



# Maeda Corporation

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

Monthly EM&A Report (March 2015)



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By Email and Post

16 April 2015

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

Our Ref.:

40032976/440514

Attention: Mr. Kenneth Chow / Environmental Engineer II

Dear Sir,

Consultancy Agreement A130-13 Independent Environmental Checker for CRS and LTS CRS - Verification for Thirteenth Monthly Environmental Monitoring and Audit (EM&A) Report (March 2015) (Report No.: EB001340R00192)

We refer to the Thirteenth Monthly EM&A Report (March 2015) received under cover of the email from the Environmental Team, Hyder Consulting Limited (HCL), dated on 14 April 2015.

HCL revised the Report addressing the comments from Maeda Corporation and provided on 16 April 2015. We have no further comment and have verified the captioned report (Report No.: EB001340R00192).

Should you have any queries, please feel free to contact the undersigned at 24103750 or our Dr. Alex Cheung at 2410 3796.

Yours faithfully AECOM Consulting Services Ltd

Rodney Ip // // // Independent Environmental Checker

ACWH/wwsc

cc Hyder Consulting Limited Maeda Corporation (Attn.: Mr. F. N. Wong) via email (Attn.: Ms. Cecilia Lee) via email

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MAEDA

# Maeda Corporation

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

# Monthly EM&A Report (March 2015)

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**Date** 10 April 2015

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Monthly EM&A Report (March 2015)

Hyder Consulting Limited-Company Number 126012

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# **EXECUTIVE SUMMARY**

## Breaches of Action and Limit Levels

- ES01 No Notice of Exceedance and the associated investigation and follow-up actions were required as the environmental monitoring results registered no exceedances of Action/ Limit Levels of air quality and construction noise during the Reporting Period.
- ES02 No corrective action were required as the environmental audit during the Reporting Period observed:
  - 1) No deficiencies with major environmental significance of the required environmental mitigation measures;
  - 2) No non-compliance with the required waste management; and
  - 3) No adverse environmental impacts on the sensitive receivers environed with the site of the Project.

## **Environmental Complaints**

ES03 No environmental complaints were recorded during the Report Period.

## Notification of Summons & Successful Prosecutions

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

## Reporting Changes

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

## Future Key Issues

#### General

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

#### **Construction Noise**

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

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#### Water Quality

ES08 In addition, compliance with water quality mitigation measures remains one of the key environmental issues within the construction period, especially when water usage is high.

#### Air quality

- ES09 Furthermore, implying of construction dust suppression measures are recommended during dusty activities under dry and windy conditions.
- ES10 Where appropriate, construction dust suppression measures including decking over the excavation areas, watering of exposed site surface and covering of all excavated and stockpiles of dusty material by impervious sheeting or similar materials are reminded.

# 1 INTRODUCTION

## 1.1 The Reporting Period

- 1.1.1 This is the 13th monthly EM&A report (hereinafter referred as 'This Report') covering construction period from 1 to 31 March 2015 (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 in September 2017.
- 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.

## 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 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*.

| ltem | Description  | License/Permit Status   |
|------|--|---|
| 1    | Air Pollution Control (Construction Dust)                | Notification Ref. 365953 acknowledged on 21 Oct 2013.   |
| 2    | Water Pollution Control Ordinance<br>(Discharge License) | The discharge license (Ref No.<br>WT00019722-2014) was granted on 01<br>Sep 2014 superseding the previous<br>license (Ref No. WT00018229-2014). |
| 3    | Billing Account for Disposal of<br>Construction Waste    | A/C Ref. 7018523 granted on 25 Oct 2013   |
| 4    | Chemical Waste Producer Registration                     | Registration Ref. 5213-2214-M2446-16 granted on 4 Mar 2014  |
| 5    | Noise Control Ordinance                                  | The Noise Permit (Ref No.GW-RE1475-<br>14) was granted on 17 Dec 2014<br>superseding the previous permit (Ref<br>No. GW-RE0876-14).             |

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

# 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 Undertaken during the Reporting Period and Up-Coming Month

| Item | Description   |
|------|---|
|      | Construction Activities Undertaken during the Reporting Period  |
| 1    | Demolition the underground structure of D1 Entrance             |
| 2    | Excavation at vertical shaft                                    |
| 3    | Excavation for the construction of temporary staircase          |
| 4    | Construction of decking at Bay 1 & 2                            |
| 5    | Re-routing utilities  |
|      | Construction Activities to be Undertaken in the Up-Coming Month |
| 1    | Demolition the underground structure of D1 Entrance             |
| 2    | Excavation at vertical shaft                                    |
| 3    | Excavation for the construction of temporary staircase          |
| 4    | Construction of decking at Bay 1 & 2                            |
| 5    | Re-routing utilities  |
| 6    | Horizontal pipe piling for mined tunnel                         |

# 2 EM&A REQUIREMENTS

## 2.1 Air Quality

#### Monitoring Parameters and Frequency

- 2.1.1 24-Hour Total Suspended Particulates (hereinafter referred as '24-Hr TSP') is required to be monitored once a week during construction period of the Project.
- 2.1.2 1-Hour Total Suspended Particulates (hereinafter referred as '1-Hr TSP') is required to be monitored when exceedances of 24-Hr TSP occur, following the Event and Action Plan presented in *Appendix F*.
- 2.1.3 Schedules for 24-Hr TSP monitoring for the Reporting Period and the next month were prepared and submitted to MTRC, IEC and MC prior to implementation via e-mail and / or facsimile for ease of necessary inspection. If amendment is necessary under ad hoc conditions, including actual and broadcast adverse weather, accidental instrument failures, etc., notification will be given at least 24 hours prior to implementation or as practical as possible. The monitoring schedules are enclosed in *Appendix G*.

#### Monitoring Location

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

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

Table 2-1-2 Air Quality Monitoring Equipment

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

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

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

#### Calibration of Monitoring Equipment

- 2.1.9 The HVAS is calibrated before commencement of monitoring using standard orifice 5points 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 bimonthly 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) A horizontal platform with appropriate support to secure the samplers against gusty wind will be provided;
  - b) No two samplers will be placed less than 2 m apart;
  - c) The distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler where possible;
  - d) A minimum of 2 m of separation from walls, parapets and penthouses is required for rooftops samplers;
  - e) A minimum of 2 m of separation from any supporting structure, measured horizontally is required;
  - f) No furnace or incinerator flue or building vent is nearby;
  - g) Airflow around the sampler is unrestricted;
  - h) The sampler is more than 20 m from the drip line;
  - i) Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;

- j) Permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- k) A secured supply of electricity is needed to operate the samplers.

#### Preparation of Filter Papers and Laboratory Analysis

- 2.1.14 Sufficient pieces of filter paper should be labelled before sampling. It should be a clean filter paper with no pinholes, and should be conditioned in a humidity-controlled chamber for over 24-hour and be pre-weighed before use for the sampling. The preferred room temperature is around 25 °C ±3 °C with relative humidity (hereinafter referred as 'the RH') less than 50% ± 5%, preferably 40%.
- 2.1.15 Preparation of filters and subsequent laboratory analysis of the collected 24-Hr TSP samples were performed by ALS 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 m<sup>3</sup> per minute. (The range specified in the EM&A Plan is between 0.6-1.7 m<sup>3</sup> 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.
  - I) At the end of sampling, remove the sampled filter carefully and fold it in half-length so that only surfaces with collected particulate matter are in contact.
  - m) Place the sampled filter in a clean plastic envelope and seal.
  - n) Record all monitoring information on a Field Data Sheet as shown in *Appendix J*.

o) Send the filters to ALS for analysis.

#### Monitoring Methodology – 1-Hr TSP

Field Monitoring

- 2.1.18 The procedures for measurement of 1-Hr TSP follow Manufacturer's Instruction Manual, which is summarised as follows:
  - a) Set power to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).
  - b) Push the knob at MEASURE position.
  - c) Push "O-ADJ" button. (Then meter's indication is 0).
  - d) Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
  - e) Pull out the knob and return it to MEASURE position.
  - f) Push "START" button.
  - g) Record all monitoring information on a Field Data Sheet as shown in *Appendix J*.

Maintenance and Calibration

- 2.1.19 The procedures for maintenance and calibration of 1-Hr TSP follow Manufacturer's Instruction Manual as follows:
  - a) The Sibata is checked at 3-month intervals and calibrated at 1-year intervals throughout the whole construction period.
  - b) Calibration records for the Sibata Digital Dust Monitor direct dust meters are shown in *Appendix I*.

#### Action and Limit Levels

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

| Parameter | Action Level  | Limit Level |
|-----------|---|-------------|
|           | For baseline level ≤200 µg/m³, Action level                                 |             |
| 24-Hr TSP | = (130% of baseline level + Limit level)/2                                  | 260         |
|           | For baseline level >200 µg/m <sup>3</sup> , Action level = Limit level      |             |
|           | For baseline level ≤384 µg/m³, Action level                                 |             |
| 1-Hr TSP  | = (130% of baseline level + Limit level)/2                                  | 500         |
|           | For baseline level >384 $\mu$ g/m <sup>3</sup> , Action level = Limit level |             |

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

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

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

#### Table 2-1-4 Action & Limit Levels for Air Quality at K11, µg/m<sup>3</sup>

#### Event and Action Plan

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

#### Environmental Mitigation Measures for Air Quality

- 2.1.23 Although most of the construction works would be carried out underground, appropriate dust mitigation measures as stipulated in the EP, Project Profile, related environmental regulation including Air Pollution Control (Construction Dust) Regulation as well as those recommended in the Implementation Schedule should be implemented to control fugitive dust emission. The following key dust suppression measures are recommended:
  - a) Decking over the excavation areas;
  - b) Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;
  - c) Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;
  - d) Cover all excavated or stockpiles of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;
  - e) Provision of vehicle washing facilities at the exit points of the site; and
  - f) Provision of tarpaulin covering for any dusty materials on a vehicle leaving the site.
- 2.1.24 Details of the implementation schedule for the required environmental mitigation measures are presented in *Appendix D*.

#### 2.2 Construction Noise

#### Monitoring Parameters and Frequency

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

#### Table 2-2-1 Noise Monitoring Parameters and Frequency

| Parameters                    | Frequency   |
|-------------------------------|-------------|
| L <sub>eq</sub> 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

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implementation via e-mail and / or facsimile for ease of necessary inspection. Where amendment is necessary under ad hoc conditions, including actual and broadcast adverse weather, accidental instrument failures, etc., advanced notification is given at least 24 hours prior to implementation or as practical as possible.

#### Monitoring Equipment

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

#### Table 2-2-2 Construction Noise Monitoring Equipment

| Item | Equipment Name      | Model                         |
|------|---------------------|-------------------------------|
| 1    | Sound Level Meter   | B&K 2238 (Serial no. 2562782) |
| 2    | Acoustic Calibrator | B&K 4231 (Serial no. 409134)  |

#### Monitoring Location

- 2.2.4 As stated in previous **Section 2.1.4**, the alternative air quality monitoring location K11 which is proposed by the ET and agreed among MTRC, IEC and MC, i.e. on the roof-top above the 4/F of the commercial complex of K11, is used for the construction noise monitoring location. The access to K11 has been granted by the management office of the K11 prior to the commencement of the baseline monitoring in January 2014.
- 2.2.5 **Table 2-2-3** summarizes the recommended alternative noise monitoring location, which is illustrated in *Appendix A*.

#### Table 2-2-3 Noise Monitoring Location

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

#### Monitoring Methodology

Field Monitoring

- 2.2.6 Procedures for noise monitoring 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

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

#### Action and Limit Levels

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

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

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

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

#### Event and Action Plan

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

#### Mitigation Measures for Construction Noise

- 2.2.10 Although no residual noise impact would be generated after the proposed mitigation measures are in place, the general construction noise control measures stipulated in the EP, Project Profile as well as those recommended in the Implementation Schedule should be fully implemented in order to minimise noise impacts during the construction phase. They are summarised as follows:
  - The Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD shall be adopted;

- j) The statutory and non-statutory requirements and guidelines shall be complied with;
- k) Approval for the method of working, equipment and noise mitigation measures intended to be used at the site shall be granted from the Project Engineer before commencing any work;
- Working methods to minimize the noise impact on the surrounding NSRs shall be formulated and executed, and the implementation of these methods shall be monitored by experienced personnel with suitable training;
- m) Noisy equipment and noisy activities shall be located as far away from the NSRs as is practical;
- n) Unused equipment shall be turned off;
- o) PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;
- p) All plant and equipment shall be maintained regularly;
- q) Material stockpiles and other structures shall be effectively utilised as noise barriers, whenever practicable; and
- r) Enclosure of Entrance D1 with acoustic mat during demolition.
- 2.2.11 Details of the implementation schedule for the mitigation measures are presented in *Appendix D*.

# 3 MONITORING RESULTS

## 3.1 Air Quality

#### **Monitoring Results**

- 3.1.1 24-Hr TSP monitoring during the Reporting Period was conducted following the agreed monitoring schedule.
- 3.1.2 24-Hr TSP results of the Reporting Period are summarised in the following *Table 3-1-1*. Graphical plots of the parameter are illustrated in *Appendix K*.

| Mean (Min – Max) | 43.6 (33.5 – 61.2) |              |            |
|------------------|--------------------|--------------|------------|
| 23-Mar-2015      | 61.2               | _            |            |
| 16-Mar-2015      | 33.5               | 222          | 260        |
| 09-Mar-2015      | 33.8               | _            |            |
| 02-Mar-2015      | 45.9               | _            |            |
| Monitoring Date  | 24-Hr TSP          | Action Level | Limit Leve |

#### Table 3-1-1 Summary of 24-Hr TSP Monitoring Results, ug/m<sup>3</sup>

#### Discussion

- 3.1.3 **Table 3-1-1** demonstrates that all 24-Hr TSP results of the Reporting Period fluctuated well below the A/L Levels of the parameter, i.e. neither Action Level nor Limit Level exceedances were recorded.
- 3.1.4 No Notice of Exceedances (thereinafter referred as 'NOE') and the associated NOE Investigation as well as remedial actions was 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**..

| Monitoring Date                       | L <sub>eq (30 min)</sub> | A/L Levels                        |  |  |  |  |  |
|---------------------------------------|--------------------------|-----------------------------------|--|--|--|--|--|
| 03-Mar-2015                           | 65.8                     | – Limit Level: 75                 |  |  |  |  |  |
| 10-Mar-2015                           | 67.4                     |                                   |  |  |  |  |  |
| 17-Mar-2015                           | 67.2                     | <ul> <li>Action Level:</li> </ul> |  |  |  |  |  |
| 24-Mar-2015                           | 67.2                     | - Any documented                  |  |  |  |  |  |
| 31-Mar-2015                           | 69.1                     | _ complaint against               |  |  |  |  |  |
| Mean (Min – Max), <i>Leq</i> (30 min) | 67.5 (65.8 – 69.1)       | construction noise.               |  |  |  |  |  |

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

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

#### Weather Conditions

- 3.2.7 No weather conditions and any other factors were identified to have significant effects on the air and noise monitoring results within the Reporting Period.
- 3.2.8 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 Nevertheless, 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 3, 10, 17, 24 and 31 March 2015. Deficiencies or findings of the site audit and the associated follow up actions are summarised in the following **Table 4-1-1**:

| Date            | Deficiencies or findings   | Follow-Up Action |
|-----------------|--|------------------|
|                 | Follow-up item(s)  |                  |
| <br>03-Mar-2015 | No follow-up item.   | Not required.    |
|                 | Observation(s) on the day of inspection  |                  |
|                 | No deficiency was observed on site.  | Not required.    |
| _               | Follow-up item(s)  |                  |
| 10-Mar-2015     | No follow-up item.   | Not required.    |
| _               | Observation(s) on the day of inspection  |                  |
| _               | No deficiency was observed on site.  | Not required.    |
| _               | Follow-up item(s)  |                  |
|                 | No follow-up item.   | Not required.    |
| 17-Mar-2015     | Observation(s) on the day of inspection  |                  |
| _               | Small amount of water was observed seeped out at the footing of site hoarding, the Contractor was managed to arrange a clean-up immediately, no water seepage was observed after the clean-up. | Not required.    |
|                 | Follow-up item(s)  |                  |
| -               | No follow-up item.   | Not required.    |
| 24-Mar-2015 -   | Observation(s) on the day of inspection  |                  |
| _               | No deficiency was observed on site.  | Not required.    |
| _               | Follow-up item(s)  |                  |
| _               | No follow-up item.   | Not required.    |
| 31-Mar-2015     | Observation(s) on the day of inspection  |                  |
| _               | No deficiency was observed on site.  | Not required.    |

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

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

# 4.2 Compliance with Legal/Contractual Requirement

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

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

| Month      | No. of<br>Breach(s) | Cumulative no. from March 2014 to the Reporting<br>Period |
|------------|---------------------|---|
| March 2015 | 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<br>Complaint(s) | Cumulative no. from March 2014 to the Reporting Period |
|------------|------------------------|--|
| March 2015 | 0                      | 4  |

## 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<br>Breach(s) | Cumulative no. from March 2014 to the Reporting Period |
|------------|---------------------|--|
| March 2015 | 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 Key Environmental Issues

- 6.1.1 Future key environmental issues include:
  - Air quality in particular construction dust during dusty construction activities, e.g. demolishment of the Entrance D1 and excavation works, under dry and windy conditions;
  - 2) Construction noise during noisy activities; and
  - 3) Site surface water run-off and construction wastewater discharge.

## 6.2 Mitigation Measures

- 6.2.1 To avoid potential adverse environmental impacts of the future key environmental issues stated above, full implementation of the mitigation measures as stipulated in the Implementation Schedule shown in *Appendix D* is required.
- 6.2.2 Mitigation measures for air quality, construction noise and water quality implemented to date shall be properly maintained.
- 6.2.3 Where appropriate, improvement of the implemented mitigation measures is reminded to ensure effectiveness of the mitigation measures.

