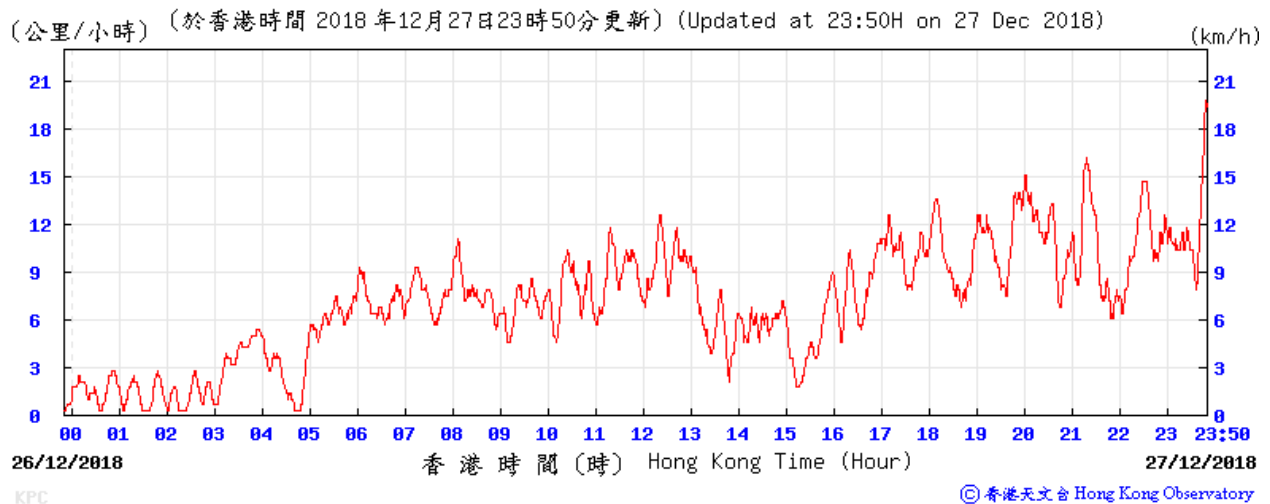
Temperature/Humidity:



Wind Direction:



Wind Speed:



APPENDIX I

CERTIFICATE OF LABORATORY AND EQUIPMENT CALIBRATION



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR THOMAS CHAN	WORK ORDER	: HK1858992
CLIENT	: MOTT MACDONALD HONG KONG LIMITED		
ADDRESS	: 3/F MAPLETREE BAY POINT, 348 KWUN TONG ROAD, KOWLOON, HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 12-NOV-2018
		DATE OF ISSUE	: 21-NOV-2018
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	:

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	Position
Richard Fung 	General Manager

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F, Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1858992
SUB-BATCH : 1
CLIENT : MOTT MACDONALD HONG KONG LIMITED
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1858992-001	S/N: 5201707005	Equipments	12-Nov-2018	S/N: 5201707005

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: TSI AM520
 Serial No. 5201707005
 Equipment Ref: NA
 Work Order: HK1858992

Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)
 Location & Location ID: Calibration Room
 Equipment Ref: HVS 018
 Last Calibration Date: 21 September 2018

Equipment Verification Results:

Verification Date: 13&14 November 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Concentration in mg/m ³ (Calibrated Equipment)	Tolerance (mg/m ³)
2hr01min	09:20 ~ 11:21	24.3	1014.1	0.036	0.139	0.103
2hr01min	11:27 ~ 13:28	24.3	1014.1	0.039	0.145	0.106
2hr01min	13:35 ~ 15:36	24.3	1014.1	0.041	0.144	0.103
2hr10min	15:41 ~ 17:51	24.3	1014.1	0.046	0.124	0.078
2hr15min	09:24 ~ 11:39	23.5	1015.6	0.034	0.105	0.071

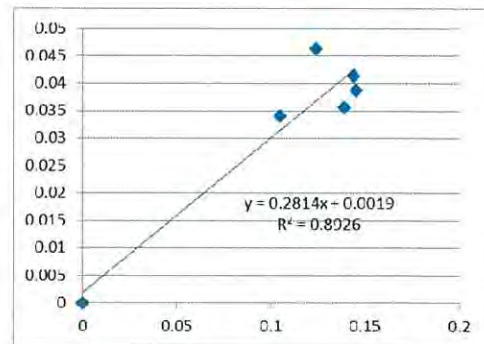
Linear Regression of Y or X

Slope (factor): 0.2814
 Correlation Coefficient 0.9448
 Date of Issue 21 November 2018

Remarks:

- Strong** Correlation ($R > 0.8$)
- Factor 0.2814 should be applied for TSP monitoring

*If $R < 0.5$, repair or re-verification is required for the equipment



Operator : Fai So Signature :  Date : 21 November 2018

QC Reviewer : Ben Tam Signature :  Date : 21 November 2018

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 21-Sep-18
 Location ID : Calibration Room Next Calibration Date: 21-Dec-18

CONDITIONS

Sea Level Pressure (hPa)	1011.6	Corrected Pressure (mm Hg)	758.7
Temperature (°C)	29.2	Temperature (K)	302

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.02017
Model->	5025A	Qstd Intercept ->	-0.03691
Calibration Date->	13-Feb-18	Expiry Date->	13-Feb-19

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.4	5.4	10.8	1.632	56	55.56	Slope = 37.2548 Intercept = -5.5606 Corr. coeff. = 0.9970
13	4.3	4.3	8.6	1.459	48	47.62	
10	3.3	3.3	6.6	1.280	43	42.66	
8	2.1	2.1	4.2	1.025	34	33.73	
5	1.3	1.3	2.6	0.810	24	23.81	

Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

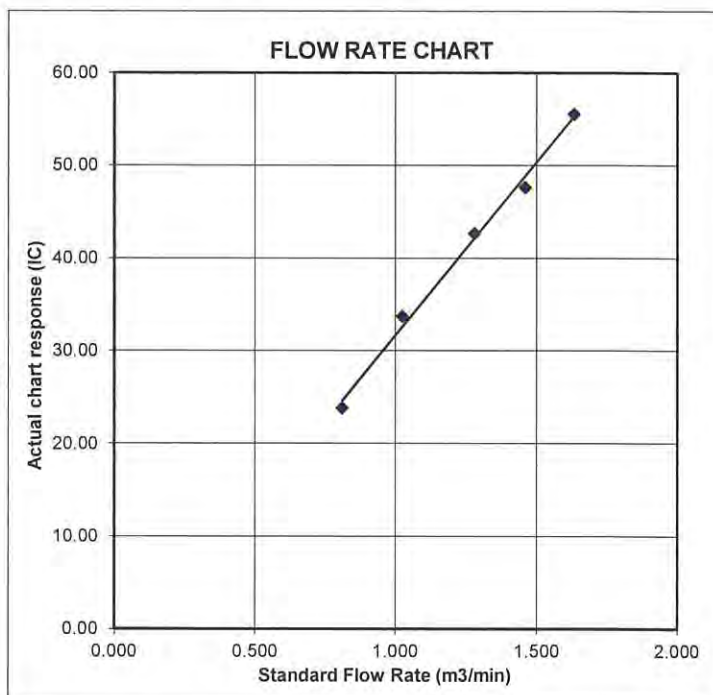
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 13, 2018	Rootsmeter S/N: 438320	Ta: 293	°K
Operator: Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 1612		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524
QSTD	m=	2.02017	QA	m=	1.26500
	b=	-0.03691		b=	-0.02263
	r=	0.99988		r=	0.99988

Calculations	
Vstd= $\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va= $\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$
For subsequent flow rate calculations:	
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30



Calibration Certificate

Certificate No. **800699**

Page 1 of 4 Pages

Customer : Arcadis Design & Engineering Limited

Address : 20/F, AXA Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong.

Order No. : Q80223

Date of receipt : 15-Jan-18

Item Tested

Description : Sound Level Meter

Manufacturer : B&K

I.D. : --

Model : 2238

Serial No. : 2448529

Test Conditions

Date of Test : 17-Jan-18

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01,IEC 61672, IEC 61260.

Test Results

All results were within the IEC 61672 Type1 & IEC 61260 Class 1 specification.(where applicable)

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


Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C170120	SCL-HKSAR
S240	Sound Level Calibrator	703741	NIM-PRC & 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), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by :


Elva Chong

Approved by :


Kin Wong

Date: 17-Jan-18



Calibration Certificate

Certificate No. 800699

Page 2 of 4 Pages

Results :

1. Self-generated noise: 18.1 dBA

2. Acoustical signal test

UUT Setting			Applied Value (dB)	UUT Reading (dB)	
Range (dB)	Frequency Weighting	Time Weighting			
40-120	A	F	94.0	94.0	
		S		94.0	
	C	F		94.0	
	L	F		94.0	
	A	F	114.0	113.9	
				S	113.9
		C		F	113.9
		L		F	113.9