# 7 CONCLUSIONS AND RECOMMENDATIONS

## 7.1 Conclusions

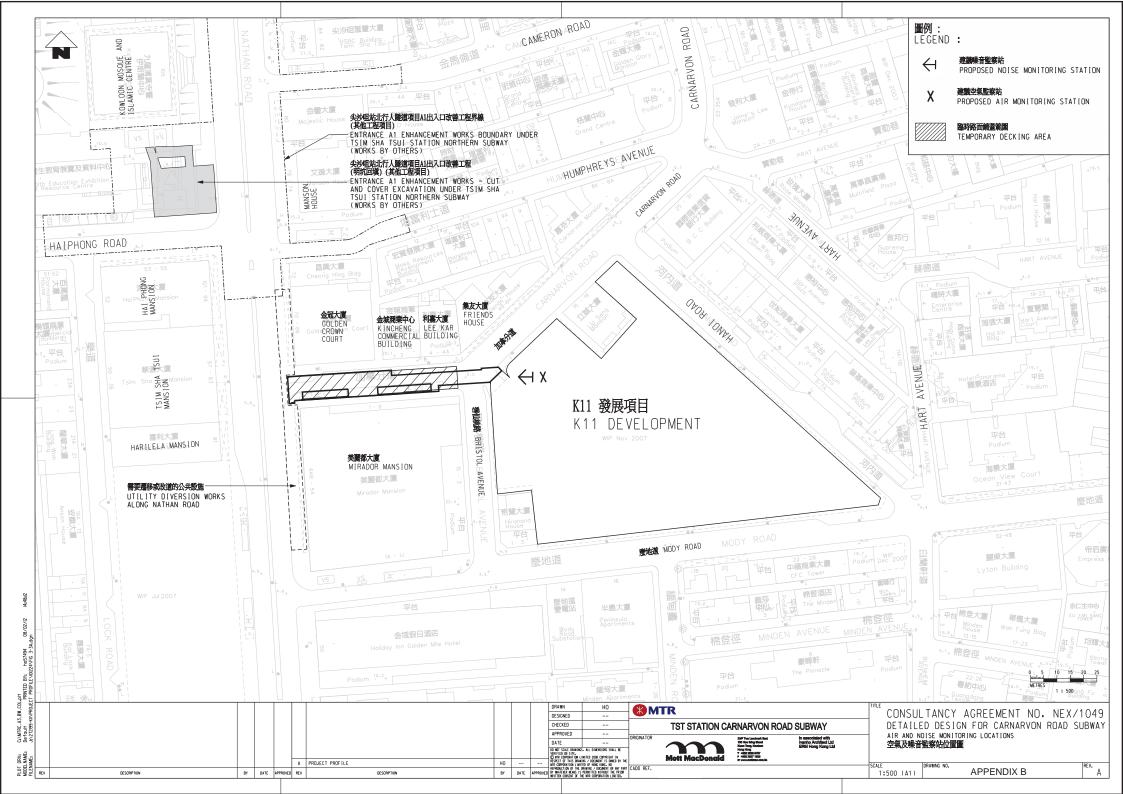
- 7.1.1 Neither NOE & the associated NOE investigation nor follow-up actions were required as the environmental monitoring results registered no exceedances of A/L Levels of air quality and construction noise during the Reporting Period.
- 7.1.2 No corrective actions were required as the environmental 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.
- 7.1.3 In addition, no remedial actions were required as no notification of summons and successful prosecutions were reported during the Reporting Period.
- 7.1.4 Nevertheless, occasional observations of inadequacies of proactive environmental mitigation measures were recorded during the regular site inspection and audit. They were rectified in situ or before the following site audit upon identification or notification.

## 7.2 Recommendations

- 7.2.1 Full implementation of the environmental mitigation measures stipulated in the EM&A Plan and summarised in the *Implementation Schedule* of *Appendix D*, are recommended. Where necessary, proper maintenance and improvement of the implemented mitigation measures are reminded.
- 7.2.2 As noisy construction activities such as piling works were being conducted during the Reporting Period, adequate mitigation measures should be implemented in order to alleviate noise nuisance.
- 7.2.3 In addition, suppression of construction dust is reminded during dusty construction activities under dry and windy conditions.
- 7.2.4 Furthermore, monitoring of site water runoff is reminded to prevent any direct water discharge off site, especially when water usage is high during the construction period. When necessary, the Contractor is reminded to apply additional precautionary measures to prevent any possible environmental deficiency.

Appendix A

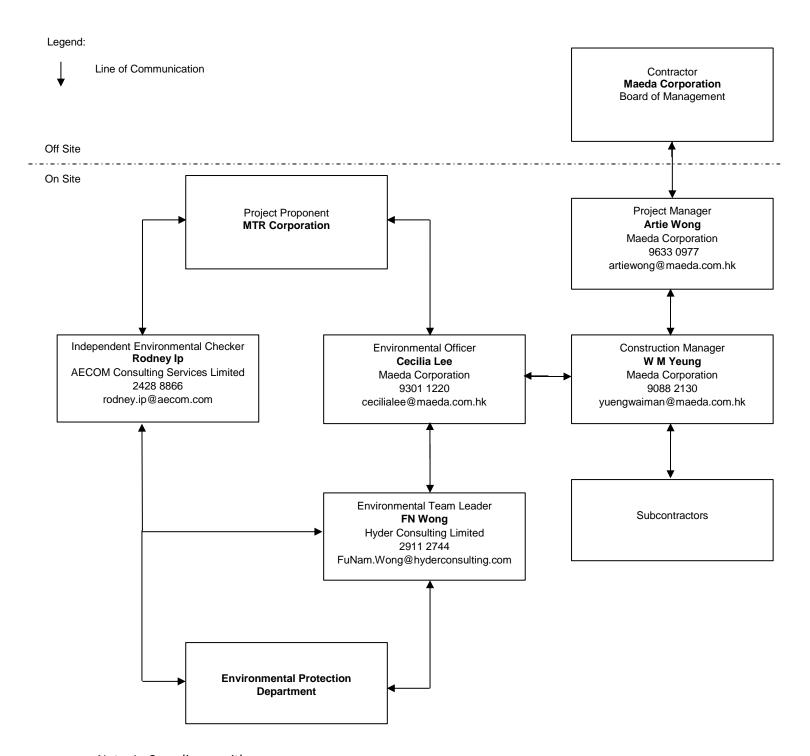
Site Location Plan



Appendix B

Management Structure

#### **Project Organization Chart in Environmental Management (Rev.03)**





Appendix C

**Construction Programme** 

|                           | MTR   |             |                  |                   |           | CONT        | [RAC      | CT C3       | 840-13C Tsim Sha Tsui Station                      | n, Carnarvon R          | oad S    | Subwa  | ay |        |                |          |              |               |                     |              |           |
|---------------------------|---|-------------|------------------|-------------------|-----------|-------------|-----------|-------------|--|-------------------------|----------|--------|----|--------|----------------|----------|--------------|---------------|---------------------|--------------|-----------|
| ity ID                    | Activity Name   | Orig<br>Dur | Planned<br>Start | Planned<br>Finish | Total Flo |             |           | ELMIA       | 2014<br>.pr M J Jul A S Oct N D Jan F M            | 2015                    | S Oct    | ND     |    | Apr. M | 2016           |          |              |               | 2017                |              |           |
| Preliminary Master Pre    | rogramme Revision 2   | 827d        | 14-Oct-13        | 3 31-Jul-16       |           |             | Jan       |             |  |                         | 3 001    | NU     |    |        | 3   301 A      |          |              | Jan i         |                     |              |           |
| Preliminaries             |   | 827d        | 14-Oct-13        | 3 31-Jul-16       |           | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Contract Key Dates        |   | Od          | 14-Oct-13        | 3 14-Oct-13       | 3         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-CD-20               | Date of Commencement  | 0d          | 14-Oct-13        | 3                 |           | d Date of   | Comm      | encement    |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Specified Degrees of Co   | ompletion   | Od          | 31-Jul-16        | 31-Jul-16         |           | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-CD-2A               | Complete to Deg. 1 status for all civil engineering works and ABWF in Subway outside                    | 0d          |                  | 31-Jul-16         |           | d           |           |             |  |                         |          |        |    |        | <b>r</b> • 0   | Complete | to Deg. 1 s  | tatus for all | civil engineering v | works and AB | 3WF in Su |
| Possession of Works Ar    | K11 Lot Boundary (31 Jul 16)<br>rea As PS Clause P8 & PS Appendix G                                     | Od          | 31-Oct-13        | 3 31-Oct-13       | 3         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-AD-20               | Access Date for Works Area 3840.W1 (subject to SLG/TMLG Approval)                                       | b0          | 31-Oct-13        | 3                 |           | d 🖚 Acce    | ss Date   | for Worl    | s Area 3840.W1 (subject to SLG/TMLG Approval)      |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Initial Site Survey       |   |             |                  | 3 10-Dec-1        |           |             |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
|                           | Velidate the summer second and compare out any second and different summer at Wester                    |             |                  |                   |           |             | Velider   |             |  |                         | 40 1014  | wa     |    |        |                |          |              |               |                     |              |           |
| C3840-SS-20               | Validate the survey record and carry out any necessary additional survey at Works<br>Areas 3840.W1 & W2 |             |                  | 3 10-Dec-1        |           |             | validat   | etnesurv    | ey record and carry out any necessary additional s | urvey at works Areas 38 | 40.001 8 | « VV 2 |    |        |                |          |              |               |                     |              |           |
|                           | gn & Approval Process (Incl. Demolition)  |             |                  | 3 30-Oct-13       |           | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Temporary Traffic Mang    | gement Scheme (TTM)   | 12d         | 16-Oct-13        | 3 30-Oct-13       | 3         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-TTM-100             | Appoint Traffic Consultant  | 0d          |                  | 16-Oct-13         | 3         | d 🕨 Appoint | t Traffic | Cohsulta    | nt   |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-TTM-110             | Pepare & submit review by Eng Outline TTM Schemes as per PS P20.4                                       | 6d          | 17-Oct-13        | 3 23-Oct-13       | 3         | d Pepar     | e⊂        | mit review  | v by Eng Outline TTM Schemes as per PS P20.4       |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-TTM-120             | Eng review Outline TTM Schemes  | 4d          | 24-Oct-13        | 3 28-Oct-13       | 3         | d 📕 Eng r   | eview (   | utline TT   | M Schemes  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-TTM-130             | Prepare Detailed TTMS   | 5d          | 24-Oct-13        | 3 29-Oct-13       | 3         | d l Prepa   | are Deta  | ailed TTM   | S  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-TTM-140             | Discussion and agree in priniciple at TMLG Meeting  | 1d          | 30-Oct-13        | 3 30-Oct-13       | 3         | id 🎫 Discu  | ussion a  | ind agree   | in priniciple at TMLG Meeting                      |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Carnarvon Road Subv       | way and Entrances   | 769d        | 14-Nov-13        | 3 22-Jun-16       | 6         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Open Cut Sequence 1 (A    | Advance Ground Works & Piling Works)  | 135d        | 14-Nov-13        | 3 02-May-1        | 4         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Advance Ground Works      | (S  | 69d         | 14-Nov-13        | 3 08-Feb-14       | 4         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-AGW-020             | Trial Pit/trench excavation   | 69d         | 14-Nov-13        | 3 08-Feb-14       | 4         | d F         |           | Trial Pi    | //trench excavation                                |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-AGW-040             | Pre-drilling works  | 24d         | 27-Dec-1         | 3 24-Jan-14       | 4         | id          | -         | Pre-drillin | q works  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Piles & Grouting for Ver  |   | 51d         | 27-Eeb-14        | 4 02-May-14       |           | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-EVS-010             | Mobilization for Piling Rig and Setup   |             |                  | 4 03-Mar-14       |           |             |           |             | What is to Dia Dia and Catha                       |                         |          |        |    |        |                |          |              |               |                     |              |           |
|                           |   |             |                  |                   |           | id .        |           |             | ilization for Piling Rig and Setup                 |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-EVS-020             | 52 nos. pipe piles with 1m. to 2.2m. minimum rock socket  |             |                  | 4 14-Apr-14       |           | d           |           | - F - E     | 52 nos. pipe piles with 1m. to 2.2m. minimum roc   | k socket                |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-EVS-030             | Grouting for Vertical Shaft Bulk Head   | 18d         | 17-Mar-14        | 4 07-Apr-14       | 1         | d           |           | Π           | Grouting for Vertical Shaft Bulk Head              |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-EVS-040             | Curtain Grouting vertical shaft   | 18d         | 08-Apr-14        | 02-May-1          | 4         | d           |           | <b>L</b> =1 | urtain Grouting vertical shaft                     |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Tunnel (Vertical Shaft Ex | xcavation)  | 226d        | 03-May-1         | 4 31-Jan-15       | 5         | d           |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-SH-100              | Pump Test   | 24d         | 03-May-1         | 4 31-May-1        | 4         | d           |           |             | Pump Test  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-SH-110              | Excavation for 1st layer 140m3 50m3/day   | 3d          | 03-Jun-14        | 1 05-Jun-14       | 4         | d           |           |             | Excavation for 1st layer 140m3 50m3/day            | /                       |          |        |    |        |                |          |              |               |                     |              |           |
| C3840-SH-120              | Install 1st waling, strut & legging wall  | 4d          | 06-Jun-14        | 10-Jun-14         | 4         | d           |           |             | Install 1st waling, strut & legging wall           |                         |          |        |    | ÷      |                |          |              |               |                     |              |           |
| C3840-SH-130              | Shotcrete 1st layer   | 2d          | 11-Jun-14        | 12-Jun-14         | 4         | d           |           |             | Shotcrete 1st layer                                |                         |          |        |    |        |                |          |              |               |                     |              |           |
|                           |   |             |                  |                   |           |             |           |             |  |                         |          |        |    |        |                |          |              |               |                     |              |           |
| Actual Work               | Milestone   |             |                  | C                 | Data Date | 11-Oct-13   | 3         |             | n  |                         |          |        |    |        | Data           |          |              |               | P/PMP/2             |              | 000000    |
| Remaining Work            |   |             |                  |                   | Page      | 1 of 3      |           |             | Preliminary M                                      | laster Program          | mme      | 9      |    | 27-    | Date<br>Feb-14 |          | Rev<br>REV 2 |               | Checked<br>BG       | AW           | Approve   |
| Critical Remaining        | g Work  |             |                  |                   |           |             |           |             | Extract C  | ritical Path 1          |          |        |    |        |                |          |              |               |                     |              |           |