IEC 61672 Type 1 Spec. : ± 1.1 dB

Uncertainty : ± 0.1 dB

3 Electrical signal tests of frequency weightings (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	- 39.3	- 39.4 dB, ± 2 dB
63 Hz	- 26.3	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1.5 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.3	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+ 1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+ 0.9	+ 1.0 dB, ± 1.6 dB
8 kHz	- 1.2	- 1.1 dB, + 2.1 dB \sim -3.1 dB
16 kHz	- 6.7	- 6.6 dB, + 3.5 dB \sim - 17.0 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 800699

Page 3 of 4 Pages

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	--	± 0.4 dB
C	94.0	94.0	0.0	
L	94.0	93.9	-0.1	

4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	94.0 (Ref.)	--	± 0.3 dB
Slow	94.0	94.0	0.0	
Time-averaging	94.0	93.9	-0.1	

Uncertainty : ± 0.1 dB

5. Filter Characteristics

5.1 1/1 – Octave Filter

Frequency	Attenuation (dB)	IEC 61260 Class 1 Spec. (dB)
125 Hz	-63.9	< - 61
250 Hz	-44.9	< - 42
500 Hz	-21.1	< - 17.5
707 Hz	-3.8	- 2 ~ - 5
1 kHz (Ref)	--	--
1.414 kHz	-3.8	- 2 ~ - 5
2 kHz	-21.1	< - 17.5
4 kHz	-44.9	< - 42
8 kHz	-64.3	< - 61

Uncertainty : ± 0.25 dB



Calibration Certificate

Certificate No. 800699

Page 4 of 4 Pages

5.2 1/3 – Octave Filter

Frequency	Attenuation (dB)	IEC 61260 Class 1 Spec.(dB)
326 Hz	-64.7	< - 61
530 Hz	-47.2	< - 42
772 Hz	-22.6	< - 17.5
891 Hz	-3.6	+ 0.3 ~ - 5.0
1 kHz (Ref)	--	--
1.122 kHz	-3.6	+ 0.3 ~ - 5.0
1.296 kHz	-22.7	< - 17.5
1.887 kHz	-47.4	< - 42
3.070 kHz	-65.7	< - 61

Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1 028 hPa.

4. Preamplifier model : ZC 0030 , S/N : --

5. Firmware Version: 1.1.0

6. Power Supply Check: OK

7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

----- END -----



Calibration Certificate

Certificate No. **803788**

Page 1 of 2 Pages

Customer : Arcadis Design & Engineering Limited

Address : 20/F, AXA Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong.

Order No. : Q81484

Date of receipt : 18-Apr-18

Item Tested

Description : Precision Acoustic Calibrator

Manufacturer : Larson Davis

I.D. : --

Model : CAL200

Serial No. : 10929

Test Conditions

Date of Test : 26-Apr-18

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : IEC 60942, F20, Z02.

Test Results

All results were within the IEC 60942 Class 1 specification.

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


Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	707126	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	803357	NIM-PRC & SCL-HKSAR
S041	Universal Counter	802061	SCL-HKSAR
S206	Sound Level Meter	707129	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), or by reference to a natural constant. The test results apply to the above Unit-Under-Test only

Calibrated by : 
Elva Chong

Approved by : 
Kin Wong

Date: 26-Apr-18



Calibration Certificate

Certificate No. 803788

Page 2 of 2 Pages

Results :

1. Generated Sound Pressure Level

UUT Nominal Value (dB)	Measured Value (dB)	IEC 60942 Class 1 Spec.
94.0	93.7	± 0,4 dB
114.0	113.8	

Uncertainty : ± 0.2 dB

2. Short-term Level Fluctuation : 0.0 dB

IEC 60942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

3. Frequency

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 60942 Class 1 Spec.
1	0.999	± 1 %

Uncertainty : ± 3.6 x 10⁻⁶

4. Total Distortion : < 0.4%

IEC 60942 Class 1 Spec. : < 4 %

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 : 1 015 hPa.

----- END -----

APPENDIX J

SAMPLE DATA RECORD SHEET

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


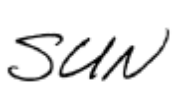
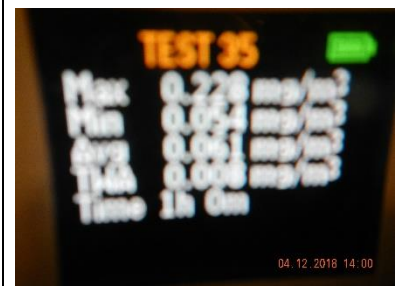
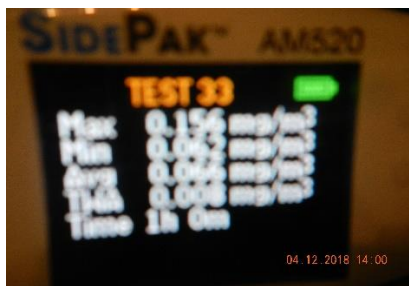