|                   | <b>MTR</b>   |             |                  |                   |             | FRACT | 55040   | -130         | - 131     |           | isu         | Jial       | .on, 0       | and         |           | Juan         | Jub       | way       |            |              |            |                |
|-------------------|--|-------------|------------------|-------------------|-------------|-------|---------|--------------|-----------|-----------|-------------|------------|--------------|-------------|-----------|--------------|-----------|-----------|------------|--------------|------------|----------------|
|                   | Activity Name  | Orig<br>Dur | Planned<br>Start | Planned<br>Finish | Total Float |       | ) Jan F | MAprin       | 20<br>N J |           | S Oct       | ND         | lan F        | M Apr       |           | 015<br>Jul A | 50        | ct N      | D lan      | FM           | Apr M      | 2016<br>I J JI |
| C3840-SH-140      | Excavation for 2nd layer 190m3 50m3/d  | 4d          | 13-Jun-14        | 17-Jun-14         | 8d          |       |         | 101 / ¢1   1 |           |           | on for 2nd  |            |              |             |           |              |           |           | Diodan     |              | i pi m     |                |
| C3840-SH-150      | Install 2nd waling, strut & lagging wall   | 4d          | 18-Jun-14        | 4 21-Jun-14       | 8d          |       |         |              | Ŀ         | Install 2 | id waling,  | strut &    | agging v     | /all        |           |              |           |           |            |              |            |                |
| C3840-SH-160      | Shotcrete 2nd layer  | 2d          | 23-Jun-14        | 4 24-Jun-14       | 8d          |       |         |              | Ŀ         | Shotcre   | te 2nd lay  | /er        |              |             |           |              |           |           |            |              |            |                |
| C3840-SH-170      | Install Decking with Subframe to cover all area                                  | 4d          | 25-Jun-14        | 28-Jun-14         | - 8d        |       |         |              |           | Install   | ecking v    | /ith \$ubf | ame to       | over all a  | rea       |              |           |           |            |              |            |                |
| C3840-SH-180      | Excavation for 3rd layer 360m3 50m3/d  | 7d          | 30-Jun-14        | 4 08-Jul-14       | 8d          |       |         |              | Ļ         | Exca      | ation for   | 3rd layer  | 360m3        | 50m3/d      |           |              |           |           |            |              |            |                |
| 3840-SH-190       | Install 3rd waling, strut & lagging wall   | 5d          | 09-Jul-14        | 14-Jul-14         | 8d          |       |         |              | Ļ         | linsta    | ll 3rd wali | ng, strut  | & laggin     | g wall      |           |              |           |           |            |              |            |                |
| 3840-SH-200       | Shotcrete 3rd layer  | 2d          | 15-Jul-14        | 16-Jul-14         | 8d          |       |         |              | Ļ         | Sho       | crete 3rd   | layer      |              |             |           |              |           |           |            |              |            |                |
| 840-SH-210        | Excavation for 4th layer117m3 (soil) @ 50m3/d, 205m3 (rock) 3m3/d                | 71d         | 17-Jul-14        | 10-Oct-14         | 8d          |       |         |              | ļ         |           |             | xcavatio   | ሰ for 4th    | layer 117r  | h3 (soil) | @ 50m3       | /d, 205m  | n3 (rock  | ) 3m3/d    |              |            |                |
| 840-SH-230        | Shotcrete 4th layer  | 2d          | 11-Oct-14        | 13-Oct-14         |             |       |         |              |           |           |             | Shotcret   | • 4th lay    | er          |           |              |           |           |            |              |            |                |
| 3840-SH-240       | Make formation and Blinding  | 2d          | 14-Oct-14        | 4 15-Oct-14       | 8d          |       |         |              |           |           | Γ,          | Make for   | mation a     | nd Blindin  | g         |              |           |           |            |              |            |                |
| 840-SH-250        | Modify waling and strut  | 3d          | 16-Oct-14        | 18-Oct-14         | 8d          |       |         |              |           |           | Γ           |            | /aling an    |             |           |              |           |           |            |              |            |                |
| 840-SH-260        | Adjustable Steel Platform Setup for Grouting & Piling Works)                     | 12d         |                  | 01-Nov-14         | 8d          |       |         |              |           |           | Ĺ           |            |              | el Platforn | Setun     | for Grouti   | na & Pili | nd Worl   | ks)        |              |            |                |
| 3840-SH-270       | Horizontal Grouting (48 Nos. Grout Holes)  |             |                  | 4 03-Dec-14       | 8d          |       |         |              |           |           | Ĺ           |            |              | Grouting    |           |              |           |           | ,          |              |            |                |
| 3840-SH-280       | Horizontal Pipe Roofing (59 Nos. Pipe Pile)                                      |             |                  | 4 07-Jan-15       |             |       |         |              |           |           |             |            |              | ontal Pipe  |           |              |           |           |            |              |            |                |
|                   |  |             |                  |                   |             |       |         |              |           |           |             |            |              |             |           |              | . гіре г  |           |            |              |            |                |
| D-SH-290          | Horizontal Re-grouting   | 14d         |                  | 5 23-Jan-15       | 8d          |       |         |              |           |           |             | -          | Γ            | prizontal R |           |              |           |           |            |              |            |                |
| 40-SH-300         | Install Portal Frame   | 3d          |                  | 5 27-Jan-15       | 8d          |       |         |              |           |           |             |            | Ι <b>Γ</b> Ι | stall Porta |           |              |           |           |            |              |            |                |
| 840-SH-310        | Cut Pipe Pile  | 4d          | 28-Jan-15        | 5 31-Jan-15       | 8d          |       |         |              |           |           |             |            |              | ut Pipe Pi  | le        |              |           |           |            |              |            |                |
| el (ELS, Excavati | ion & Construction of Tunnel)  | 408d        | 02-Feb-15        | 5 22-Jun-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              |            |                |
| 3840-TU-100       | Excavation, shotcrete & install steel framework support for 1st 6m               | 70d         | 02-Feb-15        | 5 02-May-15       | 8d -        |       |         |              |           |           |             |            | -            |             | Exca      | vation, sh   | otcrete 8 | & install | steel fra  | mework       | support    | for 1st        |
| 40-TU-110         | Excavation, shotcrete & install steel framework support for next 7m              | 75d         | 04-May-1         | 5 01-Aug-15       | 8d          |       |         |              |           |           |             |            |              | <b>ا</b>    | _         |              | xcavatio  | on, shoto | crete & i  | nstall ste   | el framev  | work su        |
| 840-TU-120        | Excavation, shotcrete & install steel framework support for last 7m              | 75d         | 03-Aug-15        | 5 31-Oct-15       | 8d          |       |         |              |           |           |             |            |              |             |           | ┕╴           |           | Exc       | avation    | shotcre      | te & insta | all steel      |
| 840-TU-130        | Install intermediate portal frame  | 3d          | 02-Nov-15        | 5 04-Nov-15       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           | Ins       | tallinter  | mediate      | portal fra | ame            |
| C3840-TU-140      | Install intermediate horizontal pipe roofing incl. mobilization & demobilization | 19d         | 05-Nov-15        | 5 26-Nov-15       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           | Install ir | htermedi     | ate horizo | ohtal pip      |
| 3840-TU-150       | Horizontal re-grouting for intermediate section                                  | 6d          | 27-Nov-15        | 5 03-Dec-15       | -<br>8d     |       |         |              |           |           |             |            |              |             |           |              |           | - 1-1     | Horizo     | ntal re-g    | routing fo | or interr      |
| 3840-TU-160       | Install Support, excavation & shotcret for intermediate section                  | 33d         | 04-Dec-1         | 5 14-Jan-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           | L         | _          | Install Su   | ipport, ex | kçavatic       |
| 3840-TU-180       | Install dowel bars & concrete collar beams                                       | 10d         | 15-Jan-16        | 6 26-Jan-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            | Install      | dowel bar  | rs & co        |
| 3840-TU-210       | Breakthrough (core & saw cut) into K11 Lot & associated works                    | 18d         | 27-Jan-16        | 6 19-Feb-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           | L          | Bre          | akthroug   | jh (care       |
| 3840-TU-220       | Construct Slab 2 Bays (2 pours)  | 12d         | 20-Feb-16        | 6 04-Mar-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            | - <b>-</b> c | Construct  | Slab 2         |
| 3840-TU-230       | Construct Wall & Roof (incl. removal of struts) 2 Bays (8 pours)                 | 64d         | 05-Mar-16        | 6 25-May-16       |             |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              |            | Const          |
| 3840-TU-240       | Curing   | 10d         | 26-May-16        | 6 06-Jun-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              | L          | 🗖 Curi         |
| 3840-TU-250       | Dismantle falsework  | 10d         | 31-May-16        | 6 11-Jun-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              |            | <b>—</b> Dis   |
| 3840-TU-260       | Grouting into void above   | 6d          | 13-Jun-16        | 6 18-Jun-16       | 8d          |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              |            | G              |
|                   |  |             |                  |                   |             |       |         |              |           |           |             |            |              |             |           |              |           |           |            |              |            | ГЦ             |
| Actual Work       | ♦ ♦ Milestone  |             |                  | Data              | Date: 11-   | Oct-1 | 3       |              |           |           |             |            |              |             |           |              |           |           |            |              |            |                |
| Remaining Wor     | rk   |             |                  |                   | Page 2 of   | 3     |         |              |           |           | Pre         | limi       | nary         | Mast        | ter P     | rogra        | amm       | ne        |            |              | 27         | Da<br>7-Feb-   |
| Critical Remaini  | ing Work   |             |                  |                   | 5 5.        |       |         |              |           |           |             |            |              | Criti       |           |              |           |           |            |              | 21         | -rep-          |

|       |              |                     |        |       |       |     |       |       |     |         |  | A        |    |     |      |     |            |
|-------|--------------|---------------------|--------|-------|-------|-----|-------|-------|-----|---------|--|----------|----|-----|------|-----|------------|
| A     | s            | Oct                 | N      | D     | Jan   | F   | М     | Apr   | М   | 20<br>J | )17<br>Jul                                     | A        | S  | Oct | N    | D   | 018<br>Jan |
| ~     | 0            |                     | N      |       | Jan   | 1   | 101   | Лрі   | 101 | 5       | Jui  | <u>^</u> | 0  | 001 |      | U   | Jan        |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     | <br><br>   |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              |                     |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              | supp                |        | or la | st 7n | h   |       |       |     |         |  |          |    |     |      |     |            |
|       | ng in<br>sec | cl. m               | obiliz | zatio | h & d | emo | biliz | ation |     |         | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- |          |    |     |      |     |            |
| rete  | colla        | t for<br>tr bea     | ams    |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
| ys (2 | 2 poi        | into<br>Irs)<br>Roc |        |       |       |     |       |       |     | s (8 j  | pour   | -6)      |    |     |      |     |            |
|       |              | ewor                |        |       |       |     |       |       |     |         |  |          |    |     |      |     |            |
| uting | into         | void                | abov   | /e    |       |     |       |       |     |         |  |          |    |     |      |     |            |
|       |              |                     |        |       | Ма    | eda | a/P/  | 'ΡΜ   | P/2 |         |  |          |    |     |      |     |            |
| e     |              | Т                   | F      | Rev   | isio  |     | Ť     |       | Che | ecke    | ed   |          |    | App | orov | /ed |            |
| 4     |              |                     | EV.    |       |       |     | -     | 3G    |     |         |  |          | AW |     |      |     |            |
| •     |              |                     | _ •    | -     |       |     |       |       |     |         |  |          |    |     |      |     |            |

| <b>MTR</b>  |   |      |           | CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway |             |       |       |         |     |       |         |       |             |         |     |       |       |           |          |           |                 |           |         |       |           |
|-------------|---|------|-----------|---|-------------|-------|-------|---------|-----|-------|---------|-------|-------------|---------|-----|-------|-------|-----------|----------|-----------|-----------------|-----------|---------|-------|-----------|
| Activity ID | Activity Name   | Orig | Planned   | Planned   | Total Float |       |       |         | 20  | 014   |         |       |             | 2015    |     |       |       |           | 2016     |           | i               |           |         | 2017  |           |
|             |   | Dur  | Start     | Finish  |             | Oct N | D Jan | F M Apr | M J | Jul A | S Oct N | D Jar | n F M Apr I | 1 J Jul | A S | Oct N | D Jan | F M Apr N | ∕l J Jul | A S       | Oct N D J       | lan F I   | M Apr M | J Jul | A S Oct N |
|             | C3840-TU-270 Cut Pipe pile at interface                   | 3d   | 20-Jun-16 | 22-Jun-16   | 8d          |       |       |         |     |       |         |       |             |         |     |       |       |           | Left Cut | Pipe pile | le at interface |           |         |       |           |
| Bu          | ilding Services & ABWF Works                              | 70d  | 27-Apr-16 | 21-Jul-16   | 8d          |       |       |         |     |       |         |       |             |         |     |       |       |           |          |           |                 |           |         |       |           |
| E           | 3S & ABWF Works at Subway Conc. Level and Plant Room & D3 | 70d  | 27-Apr-16 | 21-Jul-16   | 8d          |       |       |         |     |       |         |       |             |         |     |       |       |           |          |           |                 |           |         |       |           |
|             | C3840-BSS-120 ABWF Works to Deg. 1 Completion             | 70d  | 27-Apr-16 | 21-Jul-16   | 8d          |       |       |         |     |       |         |       |             |         |     |       |       | -         |          | ABWF      | Works to Deg. 1 | 1 Complet | ion     |       |           |

| Actual Work   Milestone | Data Date: 11-Oct-13 |                              |           |
|-------------------------|----------------------|------------------------------|-----------|
| Remaining Work          |                      | Preliminary Master Programme | Date      |
|                         | Page 3 of 3          |                              | 27-Feb-14 |
| Critical Remaining Work |                      | Extract Critical Path 1      |           |

| Maeda/P/PMP/2 |          |         |          |  |  |  |
|---------------|----------|---------|----------|--|--|--|
| e             | Revision | Checked | Approved |  |  |  |
| 1             | REV 2    | BG      | AW       |  |  |  |
|               |          |         |          |  |  |  |

| <b>MTR</b>  | CONTRACT  | C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway   |   |
|---|---|--|---|
| Activity ID Activity Name   | Orig Planned Planned Total Float<br>Dur Start Finish Oct N. D. Jan F. | 2014         2015           M Apr M J Jul A S Oct N D Jan F M Apr M J Jul A S Oct N D Jan F M  | 2016 2017 01  |
| Preliminary Master Programme Revision 2   | 898d 11-Oct-13 23-Oct-16 0d   |  |   |
| Preliminaries   | 898d 11-Oct-13 23-Oct-16 Od   |  |   |
| Contract Key Dates  | 3d 11-Oct-13 14-Oct-13 Od   |  |   |
| C3840-CD-10 Date of Contract Award  | 0d 11-Oct-13 0d ❤ Date of Contract A                                  | ward   |   |
| C3840-CD-20 Date of Commencement  | 0d 14-Oct-13 0d Date of Commence                                      | emeņt  |   |
| Specified Degrees of Completion   | 0d 23-Oct-16 23-Oct-16 0d   |  |   |
| C3840-CD-2C Complete energisation of the power isolator in the Telephone Equipment Rm (23 Oct                       | 0d 23-Oct-16 0d   |  | r⊷ Complete energisation of the power isolator in the Telephone Equ |
| 16)<br>Possession of Works Area As PS Clause P8 & PS Appendix G   | 0d 31-Oct-13 31-Oct-13 0d   |  |   |
| C3840-AD-20 Access Date for Works Area 3840.W1 (subject to SLG/TMLG Approval)                                       |   | r Works Area 3840.W1 (subject to SLG/TMLG Approval)  |   |
|   |   |  |   |
| Initial Site Survey   | 35d 31-Oct-13 10-Dec-13 0d  |  |   |
| C3840-SS-20 Validate the survey record and carry out any necessary additional survey at Works<br>Areas 3840.W1 & W2 | 35d 31-Oct-13 10-Dec-13 0d  | e survey record and carry out any necessary additional survey at Works Areas 3840.W1 & W2  |   |
| Procurement of Subcontract Packages   | 4d 11-Oct-13 16-Oct-13 0d   |  |   |
| Preliminaries and Utilities Diversion   | 4d 11-Oct-13 16-Oct-13 0d   |  |   |
| C3840-PRC-140 Temporary Traffic Diversion (Consultant)  | 4d 11-Oct-13 16-Oct-13 0d 1 Temporary Traffic                         | Diversion (Consultant)   |   |
| Temporary Works Design & Approval Process (Incl. Demolition)  | 12d 16-Oct-13 30-Oct-13 0d  |  |   |
| Temporary Traffic Mangement Scheme (TTM)  | 12d 16-Oct-13 30-Oct-13 0d  |  |   |
| C3840-TTM-100 Appoint Traffic Consultant  | 0d 16-Oct-13 0d ➡ Appoint Traffic Co                                  | nsultant   |   |
| C3840-TTM-110 Pepare & submit review by Eng Outline TTM Schemes as per PS P20.4                                     | 6d 17-Oct-13 23-Oct-13 0d • 17 Pepare & submit                        | review by Eng Outline TTM Schemes as per PS P20.4  |   |
| C3840-TTM-120 Eng review Outline TTM Schemes  | 4d 24-Oct-13 28-Oct-13 0d Eng review Outi                             | ne TTM Schemes   |   |
| C3840-TTM-130 Prepare Detailed TTMS   | 5d 24-Oct-13 29-Oct-13 0d - Prepare Detailed                          |  |   |
|   |   |  |   |
| C3840-TTM-140 Discussion and agree in priniciple at TMLG Meeting  |   | agree in priniciple at TMLG Meeting  |   |
| Carnarvon Road Subway and Entrances   | 774d 14-Nov-13 28-Jun-16 0d   |  |   |
| Utility Diversion   | 57d 10-Feb-14 17-Apr-14 Od  |  |   |
| C3840-UTD-290 Diversion of Gasmain as necessary   | 57d 10-Feb-14 17-Apr-14 Od  | Diversion of Gasmain as necessary  |   |
| Open Cut Sequence 1 (Advance Ground Works & Piling Works)   | 444d 14-Nov-13 18-May-15 Od   |  |   |
| Advance Ground Works  | 69d 14-Nov-13 08-Feb-14 0d  |  |   |
| C3840-AGW-020 Trial Pit/trench excavation   | 69d 14-Nov-13 08-Feb-14 0d  | rial Brit/trench excavation  |   |
| Piles & Grouting for Vertical Shaft   | 39d 27-Feb-14 14-Apr-14 0d  |  |   |
| C3840-EVS-010 Mobilization for Piling Rig and Setup   | 4d 27-Feb-14 03-Mar-14 0d   | Mobilization for Piling Rig and Setup  |   |
| C3840-EVS-020 52 nos. pipe piles with 1m. to 2.2m. minimum rock socket  | 35d 04-Mar-14 14-Apr-14 0d  | 52 nos. ppe piles with 1 m. to 2.2 m. minimum rock;socket  |   |
| Piles & Grouting for Temporary Staricase & C&C Subway   | 59d         15-Apr-14         28-Jun-14         0d                    |  |   |
|   |   |  |   |
| C3840-ETS-020 70 nos. pipe piles along Grid Line A with 1m. to 3.1m minimum rock socket                             | 47d 15-Apr-14 14-Jun-14 0d  | Image: Provide the state of |   |
|   | Data Date: 11-Oct-13  |  | Maeda/P/PMP/2   |
| Actual Work   Milestone  Remaining Work   |   | Preliminary Master Programme   | Date Revision Checked Approved                                      |
| Critical Remaining Work   | Page 1 of 5   |  | 27-Feb-14 REV 2 BG AW   |
|   |   | Extract Critical Path 2  |   |