Monitoring Location			4/F Roof top, K11	
Date of Monitoring			4 December 2018	
1-Hour TSP Monitoring	No.	Measurement Time (minutes)		Monitoring Results, ug/M ³ (Average (min-max))
	1	09:07 – 10:07	60	66 (62-156)
	2	10:07 – 11:07	60	67 (63-164)
	3	11:07 – 12:07	60	61 (54-228)
Weather Condition			Cloudy	
Equipment Model (Serial Number)			TSI AM520 (5201707005)	
Expiry Date			12 November 2019	
Action Level, ug/M ³			250	
Limit Level, ug/M ³			500	
Major Construction Dust Source(s) During Monitoring			On-site excavation, filling, loading and un-loading of dusty materials	
Other Dust Source(s) During Monitoring			Traffic, nearby fixed plant exhaust/emission	
<u>Name & Designation</u>		<u>Date</u>		<u>Signature</u>
Record by: Wong Fu Nam		4 December 2018		
Checked by: Tung Chi Sun		4 December 2018		

Photo Records



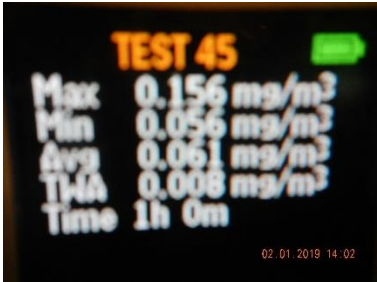
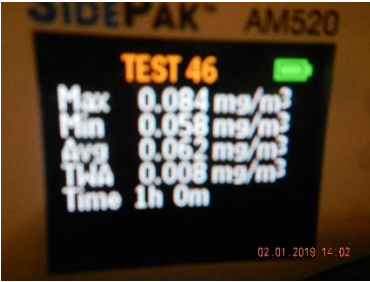
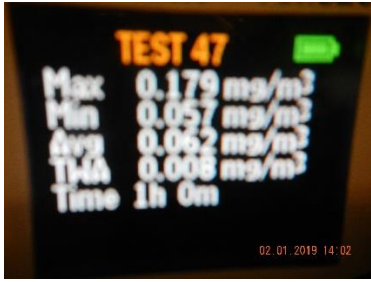


C3840-13C MTRCL Tsim Sha Tsui Station




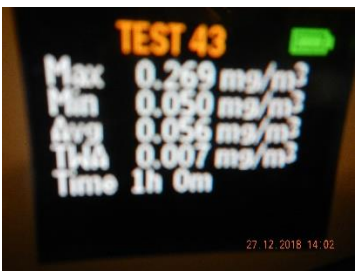

Carnarvon Road Subway and Entrances Modification Works

Monitoring Location			4/F Roof top, K11		
Date of Monitoring			11 December 2018		
1-Hour TSP Monitoring	No.	Measurement Time (minutes)		Monitoring Results, ug/M ³ (Average (min-max))	
	1	09:09 – 10:09	60	57 (52-190)	
	2	10:09 – 11:09	60	54 (46-137)	
	3	11:09 – 12:09	60	58 (49-379)	
Weather Condition			Cloudy		
Equipment Model (Serial Number)			TSI AM520 (5201707005)		
Expiry Date			12 November 2019		
Action Level, ug/M ³			250		
Limit Level, ug/M ³			500		
Major Construction Dust Source(s) During Monitoring			On-site excavation, filling, loading and un-loading of dusty materials		
Other Dust Source(s) During Monitoring			Traffic, nearby fixed plant exhaust/emission		
<u>Name & Designation</u>		<u>Date</u>		<u>Signature</u>	
Record by: Wong Fu Nam		11 December 2018			
Checked by: Tung Chi Sun		11 December 2018			
Photo Records					
					


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

Monitoring Location			4/F Roof top, K11	
Date of Monitoring			18 December 2018	
1-Hour TSP Monitoring	No.	Measurement Time (minutes)		Monitoring Results, ug/M ³ (Average (min-max))
	1	09:19 – 10:19	60	61 (56-156)
	2	10:19 – 11:19	60	62 (58-84)
	3	11:19 – 12:19	60	62 (57-179)
Weather Condition			Cloudy	
Equipment Model (Serial Number)			TSI AM520 (5201707005)	
Expiry Date			12 November 2019	
Action Level, ug/M ³			250	
Limit Level, ug/M ³			500	
Major Construction Dust Source(s) During Monitoring			On-site excavation, filling, loading and un-loading of dusty materials	
Other Dust Source(s) During Monitoring			Traffic, nearby fixed plant exhaust/emission	
<u>Name & Designation</u>		<u>Date</u>		<u>Signature</u>
Record by: Wong Fu Nam		03 January 2019		
Checked by: Tung Chi Sun		03 January 2019		
Photo Records				
				