|                                   | MTR   | CONTRACT   | C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway   |                           |
|-----------------------------------|---|--|--|---------------------------|
| vity ID Activity N                | ame   | Orig Planned Planned Total Float<br>Dur Start Finish Oct N D Lan F | 2014         2015         2016           M Apr M J Juli A S Oct N D Jan F M Apr M J Juli A S Oct N D Jan F M Apr M J Juli A         S Oct N D Jan F M Apr M J Juli A | 2017                      |
| C3840-ETS-030 Curtain G           | Grouting along Grid Line A  | 24d 29-May-14 26-Jun-14 2d   | Curtain Grouting along Grid Line A   |                           |
| C3840-ETS-070 Type III S          | Sheet Plle, 355m along between Grids A & B                              | 6d 22-Apr-14 28-Apr-14 0d  | Type III' Sheet Plie, 355m along between Grids A & B   |                           |
| C3840-ETS-080 Toe Grou            | uting   | 8d 29-Apr-14 09-May-14 0d  | Top Grouting   |                           |
| C3840-ETS-090 Mobilizati          | ion for Piling Rig and Setup  | 4d 10-May-14 14-May-14 Od  | Mpbilization for Piling Rig and Setup  |                           |
| C3840-ETS-110 37 nos. p           | ipe piels along Grid Line B with 1m. to 1.5m. minimum rock socket       | 25d 15-May-14 13-Jun-14 0d   | 37 nos. pipe piels along Grid Line B with 1m. to 1.5m. minimum rock socket   |                           |
| C3840-ETS-120 Curtain G           | Grouting along Grid Line B  | 13d 14-Jun-14 28-Jun-14 Od   | Curtain Grouting along Grid Line B   |                           |
| Piles & Grouting for Remaining Se | ection of Cofferdam at D2   | 20d 24-Apr-15 18-May-15 0d   |  |                           |
| C3840-ECD-010 Mobilizati          | ion for Piling Rig and Setup  | 4d 24-Apr-15 28-Apr-15 0d  | r <b>~1</b> Mobilization for Piling Rig and Setup  |                           |
| C3840-ECD-020 23 nos. p           | pipe piles along Grid Line B at D2 with 1m. to 3.2m minimum rock socket | 16d 29-Apr-15 18-May-15 0d   | 23 nos. pipe piles along Grid Linie B at D2 with 1m. to 3.2m minimu  | umi rock sočket           |
| Open Cut Sequence 2 (Excavation   |   | 209d 30-Jun-14 11-Mar-15 0d  |  |                           |
|                                   | for temporary stancase)   |  |  |                           |
| Excavation                        |   | 93d 30-Jun-14 20-Oct-14 0d   |  |                           |
| C3840-EXC-100 Pump tes            | st prior to excavate for temporary staricase                            | 24d 30-Jun-14 28-Jul-14 Od   | Pump test prior to excavate for temporary staricase  |                           |
| C3840-EXC-120 Excavatio           | on for 1st layer at D1 208m3  | 4d 29-Jul-14 01-Aug-14 0d  | Excavation for 1'st layer at D1 208h3  |                           |
| C3840-EXC-130 Install 1st         | t waling & strut 21ton & temporary support to underground UUs           | 7d 02-Aug-14 09-Aug-14 0d  | Install 1st waling & strut 21ton & emporary support to underground UUs   |                           |
| C3840-EXC-140 Install Tru         | uss for Suport Temp D1  | 6d 11-Aug-14 16-Aug-14 Od  | Install Truss for Suport Temp D  |                           |
| C3840-EXC-150 Shotcrete           | e 1st layer   | 2d 18-Aug-14 19-Aug-14 0d  | Shotcrete 1st layer  |                           |
| C3840-EXC-160 Demolish            | n D1 4m below GL  | 6d 20-Aug-14 26-Aug-14 0d  | Demolish D1 4m;below GL  |                           |
| C3840-EXC-170 Excavatio           | on for 2nd layer at D1 230m3  | 5d 27-Aug-14 01-Sep-14 0d  | Excavation for 2nd layer at D1 230m3   |                           |
| C3840-EXC-180 Install 2nd         | d waling & strut 17ton  | 7d 02-Sep-14 10-Sep-14 0d  | Instali 2nd waling & strut 17ton   |                           |
| C3840-EXC-190 Shotcrete           | e 2nd layer   | 2d 11-Sep-14 12-Sep-14 0d  | 🛨 \$hot¢rete 2nd¦layer   |                           |
| C3840-EXC-200 Excavatio           | on for 3rd layer at D1 216m3  | 5d 13-Sep-14 18-Sep-14 0d  | →■ Excavation for 3rd layer at 0 1 216m3   |                           |
| C3840-EXC-210 Install 3rd         | d waling & strut 15ton  | 6d 19-Sep-14 25-Sep-14 0d  | Install 3rd waling & strut 1\$ton  |                           |
|                                   | e 3rd layer   | 4d 26-Sep-14 30-Sep-14 0d  | Shotcrete 3rd layer  |                           |
|                                   |   |  | Γ  |                           |
|                                   | on for 4th layer at D1 166m3  | 4d 03-Oct-14 07-Oct-14 0d  | Excavation for 4th layer at D1 166n3   |                           |
|                                   | annel on opening  | 3d 08-Oct-14 10-Oct-14 0d  | linstalit channelion opening   |                           |
| C3840-EXC-250 Shotcrete           | e 4th layer   | 4d 11-Oct-14 15-Oct-14 Od  | Shotcrete 4th layer  |                           |
| C3840-EXC-260 Make for            | mation and Blinding   | 4d 16-Oct-14 20-Oct-14 0d  | Make formation and Binding   |                           |
| RC Structure (Temporary Staricase | a)  | 116d 21-Oct-14 11-Mar-15 0d  |  |                           |
| C3840-TSC-100 Install Do          | wel bars (130#)   | 6d 21-Oct-14 27-Oct-14 Od  | Install Dowel bars (130#)  |                           |
| C3840-TSC-110 Const. Ba           | ay1 : 18m3  | 6d 28-Oct-14 03-Nov-14 0d  | Const; Bay1 : 18m3   |                           |
| C3840-TSC-120 Const. Ba           | ay2 : 16m3  | 9d 04-Nov-14 13-Nov-14 0d  | Const. Bay2 ::16m3   |                           |
| C3840-TSC-130 Const. Ba           | ay3 : 6m3   | 6d 14-Nov-14 20-Nov-14 0d  | Const. Bay3: 6ms   |                           |
|                                   |   |  |  |                           |
| Actual Work                       | Milestone   | Data Date: 11-Oct-13   |  | Maeda/P/PMP/2             |
| Remaining Work                    |   | Page 2 of 5  | Preliminary Master Programme Date 27-Feb-14  | Revision Checked Approved |
| Critical Remaining Work           |   |  | Extract Critical Path 2  |                           |

|             |   | MTR  |             |                  |                   |   | CONTRACT C3840-13C Tsim Sha Tsui Station, Carnarvon Road Subway  |
|-------------|---|--|-------------|------------------|-------------------|---|--|
| Activity ID |   | Activity Name  | Orig<br>Dur | Planned<br>Start | Planned<br>Finish | Total Float   | 2014         2015         2016         2017           ct         N         D         Jan         F         M         Apr         M         J         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         J         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         J         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         J         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         J         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         Jul         A         S         Oct         N         D         Jan         F         M         Apr         M         Jul         A         S         Oct         N         D         Jan         F |
| C           | 3840-TSC-150                            | Const. Bay5 : 35m3   | 13d         | 21-Nov-14        | 05-Dec-14         |   |  |
| C           | 3840-TSC-160                            | Const. Bay6 : 39m3   | 15d         | 06-Dec-14        | 4 23-Dec-14       | Od  | Const. Bay6. 39m3  |
| C           | 3840-TSC-170                            | Const. Bay7 : 34m3   | 14d         | 16-Dec-14        | 1 03-Jan-15       | 0d  | Const Bay : 34m3   |
| C           | 3840-TSC-180                            | Const. Bay8 : 4m3  | 6d          | 31-Dec-14        | 4 07-Jan-15       | Od  | <b>g</b> ≪Const. Bay8 : 4m3  |
| C           | 3840-TSC-190                            | Const. Bay9 : 44m3   | 14d         | 08-Jan-15        | 23-Jan-15         | Od  | Const. Bay9: 44m3  |
| C           | 3840-TSC-240                            | Temporary Staircase Commissioning & open for use           | Od          |                  | 11-Mar-15         | Od  | Temporary Staircase Commissioning & open for use   |
| Open (      | Cut Sequence 3 (A                       | dvance Ground Works & Piling Works at D2 & in front of D1) | 33d         | 12-Mar-15        | 23-Apr-15         | Od  |  |
| C384        | 40-ELS-510                              | Joint Survey & Remove existing BS & ABWF Services at D2    | 6d          | 12-Mar-15        | 5 18-Mar-15       | Od  | voint Survey & Relmové existing BS & ABWF Services at D2   |
| C384        | 40-ELS-520                              | Const Flood Barrier at Concourse and D2                    | 9d          | 19-Mar-15        | 5 28-Mar-15       | Od  | Const Flood Barrier at Concourse and D2  |
| C384        | 40-ELS-530                              | Demolish D2 above GL                                       | 12d         | 30-Mar-15        | 5 16-Apr-15       | Od  | Demicilish D2 above GL   |
| C384        | 40-ELS-540                              | Set Conc block in D2 opening                               | 6d          | 17-Apr-15        | 23-Apr-15         | Od  | Set Conc block in D2;opening   |
| Open (      | Cut Sequence 4 (E                       | xcavation for Subway in front of D1)                       | 182d        | 27-Jun-15        | 02-Feb-16         | Od  |  |
| C384        | 40-ELSD1-100                            | Excavation for 1st layer 378m3, 25m3/day                   | 15d         | 27-Jun-15        | 5 15-Jul-15       | Od  | Excavation for 1st layer 378m3, 25m3/day   |
| C384        | 40-ELSD1-110                            | Install 1st waling & strut & Utility Support               | 24d         | 03-Jul-15        | 30-Jul-15         | Od  | Install 1st waling & strut & Utility Support   |
| C384        | 40-ELSD1-130                            | Install Decking with Subframe to cover all area            | 12d         | 31-Jul-15        | 13-Aug-15         | Od  | Install Decking with Subframe to cover all area  |
| C384        | 40-ELSD1-140                            | Shotcrete 1st layer  | 2d          | 14-Aug-15        | 5 15-Aug-15       | Od  | Shotcrete 1st;layer  |
| C384        | 40-ELSD1-150                            | Excavation for 2nd layer 421m3 50m3/day                    | 9d          | 17-Aug-15        | 5 26-Aug-15       | Od  | Excavation for 2nd layer 421m3 50m3/day  |
| C384        | 40-ELSD1-160                            | Install 2nd waling & strut                                 | 8d          | 21-Aug-15        | 5 29-Aug-15       | Od  | Install 2nd waling & strut   |
| C384        | 40-ELSD1-170                            | Shotcrete 2nd layer  | 2d          | 31-Aug-15        | 5 01-Sep-15       | Od  | Shotcrete 2nd layer  |
| C384        | 40-ELSD1-180                            | Demolish existing subway 7.5m below GL                     | 6d          | 02-Sep-15        | 6 08-Sep-15       | Od  | Demojish existing subway 7.5m below GL   |
| C384        | 40-ELSD1-190                            | Excavation for 3rd layer 421m3, 50m3/d                     | 9d          | 09-Sep-15        | 5 18-Sep-15       | Od  | Excavation for 3rd layer 421m3; 50m3/d   |
| C384        | 40-ELSD1-200                            | Install 3rd waling & strut                                 | 8d          | 14-Sep-15        | 5 22-Sep-15       | Od  | Install 3rd waling & strut   |
| C384        | 40-ELSD1-210                            | Shotcrete 3rd layer  | 2d          | 23-Sep-15        | 5 24-Sep-15       | Od  | Shotcrete 3rd layer  |
| C384        | 40-ELSD1-220                            | Demolish existing subway 10.6m below GL                    | 6d          | 25-Sep-15        | 5 03-Oct-15       | Od  | Demolish existing subway 10,6m below GL  |
| C384        | 40-ELSD1-230                            | Excavation for 4th layer 443m3, 50m3/d                     | 9d          | 05-Oct-15        | 14-Oct-15         | Od  | Excavation for, 4th layer, 443m3, 50m3/d   |
| C384        | 40-ELSD1-240                            | Install 4th waling & strut                                 | 8d          | 09-Oct-15        | 17-Oct-15         | Od  | Install 4th waling & strut   |
| C384        | 40-ELSD1-250                            | Shotcrete 4th layer  | 2d          | 19-Oct-15        | 20-Oct-15         | Od  | Shotcrete 4th layer  |
| C384        | 40-ELSD1-260                            | Excavation for 5th layer 443m3, 50m3/d                     | 9d          | 22-Oct-15        | 31-Oct-15         | Od  | Excavation for 5th layer 443m3, 50m3/d   |
| C384        | 40-ELSD1-270                            | Install 5th waling & strut                                 | 8d          | 27-Oct-15        | 04-Nov-15         | Od  | Install5th waling & strut  |
| C384        | 40-ELSD1-280                            | Shotcrete 5th layer  | 2d          | 05-Nov-15        | 5 06-Nov-15       | Od  | Shotcrete 5th layer  |
| C384        | 40-ELSD1-290                            | Excavation Soil for 6th layer 392m3, 50m3/d                | 8d          | 07-Nov-15        | 5 16-Nov-15       | Od  | Excavation Soil for 6th layer 392m3, 50m3/d  |
| C384        | 40-ELSD1-300                            | Excavation Rock (Grade 2) 402m3, 8m3/d                     | 50d         | 17-Nov-15        | 5 16-Jan-16       | Od  | Excavatión Rock (Grade 2) 402m3, 3m3/d   |
|             |   |  |             |                  |                   | ata Date: 11-   |  |
|             | Actual Work   Milestone  Remaining Work |  |             | Da               |                   | Preliminary Master Programme Date Revision Checked Approv |  |
|             | Critical Remaining Work                 |  |             |                  | Page 3 of         | f 5 27-Feb-14 REV 2 BG AW                                 |  |
|             |   |  |             |                  |                   |   | Extract Critical Path 2  |

|                        | MTR                                |                           |                   |             | CONTRACT C3840-13C Tsim Sha Tsu                 | ui Station, Carnarvon Road Subwa             | у               |                       |                        |                  |
|------------------------|------------------------------------|---------------------------|-------------------|-------------|---|--|-----------------|-----------------------|------------------------|------------------|
| Activity ID            | Activity Name C                    | Drig Planned<br>Dur Start | Planned<br>Finish | Total Float | 2014<br>Oct N D Jan F M Apr M J Jul A S Oct N D | 2015<br>D Jan F M Apr M J Jul A S Oct N D Ja | Ian F M Anr     | 2016                  |                        | 2017 013         |
| C3840-ELSD1-310        | Install 6th waling & strut         | 8d 18-Jan-16              | 26-Jan-16         | 0d          |   |  | Install 6th w   |                       |                        |                  |
| C3840-ELSD1-320        | Shotcrete 6th layer 2              | 2d 27-Jan-16              | 28-Jan-16         | 0d          |   |  | Shotcrete 6     | h layer               |                        |                  |
| C3840-ELSD1-330        | Make formation and Blinding        | 4d 29-Jan-16              | 02-Feb-16         | 0d          |   |  | Make form       | ation and Blinding    |                        |                  |
| Open Cut Sequence 5 (C | onstruction of Subway & D2) 17     | 16d 03-Feb-16             | 28-Jun-16         | 0d          |   |  |                 |                       |                        |                  |
| C3840-STR-110          | Const. Bay1 : 4m3                  | 6d 03-Feb-16              | 12-Feb-16         | Od          |   |  | Const. Ba       | iy1 : 4m3             |                        |                  |
| C3840-STR-120          | Const. Bay2 : 123m3 1              | 0d 13-Feb-16              | 24-Feb-16         | Od          |   |  | Const.          | 3ay2 : 123m3          |                        |                  |
| C3840-STR-130          | Const. Bay3.1 : 125m3 1            | 0d 25-Feb-16              | 07-Mar-16         | Od          |   |  | Const           | . Bay3.1 : 125m3      |                        |                  |
| C3840-STR-140          | Const. Bay3.2 : 120m3 1            | 5d 08-Mar-16              | 24-Mar-16         | 0d          |   |  | Cor             | nst. Bay3.2 : 1/20m/3 |                        |                  |
| C3840-STR-150          | Const. Bay4 : 29m3 6               | 6d 18-Mar-16              | 24-Mar-16         | 0d          |   |  | - Cor           | nst. Bay4 : 29m3      |                        |                  |
| C3840-STR-160          | Const. Bay4.5 : 13m3 6             | 6d 23-Mar-16              | 01-Apr-16         | 0d          |   |  | - Co            | onst. Bay4.5 : 13m3   |                        |                  |
| C3840-STR-170          | Const. Bay5 : 141m3 1              | 0d 31-Mar-16              | 12-Apr-16         | 0d          |   |  | , L             | Const. Bay5 : 141m3   |                        |                  |
| C3840-STR-180          | Const. Bay6.1 : 130m3 1            | 2d 13-Apr-16              | 26-Apr-16         | Od          |   |  |                 | Const. Bay6.1 : 130   | m <mark>B</mark>       |                  |
| C3840-STR-190          | Const. Bay6.2 : 130m3 1            | 2d 18-Apr-16              | 30-Apr-16         | 0d          |   |  |                 | Const. Bay6.2 : 130   | m <sup>-</sup> 3       |                  |
| C3840-STR-200          | Const. Bay6.3 : 130m3 1            | 2d 22-Apr-16              | 06-May-16         | 0d          |   |  |                 | Const. Bay6.3 13      | 0 <b>m</b> 3           |                  |
| C3840-STR-210          | Const. Bay6.4 : 130m3 1            | 2d 27-Apr-16              | 11-May-16         | 0d          |   |  |                 | Const. Bay6.4 : 1     | 30m3                   |                  |
| C3840-STR-220          | Const. Bay6.5 : 130m3 1            | 5d 03-May-16              | 20-May-16         | Od          |   |  | Ļ               | Const. Bay6.5 :       | 130m3                  |                  |
| C3840-STR-240          | Const. Bay7 : 90m3 1               | 5d 06-May-16              | 24-May-16         | 0d          |   |  | Ļ               | Const. Bay7: 9        | 0m3                    |                  |
| C3840-STR-260          | Const. Bay8.1 : 104m3 1            | 0d 12-May-16              | 24-May-16         | Od          |   |  |                 | Const. Bay8 1 :       | 1. <mark>0</mark> 4m3  |                  |
| C3840-STR-270          | Const. Bay8.2 : 104m3 1            | 0d 19-May-16              | 30-May-16         | Od          |   |  |                 | Const. Bay8.2         | : 04m3                 |                  |
| C3840-STR-280          | Const. Bay8.5 : 39m3 (D2) 1        | 5d 25-May-16              | 11-Jun-16         | Od          |   |  |                 | ► _ Const. Bay8.      | 5 39m3 (Þ2)            |                  |
| C3840-STR-290          | Curing, remove strut & falsework 1 | 4d 13-Jun-16              | 28-Jun-16         | 0d          |   |  |                 | Curing, re            | move strut & falsewprk |                  |
| Building Services & A  | BWF Works 55                       | 33d 05-Jan-15             | 22-Oct-16         | Dd          |   |  |                 |                       |                        |                  |
| BS & ABWF Works at Te  |                                    | 4d 05-Jan-15              |                   | 0d          |   |  |                 |                       |                        |                  |
| C3840-TSBA-100         |                                    |                           | 23-Jan-15         | 0d          |   | ► <b>♦</b> Complete RC works                 |                 |                       |                        |                  |
| C3840-TSBA-110         |                                    | l0d 05-Jan-15             |                   | 0d          |   | Installation of BS and ABWF works            |                 |                       |                        |                  |
| C3840-TSBA-120         |                                    | lod 05-Jan-15             |                   | 1d          |   | CN&SE access & cable routing connecting to   | existing TST St | tion                  |                        |                  |
| C3840-TSBA-130         |                                    | 6d 25-Feb-15              |                   | 0d          |   | T&C  |                 |                       |                        |                  |
| C3840-TSBA-140         |                                    | 6d 04-Mar-15              |                   | 0d          |   | Inspection prior to open for public use      |                 |                       |                        |                  |
| C3840-TSBA-150         |                                    | Od                        | 11-Mar-15         | 0d          |   | <ul> <li>Open for public use</li> </ul>      |                 |                       |                        |                  |
|                        |                                    | 00<br>06d 29-Jun-16       |                   | 00<br>D0    |   |  |                 |                       |                        |                  |
|                        |                                    |                           |                   |             |   |  |                 |                       |                        |                  |
| C3840-BSM-100          |                                    | 56d 29-Jun-16             |                   | b0          |   |  |                 |                       | 35 1st Fix             |                  |
| C3840-BSM-110          | BS 2nd Fix 4                       | 0d 03-Sep-16              | 22-UCT-16         | 0d          |   |  |                 |                       | BS 2nd Fix             |                  |
|                        |                                    | I                         | Date              | ta Date: 11 | 1-Oct-13  |  |                 |                       | Maeda/P/PMI            | 2/2              |
| Actual Work            | ♦ Milestone                        |                           | Date              | Page 4 c    | Prelimi   | inary Master Programme                       |                 | Date                  | Revision (             | Checked Approved |
| Critical Remaining     | Work                               |                           |                   | i aye 4 (   |   | xtract Critical Path 2                       |                 | 27-Feb-14             | REV 2 BG               | AW               |
|                        |                                    |                           |                   |             |   |  |                 |                       |                        |                  |

|               | <b>MTR</b>                   |    |                  |                   |            | CONT         | RACT  | C3840-1 | 3C Tsin         | n Sha Tsu | ui Sta  | tion, Car | narvon R        | oad Subw  | ay      |       |                 |       |            |                |                  | D A |                    |
|---------------|------------------------------|----|------------------|-------------------|------------|--------------|-------|---------|-----------------|-----------|---------|-----------|-----------------|-----------|---------|-------|-----------------|-------|------------|----------------|------------------|-----|--------------------|
| Activity ID   | Activity Name                |    | Planned<br>Start | Planned<br>Finish | Total Floa | t<br>Oct N D | Jan F | M Apr M | 2014<br>J Jul A | S Oct N D | ) Jan F |           | 2015<br>J Jul A | S Oct N D | Jan F N | Apr M | 2016<br>J Jul A | S Oct | N D Ja     | n F M Ap       | 2017<br>r M J Ju |     | 018<br>Oct N D Jan |
| C3840-BSM-120 | Complete all BS works in TER | Od |                  | 22-Oct-16         | 00         | 1            |       |         |                 |           |         |           |                 |           |         |       |                 | 5     | Complete a | II BS works in | TER              |     |                    |
|               |                              | I  |                  | 1                 | 1          | L <b>e</b>   |       |         | _!!             |           |         |           |                 |           |         |       |                 |       |            |                |                  |     |                    |

| Actual Work   Milestone | Data Date: 11-Oct-13 |                              |           |
|-------------------------|----------------------|------------------------------|-----------|
| Remaining Work          |                      | Preliminary Master Programme | Date      |
| Critical Remaining Work | Page 5 of 5          |                              | 27-Feb-14 |
|                         |                      | Extract Critical Path 2      |           |

|   | Maeda/F  | P/PMP/2 |          |
|---|----------|---------|----------|
| е | Revision | Checked | Approved |
| 4 | REV 2    | BG      | AW       |
|   |          |         |          |

Appendix D

Implementation Schedule

## Appendix VIII

## Implementation Schedule

| Project<br>Profile<br>Ref. | Recommended Mitigation Measures  | Objectives of the<br>Recommended<br>Measures & Main<br>Concerns to<br>address | Implementation<br>Parties | Location<br>of the<br>measure | When to<br>implement<br>the measure | Relevant<br>requirements or<br>standards for<br>the measure to<br>achieve                |
|----------------------------|--|---|---------------------------|-------------------------------|-------------------------------------|--|
|                            | Noise Impact   | 1   |                           |                               | -                                   |  |
| S.3.1                      | Use of quieter plant   | To minimise<br>construction noise<br>emissions                                | Contractor                | Work site                     | Construction<br>Stage               | ProPECC PN2/93<br>and Noise Control<br>Ordinance   |
| S.3.1                      | <ul> <li>Use of noise enclosure and movable barrier</li> <li>movable barrier can achieve a 5 dB(A) reduction for movable PME and 10 dB(A) reduction for stationary PME;</li> <li>noise enclosure can achieve 15dB(A) reduction for PME;</li> <li>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;</li> <li>Barrier material of surface mass in excess of 7kg/m<sup>2</sup> shall be required to achieve the maximum screening effect (and minimum 10kg/m<sup>2</sup> for noise enclosure);</li> <li>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.</li> </ul> | To minimize<br>construction noise<br>emissions                                | Contractor                | Work site                     | Construction<br>Stage               | ProPECC<br>PN2/93, Noise<br>Control Ordinance<br>and EIAO<br>Guidance Note<br>NO. 9/2010 |
| S.3.1                      | <ul><li>General Construction Noise Control Measures</li><li>The Code of Practice on Good Management Practice</li></ul>   | To minimize<br>construction noise   | Contractor                | Work site                     | Construction<br>Stage               | ProPECC PN2/93<br>and Noise Control  |

| Project<br>Profile<br>Ref. | Recommended Mitigation Measures   | Objectives of the<br>Recommended<br>Measures & Main<br>Concerns to<br>address | Implementation<br>Parties | Location<br>of the<br>measure | When to<br>implement<br>the measure | Relevant<br>requirements or<br>standards for<br>the measure to<br>achieve |
|----------------------------|---|---|---------------------------|-------------------------------|-------------------------------------|---|
|                            | <ul> <li>to Prevent Violation of the Noise Control Ordinance<br/>(Chapter 400) (for Construction Industry) published<br/>by EPD shall be adopted;</li> <li>The statutory and non-statutory requirements and<br/>guidelines shall be complied with;</li> <li>Approval for the method of working, equipment and<br/>noise mitigation measures intended to be used at the<br/>site shall be granted from the Project Engineer before<br/>commencing any work;</li> <li>Working methods to minimize the noise impact on the<br/>surrounding NSRs shall be formulated and executed,<br/>and the implementation of these methods shall be<br/>monitored by experienced personnel with suitable<br/>training;</li> <li>Noisy equipment and noisy activities shall be located<br/>as far away from the NSRs as is practical;</li> <li>Unused equipment shall be turned off;</li> <li>PME should be kept to a minimum and the parallel<br/>use of noisy equipment shall be maintained regularly;<br/>and</li> <li>Material stockpiles and other structures shall be<br/>effectively utilized as noise barriers, whenever<br/>practicable.</li> </ul> | emissions   |                           |                               |                                     | Ordinance   |
|                            | Air Quality Impact  |   |                           |                               |                                     |   |
| S.3.2                      | <ul> <li>Construction Dust Control Measures</li> <li>Decking will be provided subsequent to the completion of surface excavation works. The duration</li> </ul>   | To minimise the<br>dust impacts<br>arising from the                           | Contractor                | Work site                     | Construction<br>Stage               | Air Pollution<br>Control<br>(Construction                                 |

| Project<br>Profile<br>Ref. | Recommended Mitigation Measures  | Objectives of the<br>Recommended<br>Measures & Main<br>Concerns to<br>address | Implementation<br>Parties | Location<br>of the<br>measure | When to<br>implement<br>the measure | Relevant<br>requirements or<br>standards for<br>the measure to<br>achieve |
|----------------------------|--|---|---------------------------|-------------------------------|-------------------------------------|---|
|                            | <ul> <li>of decking is around 13 months after surface excavation works;</li> <li>Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;</li> <li>Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;</li> <li>Cover all excavated or stockpile of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;</li> <li>Provision of vehicle washing facilities at the exit points of the site; and</li> <li>Provision of tarpaulin covering of any dusty materials on a vehicle leaving the site.</li> </ul>   | construction works  |                           |                               |                                     | Dust) Regulation  |
|                            | Water Quality Impact   |   |                           |                               |                                     |   |
| S.3.3                      | <ul> <li>Construction Water Quality Impact Measures</li> <li>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.</li> <li>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.</li> </ul> | To reduce water<br>quality impact<br>induced by the<br>construction work      | Contractor                | Work Site                     | Construction<br>Stage               | ProPECC<br>PN1/94; Water<br>Pollution Control<br>Ordinance                |

| Project<br>Profile<br>Ref. | Recommended Mitigation Measures  | Objectives of the<br>Recommended<br>Measures & Main<br>Concerns to<br>address  | Implementation<br>Parties | Location<br>of the<br>measure | When to<br>implement<br>the measure | Relevant<br>requirements or<br>standards for<br>the measure to<br>achieve   |
|----------------------------|--|--|---------------------------|-------------------------------|-------------------------------------|---|
|                            | <ul> <li>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.</li> <li>Site toilet facilities, if needed, should be chemical toilets or should have the foul water effluent directed to a foul sewer.</li> </ul>   |  |                           |                               |                                     |   |
|                            | Waste Management   |  |                           |                               |                                     |   |
| S.3.4                      | <ul> <li>Construction Waste Management Measures</li> <li>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.</li> <li>Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner.</li> <li>The Contractor should adopt a trip ticket system for the disposal of C&amp;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.</li> <li>Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.</li> <li>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</li> </ul> | To adopt waste<br>management<br>measures in the<br>way of avoiding,<br>minimising, reusing<br>and recycling so as<br>to reduce waste<br>generation | Contractor                | Work Site                     | Construction<br>Stage               | Waste Disposal<br>Ordinance (Cap.<br>54); Waste<br>Disposal<br>(Chemical Waste)<br>(General)<br>Regulation;<br>ETWB TCW No.<br>31/2004; ETWB<br>TCW No.<br>19/2005. |

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



Appendix E

Status of Environmental Licenses and Permits



Maeda Corporation

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

# Licence Summary

| ltem No. | Our Ref.            | Govt.<br>Ord. | Type?<br>(License / Permit /<br>Account /<br>Notification /<br>Registration & etc.) | Description          | Submission  | Ref. No            | Date of<br>Submission<br>(to EPD)<br>(DD-MM-YYYY) | Date of Approval<br>/ Receipt<br>(from EPD)<br>(DD-MM-YYYY) | Date of Activation<br>(DD-MM-YYYY) | Date of Expiry<br>(DD-MM-YYYY)<br>Green = expire next mth;<br>Yellow = expire this wk;<br>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<br>Monitoring   |                                  |
| 001      | 001                 | APCO          | Notification  |                      | Form NA – Notification S3(1) of<br>APCO (Construction Dust)                                 | 365953             | 18 - 10 - 2013                                    | 21 - 10 - 2013  | 01 - 11 - 2013                     | 01 - 12 - 2014  | Site Formation   |                                  |
| 001      | 001                 | APCO          | Notification  |                      | Form NA – Notification S3(1) of<br>APCO (Construction Dust)                                 | 365953             | 18 - 10 - 2013                                    | 21 - 10 - 2013  | 01 - 02 - 2014                     | 01 - 10 - 2016  | Demolition of a Building   |                                  |
| 001      | 001                 | APCO          | Notification  |                      | Form NA – Notification S3(1) of<br>APCO (Construction Dust)                                 | 365953             | 18 - 10 - 2013                                    | 21 - 10 - 2013  | 01 - 08 - 2014                     | 01 - 08 - 2016  | Work carried out in any part of<br>a tunnel that is within 100m of<br>any exit to the open air |                                  |
| 001      | 001                 | APCO          | Notification  |                      | Form NA – Notification S3(1) of<br>APCO (Construction Dust)                                 | 365953             | 18 - 10 - 2013                                    | 21 - 10 - 2013  | 01 - 01 - 2016                     | 01 - 03 - 2017  | Construction of the<br>Superstructure of a Building  |                                  |
| 001      | 001                 | APCO          | Notification  |                      | Form NA – Notification S3(1) of<br>APCO (Construction Dust)                                 | 365953             | 18 - 10 - 2013                                    | 21 - 10 - 2013  | 01 - 11 - 2016                     | 10 - 09 - 2017  | Road Construction Work   |                                  |
| 002      | 002                 | WDO           | Account   | Billing Account      | EPD-211 (Form 1) Application<br>for a Billing Account for<br>Disposal of Construction Waste | 7018523            | 18 - 10 - 2013                                    | 25 - 10 - 2013  | 25 - 10 - 2013                     | N/A   | Disposal of C&D Waste  | Application No.<br>WFG12765      |
| 003      | 003<br>WPCO<br>#001 | WPCO          | Licence   | Licence              | EPD-117 (Form A) Application<br>for a Licence of Water<br>Discharge                         | WT00018229-2014    | 09 - 01 - 2014                                    | 04 - 03 - 2014  | 04 - 03 - 2014                     | 31 - 08 - 2014  | Self Monitoring Only<br>FlowRate 9m3/d, pH 6-9, SS<br>50mg/L, COD 100mg/L                      | Superseded by<br>WT00019722-2014 |
| 003      | 003<br>WPCO<br>#002 | WPCO          | Licence   | Licence              | EPD-117 (Form A) Application<br>for a Licence of Water<br>Discharge                         | WT00019722-2014    | 24 - 07 - 2014                                    | 01 - 09 - 2014  | 01 - 09 - 2014                     | 31 - 03 - 2019  | Quarterly Report<br>FlowRate 25m3/d, pH 6-9, SS<br>30mg/L, COD 80mg/L                          |                                  |
| 004      | 004<br>CWP#00<br>1  | WDO           | Registration  | Producer             | EPD-129 Application for<br>Registration as a Chemical<br>Waste Producer                     | 5213-2214-M2446-16 | 15 - 01 - 2014                                    | 04 - 03 - 2014  | 04 - 03 - 2014                     | N/A   | Surplus paint, spent lubrucating<br>oil, spent battery   |                                  |
| 005      | 005<br>CNP#001      | NCO           | Permit  | Construction Noise   | EPD74A(s) Form 1 - Application<br>for a Construction Noise Permit                           |                    | 29 - 07 - 2014                                    | 07 - 08 - 2014  | 11 - 08 - 2014                     | 24 - 12 - 2014  | Apply for 4nos Submersible<br>Water pump (Electric)  | Superseded by<br>GW-RE1475-14    |
| 005      | 005<br>CNP#002      | NCO           | Permit  |                      | EPD74A(s) Form 1 - Application<br>for a Construction Noise Permit                           |                    | 15 - 12 - 2014                                    | 17 - 12 - 2014  | 24 - 12 - 2014                     | 23 - 06 - 2015  | Apply for 4nos Submersible<br>Water pump (Electric) w/ new<br>area to be included              |                                  |

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 /<br>Action  | ET   | IEC  | ER  | Contractor  |
|--|--|--|---|---|
| Action Level<br>Exceedance<br>for one<br>sample            | <ol> <li>Identify source;</li> <li>If valid, inform<br/>IEC and ER;</li> <li>Repeat<br/>measurement to<br/>confirm finding;</li> <li>Increase<br/>monitoring<br/>frequency to<br/>daily.</li> </ol>  | <ol> <li>Check<br/>monitoring data<br/>submitted by<br/>ET;</li> <li>Check<br/>Contractor's<br/>working<br/>method.</li> </ol>   | 1. Notify<br>Contractor   | <ol> <li>Rectify any<br/>unacceptable<br/>practice;</li> <li>Amend working<br/>methods if<br/>appropriate</li> </ol>  |
| Exceedance<br>for two or<br>more<br>consecutive<br>samples | <ol> <li>Identify source;</li> <li>Inform IEC and<br/>EPD;</li> <li>Repeat<br/>measurements<br/>to confirm<br/>findings;</li> <li>Increase<br/>monitoring<br/>frequency to<br/>daily;</li> <li>Discuss with<br/>IEC and<br/>Contractor on<br/>remedial action<br/>required;</li> <li>If exceedance<br/>continues,<br/>arrange<br/>meeting with<br/>IEC and ER;</li> <li>If exceedance<br/>stops, cease<br/>additional<br/>monitoring.</li> </ol> | <ol> <li>Check<br/>monitoring data<br/>submitted by<br/>ET;</li> <li>Check<br/>Contractor's<br/>working<br/>method;</li> <li>Discuss with ET<br/>and Contractor<br/>on possible<br/>remedial<br/>measures;</li> <li>Advise the ER<br/>on the<br/>effectiveness of<br/>the proposed<br/>remedial<br/>measures;</li> <li>Supervise<br/>implementation<br/>of remedial<br/>measures.</li> </ol> | <ol> <li>Confirm receipt<br/>of notification of<br/>failure in writing;</li> <li>Notify<br/>Contractor;</li> <li>Ensure<br/>remedial<br/>measure<br/>properly<br/>implemented.</li> </ol> | <ol> <li>Submit<br/>proposals for<br/>remedial action<br/>to IEC within 3<br/>working days of<br/>notification;</li> <li>Implement the<br/>agreed<br/>proposals;</li> <li>Amend<br/>proposal if<br/>appropriate.</li> </ol> |
| Limit Level<br>Exceedance<br>for one<br>sample             | <ol> <li>Identify source;</li> <li>Inform ER and<br/>EPD;</li> <li>Repeat<br/>measurement to<br/>confirm finding;</li> <li>Increase</li> </ol>   | <ol> <li>Check<br/>monitoring</li> <li>data submitted<br/>by ET;</li> <li>Check<br/>Contractor's<br/>working</li> </ol>  | <ol> <li>Confirm receipt<br/>of notification of<br/>failure in writing;</li> <li>Notify<br/>Contractor;</li> <li>Ensure<br/>remedial</li> </ol>   | <ol> <li>Take immediate<br/>action to avoid<br/>further<br/>exceedance;</li> <li>Submit<br/>proposals for<br/>remedial<br/>actions to IEC</li> </ol>  |

| Action   | ET  | IEC  | ER  | Contractor  |
|--|---|--|---|---|
|  | monitoring<br>frequency to<br>daily;<br>5. Assess<br>effectiveness of<br>Contractor's<br>remedial<br>actions and<br>keep IEC, EPD<br>and ER<br>informed of the<br>results.  | <ul> <li>method;</li> <li>4. Discuss with ET<br/>and the<br/>Contractor on<br/>possible<br/>remedial<br/>measures;</li> <li>5. Advise the ER<br/>on the<br/>effectiveness of<br/>the proposed<br/>remedial<br/>measures;</li> <li>6. Supervise<br/>implementation<br/>of remedial<br/>measures.</li> </ul>   | measures<br>properly<br>implemented.  | within 3 worki<br>days of<br>notification;<br>3. Implement the<br>agreed<br>proposals;<br>4. Amend<br>proposal if<br>appropriate.   |
| Exceedance<br>for two or<br>more<br>consecutive<br>samples | <ol> <li>Notify IEC, ER,<br/>Contractor and<br/>EPD;</li> <li>Identify<br/>sources;</li> <li>Repeat<br/>measurement to<br/>confirm<br/>findings;</li> <li>Increase<br/>monitoring<br/>frequency to<br/>daily;</li> <li>Carry out<br/>analysis of<br/>Contractor's<br/>working<br/>procedures to<br/>determine<br/>possible<br/>mitigation to be<br/>implemented;</li> <li>Arrange<br/>meeting with<br/>IEC and ER to<br/>discuss the<br/>remedial<br/>actions to be<br/>taken;</li> <li>Assess the<br/>effectiveness of<br/>Contractor's<br/>remedial<br/>actions and<br/>keep IEC, EPD<br/>and ER</li> </ol> | <ol> <li>Discuss<br/>amongst ER,<br/>ET and<br/>Contractor on<br/>the potential<br/>remedial<br/>actions;</li> <li>Review<br/>Contractor's<br/>remedial<br/>actions<br/>whenever<br/>necessary to<br/>assure their<br/>effectiveness<br/>and advise the<br/>ET accordingly.</li> <li>Supervise the<br/>implementation<br/>of remedial<br/>measures.</li> </ol> | <ol> <li>Confirm receipt<br/>of notification of<br/>failure in writing;</li> <li>Notify<br/>Contractor;</li> <li>In consultation<br/>with IEC, agree<br/>with the<br/>Contractor on<br/>the remedial<br/>measures to be<br/>implemented;</li> <li>Ensure<br/>remedial<br/>measures<br/>properly<br/>implemented;</li> <li>If exceedance<br/>continues,<br/>consider what<br/>portion of the<br/>work is<br/>responsible and<br/>instruct the<br/>Contractor to<br/>stop that portion<br/>of work until the<br/>exceedance is<br/>abated.</li> </ol> | <ol> <li>Take immedia<br/>action to avoi<br/>further<br/>exceedance;</li> <li>Submit<br/>proposals for<br/>remedial<br/>actions to IEC<br/>within 3 work<br/>days of<br/>notification;</li> <li>Implement th<br/>agreed<br/>proposals;</li> <li>Resubmit<br/>proposals if<br/>problem still r<br/>under control</li> <li>Stop the<br/>relevant porti<br/>of works as<br/>determined b<br/>the ER until ti<br/>exceedance i<br/>abated.</li> </ol> |