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

Monitoring Location			4/F Roof top, K11		
Date of Monitoring			27 December 2018		
1-Hour TSP Monitoring	No.	Measurement Time (minutes)		Monitoring Results, ug/M ³ (Average (min-max))	
	1	08:03 – 09:03	60	52 (50-57)	
	2	09:03 – 10:03	60	56 (50-269)	
	3	10:03 – 11:03	60	53 (49-191)	
Weather Condition			Cloudy		
Equipment Model (Serial Number)			TSI AM520 (5201707005)		
Expiry Date			12 November 2019		
Action Level, ug/M ³			250		
Limit Level, ug/M ³			500		
Major Construction Dust Source(s) During Monitoring			On-site excavation, filling, loading and un-loading of dusty materials		
Other Dust Source(s) During Monitoring			Traffic, nearby fixed plant exhaust/emission		
<u>Name & Designation</u>		<u>Date</u>		<u>Signature</u>	
Record by: Wong Fu Nam		03 January 2019			
Checked by: Tung Chi Sun		03 January 2019			
Photo Records					
					


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

Monitoring Location		4/F Roof top, K11
Date of Monitoring		04 December 2018
Monitoring Start Time		09:07
Monitoring Stop Time		09:37
Measurement Time Length		30 mins
Weather Condition		Cloudy
Wind Speed		1.7 m/s
Noise Meter Model (Serial Number)		BK-2238 (2448529)
Calibrator Model (Serial Number)		CAL-200 (10929)
Measurement Results	L _{eq}	71.3 dB(A)
	L ₁₀	69.5 dB(A)
	L ₉₀	66.0 dB(A)
Limit Level		75.0 dB(A)
Major Construction Noise Source(s) During Monitoring		On-site powered mechanical equipment
Other Noise Source(s) During Monitoring		Traffic and nearby fixed plant
<u>Name & Designation</u>	<u>Date</u>	<u>Signature</u>
Record by: Wong Fu Nam	04 December 2018	
Checked by: Tung Chi Sun	04 December 2018	<i>SUN</i>


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

Monitoring Location		4/F Roof top, K11
Date of Monitoring		11 December 2018
Monitoring Start Time		09:09
Monitoring Stop Time		09:39
Measurement Time Length		30 mins
Weather Condition		Cloudy
Wind Speed		1.4 m/s
Noise Meter Model (Serial Number)		BK-2238 (2448529)
Calibrator Model (Serial Number)		CAL-200 (10929)
Measurement Results	L _{eq}	70.5 dB(A)
	L ₁₀	69.5 dB(A)
	L ₉₀	64.5 dB(A)
Limit Level		75.0 dB(A)
Major Construction Noise Source(s) During Monitoring		On-site powered mechanical equipment
Other Noise Source(s) During Monitoring		Traffic and nearby fixed plant
<u>Name & Designation</u>	<u>Date</u>	<u>Signature</u>
Record by: Wong Fu Nam	11 December 2018	
Checked by: Tung Chi Sun	11 December 2018	SUN

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

Monitoring Location		4/F Roof top, K11
Date of Monitoring		18 December 2018
Monitoring Start Time		09:19
Monitoring Stop Time		09:49
Measurement Time Length		30 mins
Weather Condition		Cloudy
Wind Speed		0.9 m/s
Noise Meter Model (Serial Number)		BK-2238 (2448529)
Calibrator Model (Serial Number)		CAL-200 (10929)
Measurement Results	L _{eq}	70.5 dB(A)
	L ₁₀	69.5 dB(A)
	L ₉₀	64.5 dB(A)
Limit Level		75.0 dB(A)
Major Construction Noise Source(s) During Monitoring		N / A
Other Noise Source(s) During Monitoring		Traffic and nearby fixed plant
<u>Name & Designation</u>	<u>Date</u>	<u>Signature</u>
Record by: Wong Fu Nam	03 January 2018	
Checked by: Tung Chi Sun	03 January 2018	<i>SUN</i>

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

Monitoring Location		4/F Roof top, K11
Date of Monitoring		27 December 2018
Monitoring Start Time		08:33
Monitoring Stop Time		09:03
Measurement Time Length		30 mins
Weather Condition		Cloudy
Wind Speed		2.1 m/s
Noise Meter Model (Serial Number)		BK-2238 (2448529)
Calibrator Model (Serial Number)		CAL-200 (10929)
Measurement Results	L _{eq}	68.1 dB(A)
	L ₁₀	65.0 dB(A)
	L ₉₀	62.5 dB(A)
Limit Level		75.0 dB(A)
Major Construction Noise Source(s) During Monitoring		N / A
Other Noise Source(s) During Monitoring		Traffic and nearby fixed plant
<u>Name & Designation</u>	<u>Date</u>	<u>Signature</u>
Record by: Wong Fu Nam	03 January 2018	
Checked by: Tung Chi Sun	03 January 2018	SUN

APPENDIX K

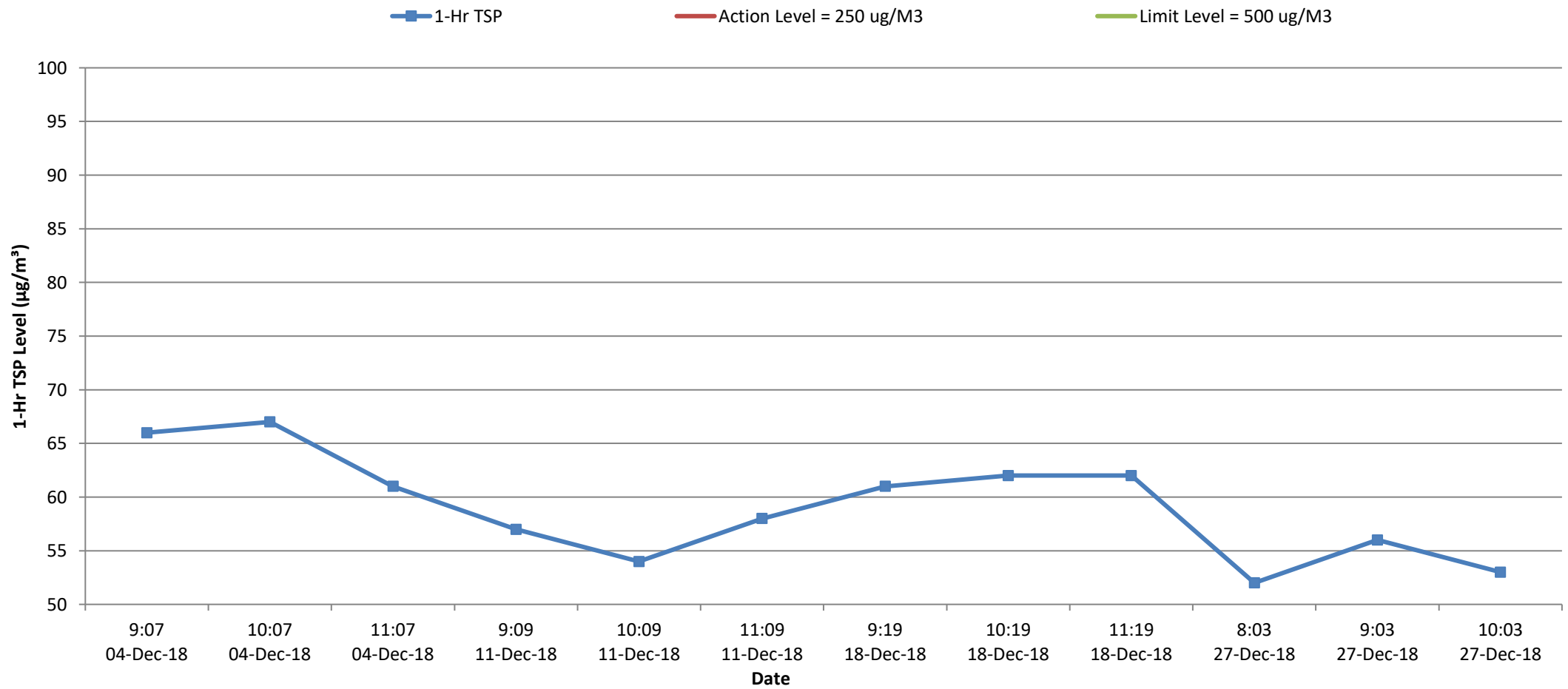
MONITORING RESULTS AND PLOTS

1-Hr TSP Results and Plot

Date	Time	1-Hr TSP	Action Level = 250 ug/M ³	Limit Level = 500 ug/M ³
04-Dec-18	9:07	66	250	500
04-Dec-18	10:07	67	250	500
04-Dec-18	11:07	61	250	500
11-Dec-18	9:09	57	250	500
11-Dec-18	10:09	54	250	500
11-Dec-18	11:09	58	250	500
18-Dec-18	9:19	61	250	500
18-Dec-18	10:19	62	250	500
18-Dec-18	11:19	62	250	500
27-Dec-18	8:03	52	250	500
27-Dec-18	9:03	56	250	500
27-Dec-18	10:03	53	250	500