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

| Event /<br>Action | ET   | IEC | ER | Contractor |  |
|-------------------|--|-----|----|------------|--|
|                   | remedial actions<br>and keep IEC,<br>EPD, ER<br>informed of the<br>results |     |    |            |  |
|                   | 8. If exceedance<br>stops, cease<br>additional<br>monitoring               |     |    |            |  |



Appendix G

Monitoring Schedule

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works Tentative Monitoring Schedule for March 2015

| March 2015 |                        |                                  |           |          |        |          |
|------------|------------------------|----------------------------------|-----------|----------|--------|----------|
| Sunday     | Monday                 | Tuesday                          | Wednesday | Thursday | Friday | Saturday |
|            |                        |                                  |           |          |        |          |
| 1          | <b>2</b><br>24-hr TSP  | 3<br>Noise<br>Weekly Site Audit  | 4         | 5        | 6      | 7        |
| 8          | <b>9</b><br>24-hr TSP  | 10<br>Noise<br>Weekly Site Audit | 11        | 12       | 13     | 14       |
| 15         | <b>16</b><br>24-hr TSP | 17<br>Noise<br>Weekly Site Audit | 18        | 19       | 20     | 21       |
| 22         | <b>23</b><br>24-hr TSP | 24<br>Noise<br>Weekly Site Audit | 25        | 26       | 27     | 28       |
| 29         | 30                     | 31<br>Noise<br>Weekly Site Audit |           |          |        |          |

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

C3840-13C MTRCL Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works Tentative Monitoring Schedule for April 2015

|        | April 2015             |                                  |  |    |              |    |  |  |  |
|--------|------------------------|----------------------------------|--|----|--------------|----|--|--|--|
| Sunday |                        |                                  |  |    |              |    |  |  |  |
|        |                        |                                  |  |    |              |    |  |  |  |
|        |                        |                                  | 1<br>24-hr TSP                               | 2  | 3<br>Holiday | 4  |  |  |  |
| 5      | 6<br>Holiday           | 7<br>Holiday                     | 8<br>24-hr TSP<br>Noise<br>Weekly Site Audit | 9  | 10           | 11 |  |  |  |
| 12     | <b>13</b><br>24-hr TSP | 14<br>Noise<br>Weekly Site Audit | 15   | 16 | 17           | 18 |  |  |  |
| 19     | <b>20</b><br>24-hr TSP | 21<br>Noise<br>Weekly Site Audit | 22   | 23 | 24           | 25 |  |  |  |
| 26     | 27<br>24-hr TSP        | 28<br>Noise<br>Weekly Site Audit | 29   | 30 |              |    |  |  |  |

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



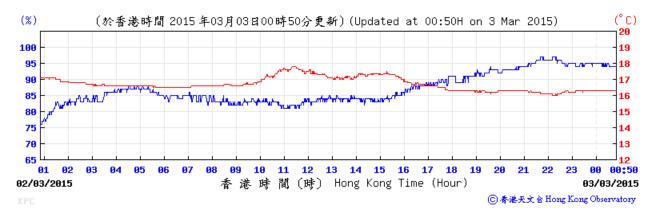
Appendix H

Weather Information Extracted from HK Observatory

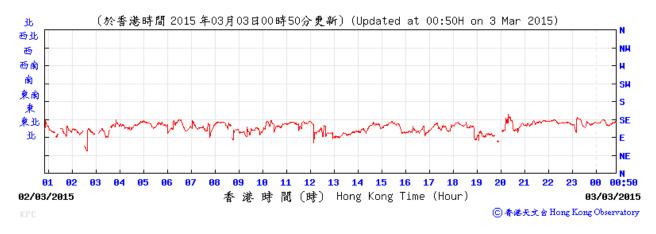
| aily Total Rainfall (mm) at Kir<br>Iarch 2015 | -    | -         |       |  |
|---|------|-----------|-------|--|
| Day   | Mar  | 24-hr TSP | Noise | Remarks  |
| 1   | -    |           |       |  |
| 2   | 0.2  | 1         |       |  |
| 3   | 0.4  |           | ~     | No rainfall recorded on site during Nois<br>Monitoring |
| 4   | 0.5  |           |       |  |
| 5   | 3.4  |           |       |  |
| 6   | 0.1  |           |       |  |
| 7   | 0.2  |           |       |  |
| 8   | -    |           |       |  |
| 9   | -    | 1         |       |  |
| 10  | -    |           | ~     | No rainfall recorded on site during Noi<br>Monitoring  |
| 11  | 0.5  |           |       |  |
| 12  | 5.6  |           |       |  |
| 13  | -    |           |       |  |
| 14  | -    |           |       |  |
| 15  | -    |           |       |  |
| 16  | -    | 1         |       |  |
| 17  | -    |           | ~     | No rainfall recorded on site during No<br>Monitoring   |
| 18  | -    |           |       |  |
| 19  | -    |           |       |  |
| 20  | -    |           |       |  |
| 21  | -    |           |       |  |
| 22  | 0.2  |           |       |  |
| 23  | -    | √         |       |  |
| 24  | -    |           | ~     | No rainfall recorded on site during No<br>Monitoring   |
| 25  | 0.1  |           |       |  |
| 26  | 3.7  |           |       |  |
| 27  | 17.0 |           |       |  |
| 28  | -    |           |       |  |
| 29  | -    |           |       |  |
| 30  | -    |           |       |  |
| 31  | -    |           | ~     | No rainfall recorded on site during Noi<br>Monitoring  |
| Total   | 31.9 |           |       |  |

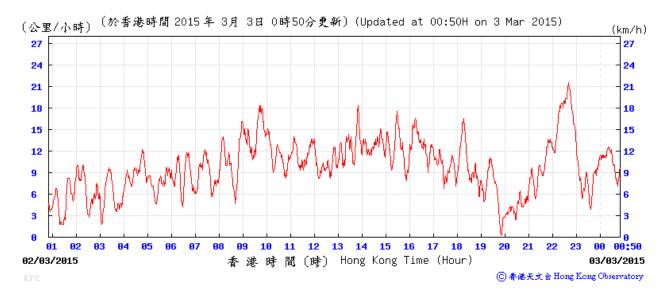
#### King's Park Weather Station – 02 March 2015

Temperature and Humidity:



Wind Direction:





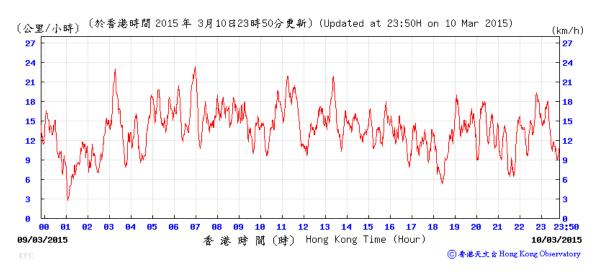
#### King's Park Weather Station – 09 March 2015



Temperature and Humidity:

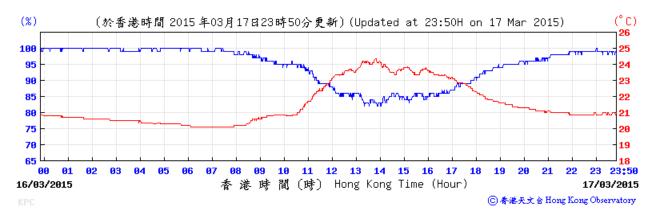
Wind Direction:



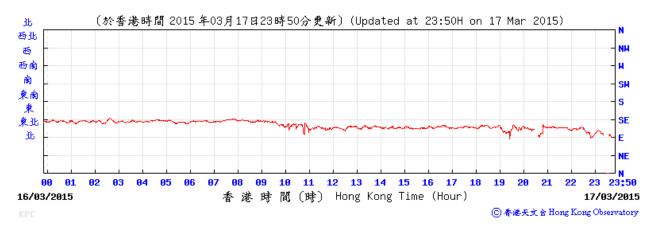


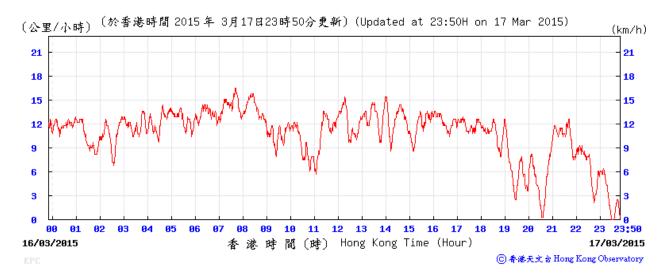
#### King's Park Weather Station – 16 March 2015

Temperature and Humidity:



Wind Direction:





#### King's Park Weather Station – 23 March 2015



Temperature and Humidity:

Wind Direction:





Appendix I

Certificate of Laboratory and Equipment Calibration



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

|                       | ORIFICE ?                  | TRANSFER STAL               | NDARD CERT                                   | IFICATION                                      | WORKSHEET                        | FE-5025A                             |
|-----------------------|----------------------------|-----------------------------|--|--|----------------------------------|--------------------------------------|
| Date - Ma<br>Operator |                            | A Rootsmeter<br>Orifice I.I |  | 438320<br>1785                                 | Ta (K) -<br>Pa (mm) -            | 293<br>- 758.19                      |
| PLATE<br>OR<br>Run #  | VOLUME<br>START<br>(m3)    | VOLUME<br>STOP<br>(m3)      | DIFF<br>VOLUME<br>(m3)                       | DIFF<br>TIME<br>(min)                          | METER<br>DIFF<br>Hg<br>(mm)      | ORFICE<br>DIFF<br>H2O<br>(in.)       |
| 1<br>2<br>3<br>4<br>5 | NA<br>NA<br>NA<br>NA<br>NA | NA<br>NA<br>NA<br>NA<br>NA  | 1.00<br>1.00<br>1.00<br>1.00<br>1.00<br>1.00 | 1.4150<br>0.9940<br>0.8890<br>0.8490<br>0.7020 | 3.2<br>6.4<br>7.9<br>8.7<br>12.6 | 2.00<br>4.00<br>5.00<br>5.50<br>8.00 |

#### DATA TABULATION

| Vstd   | (x axis)<br>Qstd                               | (y axis)                                       |      | Va   | (x axis)<br>Qa                                 | (y axis)                                       |
|--|--|--|------|--|--|--|
| 1.0103<br>1.0061<br>1.0040<br>1.0030<br>0.9977 | 0.7140<br>1.0122<br>1.1293<br>1.1814<br>1.4213 | 1.4245<br>2.0146<br>2.2524<br>2.3623<br>2.8491 |      | 0.9958<br>0.9916<br>0.9895<br>0.9885<br>0.9833 | 0.7037<br>0.9976<br>1.1130<br>1.1643<br>1.4008 | 0.8791<br>1.2433<br>1.3900<br>1.4579<br>1.7583 |
| Qstd slop<br>intercept<br>coefficie            | : (b) =  | 2.01484<br>-0.01898<br>0.99991                 |      | Qa slope<br>intercept<br>coefficie             | t (b) =  | 1.26166<br>-0.01171<br>0.99991                 |
| y axis =                                       | SQRT [H2O (P                                   | a/760) (298/1                                  | :a)] | y axis =                                       | SQRT (H2O (1                                   | [a/Pa)]  |

#### CALCULATIONS

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

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

For subsequent flow rate calculations:

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

#### TSP Sampler Calibration

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

|                     |          | CONDI | FIONS                       |     |
|---------------------|----------|-------|-----------------------------|-----|
| Barometric Pressure | (in Hg): | 40.35 | Corrected Pressure (mm Hg): | 102 |
| Temperature         | (deg F): | 59    | Temperature (deg K):        | 28  |
| Average Press.      | (in Hg): | 40.35 | Corrected Average (mm Hg):  | 102 |
| Average Temp.       | (deg F): | 59    | Average Temp. (deg K):      | 28  |

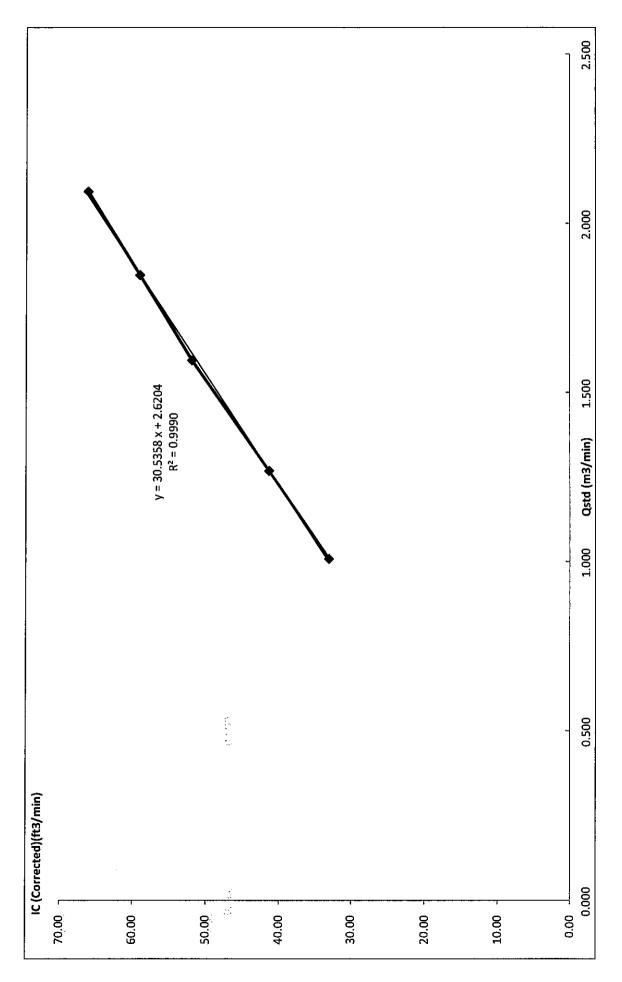
| CALIBRATION ORIFICE |          |                 |               |  |  |  |  |
|---------------------|----------|-----------------|---------------|--|--|--|--|
| Make:               | Tisch    | Qstd Slope:     | 2.00979       |  |  |  |  |
| Model:              | TE-5025A | Qstd Intercept: | -0,01403      |  |  |  |  |
| Serial#:            | 1785     | Date Certified: | April 9, 2013 |  |  |  |  |

| CALIBRATIONS       |             |                  |              |                   |                               |         |
|--------------------|-------------|------------------|--------------|-------------------|-------------------------------|---------|
| Plate or<br>Test # | H2O<br>(in) | Qstd<br>(m3/min) | I<br>(chart) | IC<br>(corrected) | LINEAR<br>REGRESSION          |         |
| 1                  | 12.60       | 2,093            | 56.0         | 66.15             | Slope ⇔                       | 30.5358 |
| 2                  | 9.80        | 1.847            | 50.0         | 59.06             | Intercept =                   | 2.6204  |
| 3                  | 7.30        | 1.595            | 44.0         | 51.98             | Corr. coeff.=                 | 0.9995  |
| 4                  | 4.60        | 1.268            | 35.0         | 41.34             | •                             |         |
| 5                  | 2.90        | 1.008            | 28.0         | 33.08             | <pre># of Observations:</pre> | 5       |

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b] IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)] Qstd = standard flow rate IC = corrected chart response I = actual chart response m = calibrator Qstd slope b = calibrator Qstd intercept Ta = actual temperature during calibration (deg K) Pa = actual pressure during calibration (mm Hg) Tstd = 298 deg K Pstd = 760 mm Hg For subsequent calculation of sampler flow: 1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature Pav = daily average pressure



#### High Volume Air Sampler Calibration Worksheet

**Project Title: Monitoring Location: Calibration Date: Calibration Due Date** Time:

MTR Tsim Sha Tsui Station Carnarvon Road Subway and Entrances Modification Works K11 Commercial Complex 11-Feb-15 11-May-15 14:35

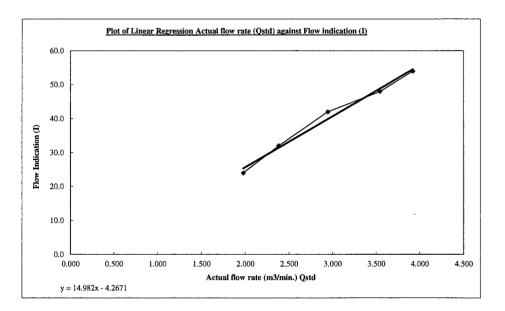
| Sampler Model:                  | BM2000HX |  |
|---------------------------------|----------|--|
| Serial No.:                     | 587      |  |
| Calibrator Orifice no.:         | 1785     |  |
| Slope (m):                      | 1.26166  |  |
| Intercept (b):                  | -0.01171 |  |
| Correction coeff. (r)           | 0.99991  |  |
|                                 |          |  |
| Standard pressure (mmHg) Pstd:  | 276.0    |  |
| Standard temp. (K) Tstd:        | 298.0    |  |
| Calibration pressure (mmHg) Pa: | 762.4    |  |
|                                 | 293.8    |  |

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$
$$Ord = \frac{1}{Ta} \times (\frac{H}{Ta} \times \frac{Pa}{Tstd} - b)$$

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

Actual flow rate (Qstd), m<sup>3</sup>/min 3.923 Flow indication (I), arbitrary 54.0 Pressure Drop (H), inch Flow (corrected), m3/min Sample no. 4.937 8.7 7.1 4.460 3.545 48.0 42.0 32.0 24.0 4.9 3.705 2.946 3.2 2.383 4 2.994 5 2.2 2.483 1.977

Correlation Coefficient: 0.9934



Remark 1 hPa = 0.750062 mmHg

Calibrated by:

Chi Sun Tung

Date: 13 Feb 2015

Checked by:

Kelvin Chiang ( Kelvin Chiang ( A. h. Chiang .)