1-Hr TSP Concentration (December 2018) *

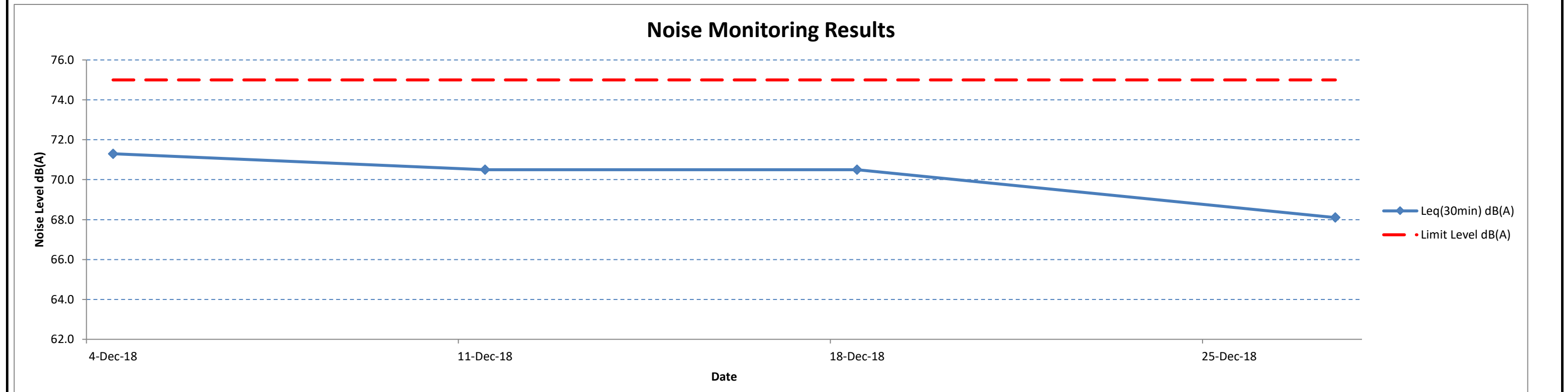
Note: * 1-Hr TSP has replaced the 24-Hr TSP since 21 September 2018 due to HVS outage



(1) 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)
K11 Art Mall	4-Dec-18	Cloudy	1.7	9:07	9:37	65.3	75	71.3	69.5	66.0
	11-Dec-18	Cloudy	1.4	9:09	9:39	65.3	75	70.5	69.5	64.5
	18-Dec-18	Cloudy	0.9	9:19	9:49	65.3	75	70.5	69.5	64.5
	27-Dec-18	Cloudy	2.1	8:33	9:03	65.3	75	68.1	65.0	62.5

Red Bold indicates an exceedance of Limit Level

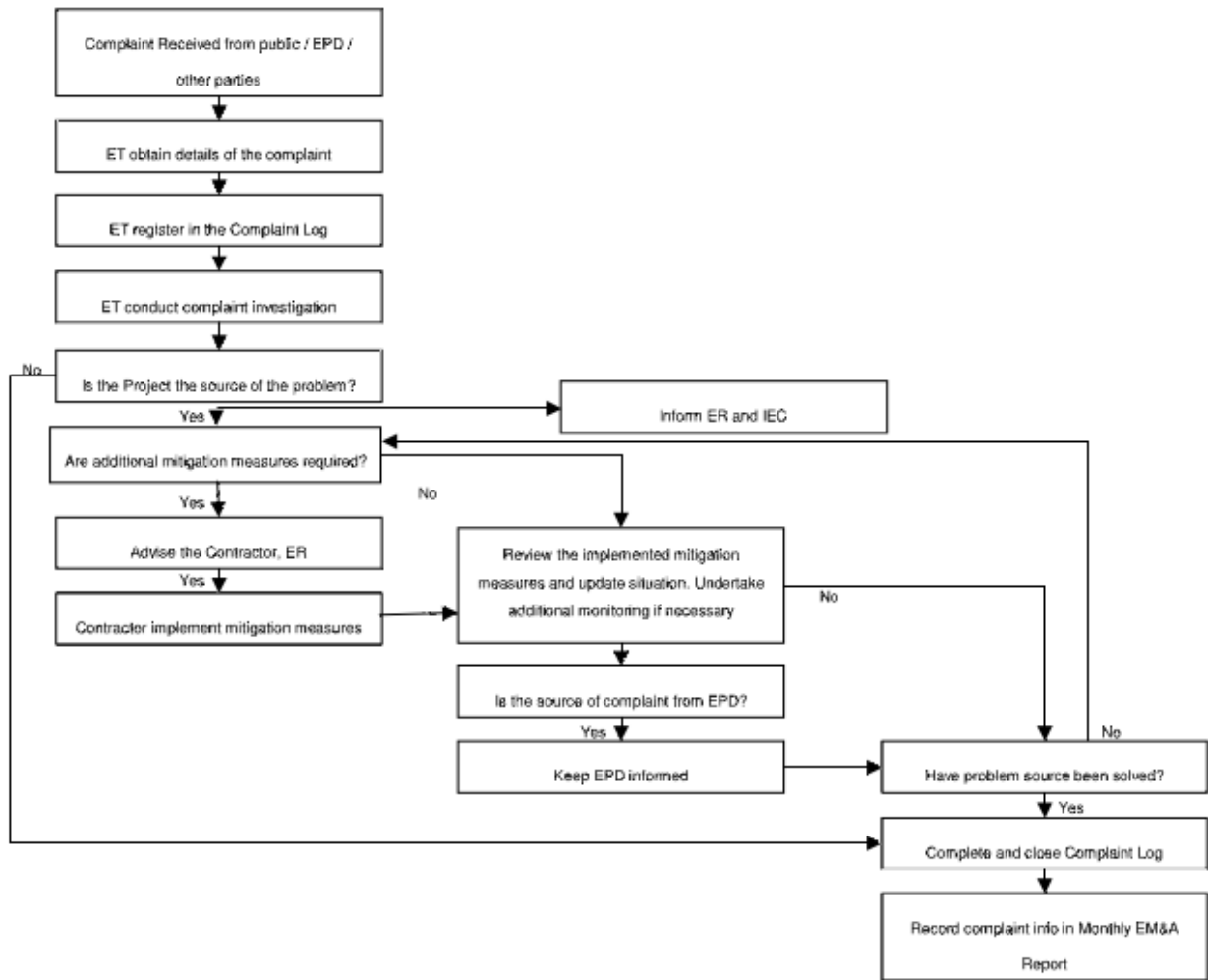


APPENDIX L

FLOW CHART FOR HANDLING ENVIRONMENTAL COMPLAINTS

APPENDIX L

Complaint Response Procedure



APPENDIX M

WASTE MANAGEMENT RECORDS

Monthly Summary Waste Flow Table for 2018 (year)

Contract No: C3840-13C Tsim Sha Tsui Station Carnarvon Road Subway
Date Reported: 2-January-2019

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse	
		(See Note 3)							(see Note 2)			
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m ³ /tonne)	
Carried from Project Start	9.6228	-	-	-	9.6228	-	-	-	-	-	0.1930	
Jan	0.0212	-	-	-	0.0212	-	-	-	-	-	0.0198	
Feb	0.0033	-	-	-	0.0033	-	-	-	-	-	0.0090	
Mar	0.0072	-	-	-	0.0072	-	-	-	-	-	0.0089	
Apr	0.0024	-	-	-	0.0024	-	-	-	-	-	0.0048	
May	0.0022	-	-	-	0.0022	-	-	-	-	-	0.0065	
June	0.0000	-	-	-	0.0000	-	-	-	-	-	0.0192	
Sub-total	0.0363	-	-	-	0.0363	-	-	-	-	-	0.0682	
July	0.0540	-	-	-	0.0540	-	-	-	-	-	0.0081	
Aug	0.0410	-	-	-	0.0410	-	-	-	-	-	0.0092	
Sept	0.0057	-	-	-	0.0057	-	225.1300	-	-	-	0.0077	
Oct	0.0235	-	-	-	0.0235	-	41.6400	-	-	-	0.0084	
Nov	0.0216	-	-	-	0.0216	-	-	-	-	-	0.0069	
Dec	0.0272	-	-	-	0.0272	-	26.8600	-	-	-	0.0099	
Total	0.2093	-	-	-	0.2093	-	293.6300	-	-	-	0.1184	
Acc. Total	9.8321	(accumulated quantity of the project = carried amount + this year amount)										0.3114

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.