Date: 13 Feb 2015



| Certificate No                                | . 501362  |  | Page 1 of 3 Pages  |
|---|---|--|--|
| Customer :                                    | Hyder Consulting Limited  |  |  |
| Address :                                     | 47/F., Hopewell Centre, 183 C   | Queens Road East, W  | anchai, Hong Kong  |
| Order No. :                                   | Q50521  |  | Date of receipt : 26-Feb-15  |
| Item Tested                                   |   |  |  |
| Manufacturer                                  | : Sound Level Meter<br>: B&K<br>: 2238  |  | Serial No. : 2562782   |
| Test Condit                                   | ions  |  |  |
| Date of Test :<br>Ambient Temp                |   |  | Supply Voltage :<br>Relative Humidity : (50 ± 25) %  |
| Test Specifi                                  | ications  |  |  |
| Calibration che<br>Ref. Document              | ck.<br>/Procedure: Z01, IEC 651, IEC  | 804.   |  |
| Test Results                                  | S   |  |  |
| All results were                              | within the IEC 651 Type 1, IEC  | 804 Type 1 specifica                                       | tion.  |
| The results are                               | shown in the attached page(s).  |  |  |
| Main Test equip                               | oment used:   |  |  |
| Equipment No.                                 |   | <u>Cert. No.</u>   | Traceable to   |
| S017  | Multi-Function Generator  | C147450  | SCL-HKSAR  |
| S240  | Sound Level Calibrator  | 500563   | NIM-PRC & SCL-HKSAR  |
| will not include allov<br>overloading, mis-ha | wance for the equipment long term drift   | t, variations with environme<br>boratory to repeat the mea | the time of the test and any uncertainties quoted<br>intal changes, vibration and shock during transportation,<br>surement. Hong Kong Calibration Ltd. shall not be liable |
|   | used for calibration are traceable to In<br>oly to the above Unit-Under-Test only | ternational System of Units                                | ; (SI).  |
|   |   |  |  |

Calibrated by : \_\_\_\_\_\_\_ Dorothy Cheuk

Approved by : \_

Steve Kwan

Date: 28-Feb-15

This Certificate is issued by: Hong Kong Calibration Ltd.

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

Е



### Certificate No. 501362

Page 2 of 3 Pages

Results :

### 1. SPL Accuracy

|        | UU         | T Setting |              | Applied Value | UUT Reading |
|--------|------------|-----------|--------------|---------------|-------------|
| Range  | Freq. Wgt. | Bandwith  | Center Freq. | (dB)          | (dB)        |
| 20~100 | A          | BB/F      |              | 94.0          | 94.3        |
|        | А          | BB/S      |              |               | 94.3        |
|        | С          | BB/F      |              |               | 94.3        |
| 40~120 | A          | BB/F      |              | 94.0          | 94.3        |
|        | A          | BB/F      |              | 114.0         | 114.3       |

IEC 651 Type 1 Spec. :  $\pm$  0.7 dB Uncertainty :  $\pm$  0.1 dB

 Level Stability : 0.0 dB IEC 651 Type 1 Spec. : ± 0.3 dB Uncertainty : ± 0.1 dB

### 3. Linearity

3.1 Level Linearity

| UUT Range | Applied    | UUT Reading | Variation | IEC 651 Type 1 Spec.      |
|-----------|------------|-------------|-----------|---------------------------|
| (dB)      | Value (dB) | (dB)        | (dB)      | (Primary Indicator Range) |
| 140       | 114.0      | 114.3       | 0.0       | ± 0.7 dB                  |
| 130       | 104.0      | 104.3       | 0.0       |                           |
| 120       | 94.0       | 94.3 (Ref.) |           |                           |
| 110       | 84.0       | 84.3        | 0.0       |                           |
| 100       | 74.0       | 74.4        | +0.1      |                           |
| 90        | 64.0       | 64.4        | +0.1      |                           |
| 80        | 54.0       | 54.3        | 0.0       |                           |

Uncertainty :  $\pm 0.1 \text{ dB}$ 



## Certificate No. 501362

Page 3 of 3 Pages

### 3.2 Differential level linearity

| UUT Range | Applied    | UUT Reading |                |                      |
|-----------|------------|-------------|----------------|----------------------|
| (dB)      | Value (dB) | (dB)        | Variation (dB) | IEC 651 Type 1 Spec. |
| 120       | 84.0       | 84.3        | 0.0            | ± 0.4 dB             |
|           | 94.0       | 94.3 (Ref.) |                |                      |
|           | 95.0       | 95.3        | 0.0            | ± 0.2 dB             |

Uncertainty :  $\pm 0.1 \text{ dB}$ 

## 4. Frequency Weighting

### A weighting

| Frequency | Attenuation (dB) | IEC 651 Type 1 Spec.                 |
|-----------|------------------|--------------------------------------|
| 31.5 Hz   | - 39.4           | - 39.4 dB, ± 1.5 dB                  |
| 63 Hz     | - 26.2           | - 26.2 dB, ± 1.5 dB                  |
| 125 Hz    | - 16.2           | - 16.1 dB, ± 1 dB                    |
| 250 Hz    | - 8.7            | - $8.6 \text{ dB}, \pm 1 \text{ dB}$ |
| 500 Hz    | - 3.2            | - $3.2 \text{ dB}, \pm 1 \text{ dB}$ |
| 1 kHz     | 0.0 (Ref)        | $0 \text{ dB}, \pm 1 \text{ dB}$     |
| 2 kHz     | + 1.2            | $+ 1.2 \text{ dB}, \pm 1 \text{ dB}$ |
| 4 kHz     | + 0.9            | $+ 1.0 \text{ dB}, \pm 1 \text{ dB}$ |
| 8 kHz     | - 1.2            | - 1.1 dB, + 1.5 dB ~ -3 dB           |
| 16 kHz    | - 6.7            | - 6.6 dB, + 3 dB $\sim$ - $\infty$   |

Uncertainty :  $\pm 0.1 \text{ dB}$ 

## 5. Time Averaging

| Applied Burst duty Factor | Applied Leq Value (dB) | UUT Reading (dB) | IEC 804 Type 1 Spec. |
|---------------------------|------------------------|------------------|----------------------|
| continuous                | 40.0                   | 40.0             |                      |
| 1/10                      | 40.0                   | 39.9             | ± 0.5 dB             |
| $1/10^{2}$                | 40.0                   | 39.9             |                      |
| 1/10 <sup>3</sup>         | 40.0                   | 39.8             | ± 1.0 dB             |
| 1/10 <sup>4</sup>         | 40.0                   | 39.8             |                      |

Uncertainty :  $\pm 0.1 \text{ dB}$ 

Remarks : 1. UUT : Unit-Under-Test

- 2. The uncertainty claimed is for a confidence probability of not less than 95%.
- 3. Atmospheric pressure : 1 010 hPa.
- 4. The UUT was adjusted with the supplied sound calibrator at the reference sound pressure level before the calibration.

----- END -----



| Certificate No.                            | 409134   | Page  | 1 of 2 Pages   |  |
|--|--|---|--|--|
| Customer :                                 | Hyder Consulting Limited   |   |  |  |
| Address :                                  | 47/F., Hopewell Centre, 183 Qu   | eens Road East, W                               | anchai, Hong Kong                                    |  |
| Order No.: Q43957                          |  |   | Date of receipt                                      | : 8-Dec-14   |
| Item Tested                                |  |   |  |  |
| Manufacturer :                             | Sound Level Calibrator<br>B&K<br>Type 4231   |   | Serial No.   | : 2699361  |
| Test Conditi                               | ons  |   |  |  |
| Date of Test :<br>Ambient Temp             |  |   | Supply Voltage<br>Relative Humidit                   | :<br>y:(50 ± 25) %   |
| Test Specifie                              | cations  |   |  |  |
| Calibration chec<br>Ref. Document/         | k.<br>Procedure : F21, Z02, IEC 942.   |   |  |  |
| Test Results                               | 6  |   |  |  |
|  | within the IEC 942 Class 1 spec<br>shown in the attached page(s).                    | ification.                                      |  |  |
| Main Test equip                            |  |   |  |  |
| Equipment No.                              | Description  | <u>Cert. No.</u>                                |  | <u>raceable to</u>   |
| S014                                       | Spectrum Analyzer  | 405316  |  | NIM-PRC & SCL-HKSAR  |
| S205                                       | Ref. Sound Level Calibrator  | PHCO40002                                       |  | SCL-HKSAR  |
| S041                                       | Universal Counter  | 405317  |  | SCL-HKSAR  |
| S206                                       | Sound Level Meter  | 405322  | S  | SCL-HKSAR  |
| S031                                       | 61/2 dgt. Multimeter   | 39256   | Ν  | NIM-PRC  |
| The values given in will not include allow | this Calibration Certificate only relate to vance for the equipment long term drift, | the values measured at variations with environm | the time of the test and<br>ental changes, vibration | any uncertainties quoted<br>and shock during transportation, |

overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI). The test results apply to the above Unit-Under-Test only

Calibrated by :

Dorothy Cheuk

Approved by :

Steve Kwan

Date: 30-Dec-14

This Certificate is issued by: Hong Kong Calibration Ltd.

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

E



### Certificate No. 409134

Page 2 of 2 Pages

Results :

## 1. Level Accuracy

| UUT Nominal Value | Measured Value (dB) |               | IEC 942       |
|-------------------|---------------------|---------------|---------------|
| (dB)              | Before Adjust.      | After Adjust. | Class 1 Spec. |
| 94                | 94.3                | 94.0          | ± 0.3 dB      |
| 114               | 114.3               | 114.0         |               |

Uncertainty :  $\pm 0.1 \text{ dB}$ 

#### 2. Frequency

| UUT Nominal Value | Measured Value | IEC 942 Class 1 Spec. |
|-------------------|----------------|-----------------------|
| 1 kHz             | 1.000 kHz      | ± 2 %                 |

Uncertainty :  $\pm$  3.6 x 10<sup>-6</sup>

- Level Stability : 0.0 dB IEC 942 Class 1 Spec. : ± 0.1 dB Uncertainty : ± 0.01 dB
- 4. Total Harmonic Distortion : < 0.4 % IEC 942 Class 1 Spec. : < 3 % Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1010 hPa.

----- END -----

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Appendix J

Field Record Sheets

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

| Monitoring Location                 |                            | K11                   |  |  |
|-------------------------------------|----------------------------|-----------------------|--|--|
| Details of Location                 |                            | 4/F Roof top, K11     |  |  |
| Sampler Identificati                | on                         | 1713                  |  |  |
| Date & Time of Sar                  | npling                     | 02/03/2015,00:00 a.m. |  |  |
| Elapsed-time                        | Start (min.)               | 7972,97               |  |  |
| Meter Reading                       | Stop (min.)                | 2996.99               |  |  |
| Total Sampling Tim                  | e (min.)                   | 1441.2                |  |  |
| Weather Conditions                  | 3                          | Overcast              |  |  |
| Site Conditions                     |                            | Nil                   |  |  |
|                                     | Pi (mm Hg)                 | 765.4                 |  |  |
| Initial Flow                        | Ti (°C)                    | 17.5                  |  |  |
| Rate, Qsi                           | Hi (in.)                   |                       |  |  |
|                                     | Qsi (Std. m <sup>3</sup> ) | 2,45                  |  |  |
|                                     | Pf (mm Hg)                 | 760.3                 |  |  |
| Final Flow                          | Tf (°C)                    | 16.4                  |  |  |
| Rate, Qsf                           | Hf (in.)                   |                       |  |  |
|                                     | Qsf (Std. m <sup>3</sup> ) | 2,52                  |  |  |
| Average Flow Rate                   | (Std. m <sup>3</sup> )     | 2.4)                  |  |  |
| Total Volume (Std. m <sup>3</sup> ) |                            | 3581.63               |  |  |
| Filter Identification No.           |                            | 034084                |  |  |
| Initial Weight. of Fill             | ter (g)                    | 2.8684                |  |  |
| Final Weight of Filter (g)          |                            | 3.0329                |  |  |
| Measured TSP Lev                    | el (μg/m³)                 | 45.9                  |  |  |

| Conducted by: | C. S. Tung    | Signature: | $\sum$ |
|---------------|---------------|------------|--------|
| Checked by:   | Kelvin Chiang | Signature: | An     |

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

| Monitoring Location                 |                            | K11                    |  |  |
|-------------------------------------|----------------------------|------------------------|--|--|
| Details of Location                 |                            | 4/F Roof top, K11      |  |  |
| Sampler Identificat                 | ion                        | 1713                   |  |  |
| Date & Time of Sa                   | mpling                     | 09/03/2015, 00:00 a.m. |  |  |
| Elapsed-time                        | Start (min.)               | 7896.99                |  |  |
| Meter Reading                       | Stop (min.)                | 8020.19                |  |  |
| Total Sampling Tim                  | ie (min.)                  | 1440                   |  |  |
| Weather Condition                   | S                          | cloudy                 |  |  |
| Site Conditions                     |                            | Nil                    |  |  |
|                                     | Pi (mm Hg)                 | 764.0                  |  |  |
| Initial Flow                        | Ti (°C)                    | 18.4                   |  |  |
| Rate, Qsi                           | Hi (in.)                   |                        |  |  |
|                                     | Qsi (Std. m <sup>3</sup> ) | 2.39                   |  |  |
|                                     | Pf (mm Hg)                 | 766.0                  |  |  |
| Final Flow                          | Tf (°C)                    | 18.5                   |  |  |
| Rate, Qsf                           | Hf (in.)                   |                        |  |  |
|                                     | Qsf (Std. m <sup>3</sup> ) | 2.52                   |  |  |
| Average Flow Rate                   | (Std. m <sup>3</sup> )     | 2.45                   |  |  |
| Total Volume (Std. m <sup>3</sup> ) |                            | 3530.6                 |  |  |
| Filter Identification No.           |                            | 034085                 |  |  |
| Initial Weight. of Filter (g)       |                            | 2, 90 89<br>3, 0282    |  |  |
| Final Weight of Filter (g)          |                            | 3,0282                 |  |  |
| Measured TSP Lev                    | /el (μg/m <sup>3</sup> )   | 33-8                   |  |  |

| Conducted by: | C. S. Tung    | Signature: | Sn |
|---------------|---------------|------------|----|
| Checked by:   | Kelvin Chiang | Signature: | AS |

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

| Monitoring Location        |                            | K11                  |  |  |
|----------------------------|----------------------------|----------------------|--|--|
| Details of Location        |                            | 4/F Roof top, K11    |  |  |
| Sampler Identifica         | tion                       | 1713                 |  |  |
| Date & Time of Sa          | Impling                    | 16/03/2015,00:00 a.m |  |  |
| Elapsed-time               | Start (min.)               | 8020.99              |  |  |
| Meter Reading              | Stop (min.)                | 8044.98              |  |  |
| Total Sampling Tin         | ne (min.)                  | 1439.4               |  |  |
| Weather Condition          | IS                         | Sunny                |  |  |
| Site Conditions            |                            | Nil                  |  |  |
|                            | Pi (mm Hg)                 | 762.8                |  |  |
| Initial Flow               | Ti (°C)                    | 20.5                 |  |  |
| Rate, Qsi                  | Hi (in.)                   |                      |  |  |
|                            | Qsi (Std. m <sup>3</sup> ) | 2.52                 |  |  |
|                            | Pf (mm Hg)                 | 760.9                |  |  |
| Final Flow                 | Tf (°C)                    | 20.8                 |  |  |
| Rate, Qsf                  | Hf (in.)                   |                      |  |  |
|                            | Qsf (Std. m <sup>3</sup> ) | 2.59                 |  |  |
| Average Flow Rate          | e (Std. m <sup>3</sup> )   | 2.55                 |  |  |
| Total Volume (Std.         | m <sup>3</sup> )           | 3673.24              |  |  |
| Filter Identification No.  |                            | 034086               |  |  |
| Initial Weight. of Fi      | lter (g)                   | 2.8776               |  |  |
| Final Weight of Filter (g) |                            | 3.0006               |  |  |
| Measured TSP Lev           | vel (µg/m³)                | 33, 5                |  |  |

| Conducted by: | C. S. Tung    | Signature: | S   |
|---------------|---------------|------------|-----|
| Checked by:   | Kelvin Chiang | Signature: | J.S |

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

| Monitoring Location                 |                            | K11                   |  |  |
|-------------------------------------|----------------------------|-----------------------|--|--|
| Details of Location                 |                            | 4/F Roof top, K11     |  |  |
| Sampler Identifica                  | ation                      | 1713                  |  |  |
| Date & Time of Sa                   | ampling                    | 23/03/2015,00:00 a.m. |  |  |
| Elapsed-time                        | Start (min.)               | 8044.98               |  |  |
| Meter Reading                       | Stop (min.)                | 8068,98               |  |  |
| Total Sampling Ti                   | me (min.)                  | 1440                  |  |  |
| Weather Condition                   | ns                         | cloudy                |  |  |
| Site Conditions                     |                            | Nil                   |  |  |
|                                     | Pi (mm Hg)                 | 764. 2                |  |  |
| Initial Flow                        | Ti (°C)                    | 19.5                  |  |  |
| Rate, Qsi                           | Hi (in.)                   |                       |  |  |
|                                     | Qsi (Std. m <sup>3</sup> ) | 2.45                  |  |  |
|                                     | Pf (mm Hg)                 | 765.8                 |  |  |
| Final Flow                          | Tf (°C)                    | 18.0                  |  |  |
| Rate, Qsf                           | Hf (in.)                   |                       |  |  |
|                                     | Qsf (Std. m <sup>3</sup> ) | 2,52                  |  |  |
| Average Flow Rat                    | e (Std. m <sup>3</sup> )   | 2.49                  |  |  |
| Total Volume (Std. m <sup>3</sup> ) |                            | 3578.65               |  |  |
| Filter Identification No.           |                            | 034087                |  |  |
| Initial Weight. of Filter (g)       |                            | 2,8640                |  |  |
| Final Weight of Filter (g)          |                            | 3.0829                |  |  |
| Measured TSP Le                     | vel (μg/m³)                | 61.2                  |  |  |

| Conducted by: | C. S. Tung    | Signature: | $2 \sim$ |
|---------------|---------------|------------|----------|
| Checked by:   | Kelvin Chiang | Signature: | fre      |

| Monitoring Location                                     |                          | K11  |  |
|---|--------------------------|--|--|
| Description of Location                                 |                          | 4/F Roof top, K11                                  |  |
| Date of Monitoring                                      |                          | 03/03/2015   |  |
| Measurement Start Time                                  | (hh:mm)                  | 1/:08  |  |
| Measurement Time Length                                 | (min.)                   | 30   |  |
| Noise Meter Model / Identifi                            | cation                   | B & K 2238   |  |
| Calibrator Model / Identifica                           | tion                     | B & K 4231   |  |
|   | L <sub>eq</sub> (dB (A)) | 65.8   |  |
| Measurement Results                                     | L <sub>10</sub> (dB (A)) | 67.5   |  |
|   | L <sub>90</sub> (dB (A)) | 63.0   |  |
| Major Construction Noise Source(s)<br>during Monitoring |                          | On-site powered mechanical equipment               |  |
| Other Noise Source(s) during Monitoring                 |                          | Traffic Noise                                      |  |
| Remarks   |                          | Weather Condition : cloudy<br>Wind Speed : 1.8 m/s |  |

| Conducted by: | C. S. Tung    | Signature: |    |
|---------------|---------------|------------|----|
| Checked by:   | Kelvin Chiang | Signature: | Ar |

| Monitoring Location                                     |                          | K11  |  |
|---|--------------------------|--|--|
| Description of Location                                 |                          | 4/F Roof top, K11                              |  |
| Date of Monitoring                                      |                          | 10/03/2015                                     |  |
| Measurement Start Time                                  | (hh:mm)                  | 11:04  |  |
| Measurement Time Length                                 | (min.)                   | 30   |  |
| Noise Meter Model / Identifi                            | cation                   | B & K 2238                                     |  |
| Calibrator Model / Identifica                           | tion                     | B & K 4231                                     |  |
|   | L <sub>eq</sub> (dB (A)) | 67.4   |  |
| Measurement Results                                     | L <sub>10</sub> (dB (A)) | 68.5   |  |
|   | L <sub>90</sub> (dB (A)) | 65.0   |  |
| Major Construction Noise Source(s)<br>during Monitoring |                          | On-site powered mechanical equipment           |  |
| Other Noise Source(s) during Monitoring                 |                          | Traffic and Aircraff nois                      |  |
| Remarks   |                          | Weather Condition : cloudy<br>Wind Speed : 2.2 |  |

| Conducted by: | C. S. Tung    | Signature: | Su  |
|---------------|---------------|------------|-----|
| Checked by:   | Kelvin Chiang | Signature: | Jh~ |

| Monitoring Location                              |                          | K11   |  |  |  |  |
|--|--------------------------|---|--|--|--|--|
| Description of Location                          |                          | 4/F Roof top, K11                                 |  |  |  |  |
| Date of Monitoring                               |                          | 17/03/2015  |  |  |  |  |
| Measurement Start Time                           | (hh:mm)                  | 11:02   |  |  |  |  |
| Measurement Time Length                          | (min.)                   | 30  |  |  |  |  |
| Noise Meter Model / Identifi                     | cation                   | B & K 2238  |  |  |  |  |
| Calibrator Model / Identifica                    | tion                     | B & K 4231  |  |  |  |  |
|  | L <sub>eq</sub> (dB (A)) | 67.2  |  |  |  |  |
| Measurement Results                              | L <sub>10</sub> (dB (A)) | 68.5  |  |  |  |  |
|  | L <sub>90</sub> (dB (A)) | 65.5  |  |  |  |  |
| Major Construction Noise So<br>during Monitoring | ource(s)                 | On-site powered mechanical equipment              |  |  |  |  |
| Other Noise Source(s) durir                      | ng Monitoring            | Aircraft and traffic noise                        |  |  |  |  |
| Remarks  |                          | Weather Condition : Sunny<br>Wind Speed : 1.8 m/s |  |  |  |  |

| Conducted by: | C. S. Tung    | Signature: | Su |
|---------------|---------------|------------|----|
| Checked by:   | Kelvin Chiang | Signature: | 45 |

| Monitoring Location                             |                          | K11  |  |  |  |  |  |
|---|--------------------------|--|--|--|--|--|--|
| Description of Location                         |                          | 4/F Roof top, K11                                  |  |  |  |  |  |
| Date of Monitoring                              |                          | 24/03/2015   |  |  |  |  |  |
| Measurement Start Time                          | (hh:mm)                  | 10=54  |  |  |  |  |  |
| Measurement Time Length                         | (min.)                   | 30   |  |  |  |  |  |
| Noise Meter Model / Identifi                    | cation                   | B & K 2238   |  |  |  |  |  |
| Calibrator Model / Identifica                   | tion                     | B & K 4231   |  |  |  |  |  |
|   | L <sub>eq</sub> (dB (A)) | 67.2   |  |  |  |  |  |
| Measurement Results                             | L <sub>10</sub> (dB (A)) | 69.0   |  |  |  |  |  |
|   | L <sub>90</sub> (dB (A)) | 64.5   |  |  |  |  |  |
| Major Construction Noise S<br>during Monitoring | ource(s)                 | On-site powered mechanical equipment               |  |  |  |  |  |
| Other Noise Source(s) durir                     | ng Monitoring            | Aircraft and traffic noise                         |  |  |  |  |  |
| Remarks   |                          | Weather Condition : Sunn y<br>Wind Speed : 2.1 m/s |  |  |  |  |  |

| Conducted by: | C. S. Tung    | Signature: | S  |
|---------------|---------------|------------|----|
| Checked by:   | Kelvin Chiang | Signature: | AL |

| Monitoring Location                             |                          | K11   |  |  |  |  |
|---|--------------------------|---|--|--|--|--|
| Description of Location                         |                          | 4/F Roof top, K11                                 |  |  |  |  |
| Date of Monitoring                              |                          | 31/03/2015  |  |  |  |  |
| Measurement Start Time                          | (hh:mm)                  | 13:50   |  |  |  |  |
| Measurement Time Length                         | (min.)                   | 30  |  |  |  |  |
| Noise Meter Model / Identifi                    | cation                   | B & K 2238  |  |  |  |  |
| Calibrator Model / Identifica                   | tion                     | B & K 4231  |  |  |  |  |
|   | L <sub>eq</sub> (dB (A)) | 69.1  |  |  |  |  |
| Measurement Results                             | L <sub>10</sub> (dB (A)) | 72.0  |  |  |  |  |
|   | L <sub>90</sub> (dB (A)) | 66.5  |  |  |  |  |
| Major Construction Noise S<br>during Monitoring | ource(s)                 | On-site powered mechanical equipment              |  |  |  |  |
| Other Noise Source(s) durir                     | ng Monitoring            | Traffic Noise                                     |  |  |  |  |
| Remarks   |                          | Weather Condition : Sunny<br>Wind Speed : 2.2 m/s |  |  |  |  |

| Conducted by: | C. S. Tung    | Signature: |     |
|---------------|---------------|------------|-----|
| Checked by:   | Kelvin Chiang | Signature: | the |



# Appendix K

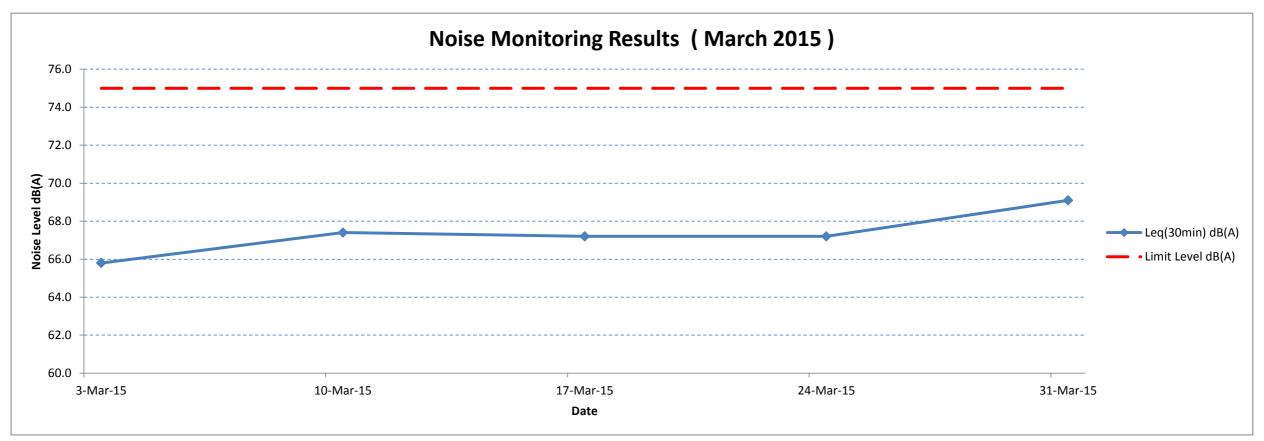
Monitoring Results and Plots

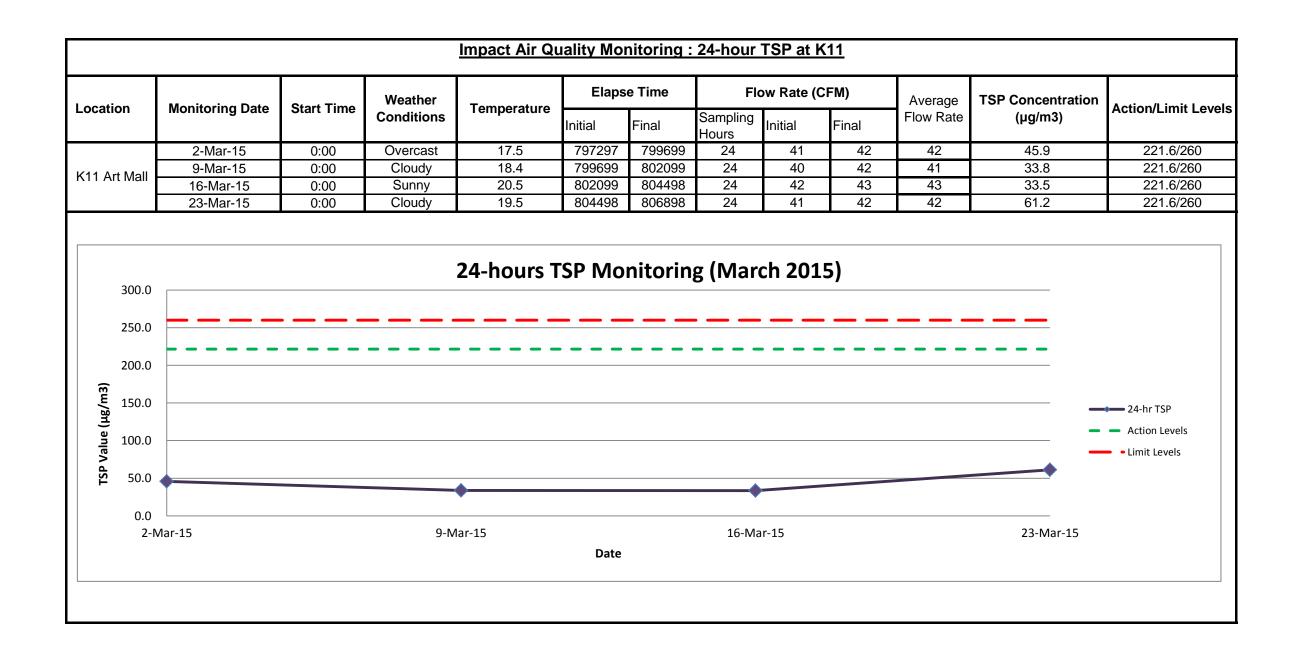
#### Noise Impact Monitoring Results at K11

| Monitoring Locations | Date      | Weather<br>Conditions | Wind Speed<br>(m/s) | Start Time | End Time | Background<br>Level dB(A) | Limit Level dB(A) | Leq(30min) dB(A) | $110(30min) dR(\Delta)$ | L90(30min)<br>dB(A) |
|----------------------|-----------|-----------------------|---------------------|------------|----------|---------------------------|-------------------|------------------|-------------------------|---------------------|
| K11 Art Mall         | 3-Mar-15  | Cloudy                | 1.8                 | 11:08      | 11:38    | 65.3                      | 75                | 65.8             | 67.5                    | 63.0                |
|                      | 10-Mar-15 | Cloudy                | 2.2                 | 11:04      | 11:34    | 65.3                      | 75                | 67.4             | 68.5                    | 65.0                |
|                      | 17-Mar-15 | Sunny                 | 1.8                 | 11:02      | 11:32    | 65.3                      | 75                | 67.2             | 68.5                    | 65.5                |
|                      | 24-Mar-15 | Sunny                 | 2.1                 | 10:54      | 11:24    | 65.3                      | 75                | 67.2             | 69.0                    | 64.5                |
|                      | 31-Mar-15 | Sunny                 | 2.2                 | 13:50      | 14:20    | 65.3                      | 75                | 69.1             | 72.0                    | 66.5                |

Note:

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

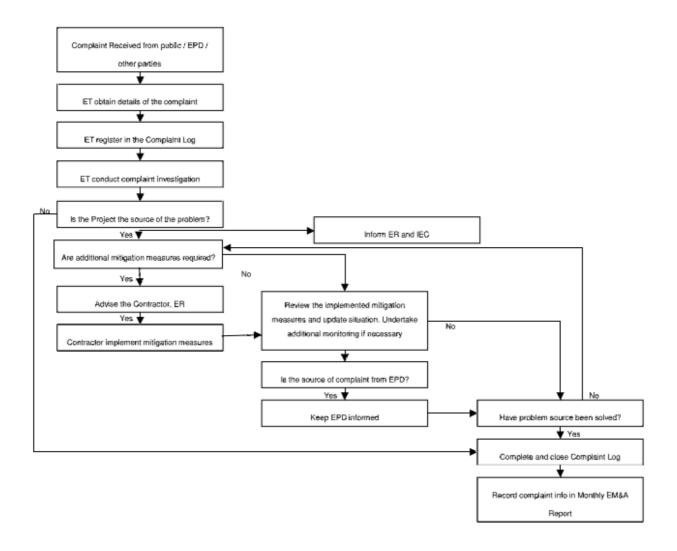




Appendix L

Flow Chart for Handling Environmental Complaints

#### **Complaint Response Procedure**





Appendix M

Waste Management Records

#### Monthly Summary Waste Flow Table for 2015 (year)

# Contract No:C3840-13C Tsim Sha Tsui Station Carnarvon Road SubwayDate Reported:8-April-2015

|                   |                             | Actual Qua                                 | ntities of Inert C&I      | O Materials Generate        | ed Monthly                 |                          | Ac          | Actual Quantities of Non-inert C&D Wastes Generated Monthly |              |                |                                |  |
|-------------------|-----------------------------|--|---------------------------|-----------------------------|----------------------------|--------------------------|-------------|---|--------------|----------------|--------------------------------|--|
| Month             | Total Quantity<br>Generated | Hard Rocks and<br>Large Broken<br>Concrete | Reused in the<br>Contract | Reused in other<br>Projects | Disposed as<br>Public Fill | Imported Fill            | Metals      | Paper/ cardboard<br>packaging                               | Plastics     | Chemical Waste | Others, e.g.<br>general refuse |  |
|                   |                             | (See Note 3)                               |                           |                             |                            |                          |             |   | (see Note 2) |                |                                |  |
|                   | (in '000m <sup>3</sup> )    | (in '000m <sup>3</sup> )                   | (in '000m <sup>3</sup> )  | (in '000m <sup>3</sup> )    | (in '000m <sup>3</sup> )   | (in '000m <sup>3</sup> ) | (in '000kg) | (in '000kg)   | (in '000kg)  | (in'000kg)     | (in '000m³/tonne)              |  |
| Carried from 2014 | 0.9342                      | -  | -                         | -                           | 0.9342                     | -                        | -           | -   | -            | -              | 0.0035                         |  |
| Jan               | 0.0682                      | -  | -                         | -                           | 0.0682                     | -                        | -           | -   | -            | -              | -                              |  |
| Feb               | 0.0418                      | -  | -                         | -                           | 0.0418                     | -                        | -           | -   | -            | -              | -                              |  |
| Mar               | 0.2563                      | -  | -                         | -                           | 0.2563                     | -                        | -           | -   | -            | -              | 0.0020                         |  |
| Apr               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| May               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| June              | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Sub-total         | 0.3663                      | -  | -                         | -                           | 0.3663                     | -                        | -           | -   | -            | -              | 0.0020                         |  |
| July              | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Aug               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Sept              | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Oct               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Nov               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Dec               | -                           | -  | -                         | -                           | -                          | -                        | -           | -   | -            | -              | -                              |  |
| Total             | 0.3663                      | -  | -                         | -                           | 0.3663                     | -                        | -           | -   | -            | -              | 0.0020                         |  |
| Acc. Total        | 1.3005                      | (accumulated quar                          | ntity of the project =    | = carried amount + t        | his year amount)           |                          |             |   |              | 0.0055         |                                |  |

#### 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.