MTR Corporation Limited

# Shatin to Central Link –
# Tai Wai to Hung Hom Section

## Monthly EM&A Report No. 87

[Period from 1 to 30 November 2019]

(December 2019)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 13 December 2019

MTR Corporation Limited

# Shatin to Central Link –
# Tai Wai to Hung Hom Section

## Monthly EM&A Report No. 87

[Period from 1 to 30 November 2019]

(December 2019)

Certified by: Lisa Poon

Position: Environmental Team Leader

Date: 13 December 2019

AECOM

**MTR Corporation Limited**

Consultancy Agreement No. C11033

# Shatin to Central Link – Tai Wai to Hung Hom Section

# Monthly EM&A Report No. 87

[Period from 1 to 30 November 2019]

| | Name | Signature |
|---|---|---|
| Prepared & Checked: | Joanne Tsoi | |
| Reviewed & Approved: | Josh Lam | |

| Version: | A | Date: 13 December 2019 |
|---|---|---|



AECOM Asia Co. Ltd.
8/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 3922 9000 Fax: (852) 3922 9797 www.aecom.com

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# 1 INTRODUCTION

## 1.1 Background

1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).

1.1.2 Shatin to Central Link – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (hereafter referred to as "the Project") is part of the SCL. Shatin to Central Link – Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] is a proposed stabling sidings option for SCL (TAW – HUH) at the former freight yard in Hung Hom.

1.1.3 The Environmental Impact Assessment (EIA) Reports for SCL (TAW-HUH) (Register No.: AEIAR-167/2012) and SCL (HHS) (Register No.: AEIAR-164/2012) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Reports, an Environmental Permit (EP) was granted on 22 March 2012 covering SCL (TAW-HUH) and SCL (HHS) (EP No: EP-438/2012) for their construction and operation. Variations of environmental permit (VEP) were subsequently applied for EP-438/2012. The latest Environmental Permit (EP No.: EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016.

## 1.2 Project Programme

1.2.1 Eleven civil construction works contracts of the Project have been awarded since July 2012. The construction of the Project commenced in September 2012 and is expected to complete in 2019 tentatively. Table 1.1 summarises the information of the awarded Works Contracts.

Table 1.1 Summary of Awarded Works Contracts

| Works Contract | Description | Construction Start Date | Contractor | Environmental Team |
|---|---|---|---|---|
| 1101[1] | Ma On Shan Line Modification Works | December 2012 | Sun Fook Kong Joint Venture (SFKJV) | ANewR Consulting Ltd. (ANewR) |
| 1102[6] | Hin Keng Station and Approach Structures | October 2013 | Penta-Ocean Construction Co. Ltd. | Wellab Limited (Wellab) |
| 1103[7] | Hin Keng to Diamond Hill Tunnels | February 2013 | Vinci Construction Grands Projets | Ove Arup & Partners Hong Kong Ltd. (Arup) |
| | | October 2019 | Wing Ho Yuen Landscaping Co. Ltd. | MTR Co. Limited |
| 1106[8] | Diamond Hill Station | March 2013 | Leader Joint Venture | Cinotech Consultants Ltd. (Cinotech) |
| 1107[4] | Diamond Hill to Kai Tak Tunnels | May 2013 | Chun Wo - SELI Joint Venture | Cinotech Consultants Ltd. (Cinotech) |
| 1108[5] | Kai Tak Station and Associated Tunnels | June 2013 | Kaden -Chun Wo Joint Venture | Environmental Pioneers & Solutions Ltd. |

| Works Contract | Description | Construction Start Date | Contractor | Environmental Team |
|---|---|---|---|---|
| 1108A(2) | Kai Tak Barging Point Facilities | September 2012 | Concentric – Hong Kong River Joint Venture (CCL-HKR JV) | Cinotech Consultants Ltd. (Cinotech) |
| 1109 | Stations and Tunnels of Kowloon City Section | September 2012 | Samsung-Hsin Chong JV (SSHCJV) | ERM-Hong Kong Limited (ERM) |
| 1111(9) | Hung Hom North Approach Tunnels | January 2013 | Gammon-Kaden SCL1111 JV | AECOM Asia Co. Ltd. |
| 1112 | Hung Hom Station and Stabling Sidings | June 2013 | Leighton Contractors (Asia) Limited | SMEC Asia Ltd., HK |
| 11240(3) | Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site | October 2017 | Crown Asia Engineering Limited (CAEL) | MTR Co. Limited |

Notes:

(1) All construction works (works areas at Tai Wai Mei Tin Road and the offsite temporary storage areas) under Works Contract 1101 were completed on 29 February 2016.

(2) All construction works (Kai Tak Barging Point Facilities) under Works Contract 1108A were completed on 29 September 2016.

(3) All construction works (Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site) under Works Contract 11240 were completed on 3 January 2018.

(4) All construction works (Diamond Hill to Kai Tak Tunnels) under Works Contract 1107 were completed on 22 February 2018.

(5) All construction works (Kai Tak Station and associated tunnels) under Works Contract 1108 were completed in July 2018.

(6) All construction works (Hin Keng Station and Approach Structures) under Works Contract 1102 were completed in December 2018. The Environmental Team was taken over by Wellab Limited starting from 1 January 2019.

(7) All construction works (Hin Keng to Diamond Hill Tunnels) under Works Contract 1103 were completed in June 2019. Minor landscaping works at Fung Tak had been commenced in mid Oct and all the works were completed at the end of Oct 2019.

(8) All construction works (Diamond Hill Station) under Works Contract 1106 with significant environmental impacts were substantially completed by 25 Jun 2019.

(9) All major construction works (Hung Hom North Approach Tunnels) under Works Contract 1111 have been substantially completed since 18 Nov 2018 with only minor works remaining.

## 1.3 Purpose of the Report

1.3.1 The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in September 2012. This is the eighty-seventh EM&A Report for the Project which summarises the EM&A works undertaken by the respective ETs during the period from 1 to 30 November 2019.

# 2 ENVIRONMENTAL MONITORING AND AUDIT

2.1.1 The construction of SCL has been divided into different civil construction works contracts which are covered by EP No. EP-438/2012/K. As per the EP Conditions, EM&A Reports for the works contracts as shown in the table below have been prepared by the respective ETs.

| Works Contract | Contract Title | Works Covered in Environmental Permit No. |
|---|---|---|
| 1101 | Ma On Shan Modification Works | EP-438/2012/K |
| 1102 | Hin Keng Station and Approach Structures | EP-438/2012/K |
| 1103 | Hin Keng to Diamond Hill Tunnels | EP-438/2012/K |
| 1106 | Diamond Hill Station | EP-438/2012/K |
| 1107 | Diamond Hill to Kai Tak Tunnels | EP-438/2012/K |
| 1108 | Kai Tak Station and Associated Tunnels | EP-438/2012/K |
| 1108A | Kai Tak Barging Point Facilities | EP-438/2012/K |
| 1109 | Stations and Tunnels of Kowloon City Section | EP-438/2012/K |
| 1111 | Hung Hom North Approach Tunnels | EP-438/2012/K |
| 1112 | Hung Hom Station and Stabling Sidings | EP-438/2012/K |
| 11240 | Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site | EP-438/2012/K |

2.1.2 The EM&A Reports for Works Contracts 1109 and 1112 prepared by the respective ETs are provided in Appendices A to B respectively. The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.

2.1.3 A summary of the major construction activities undertaken by the respective Contractors of various Works Contracts during the reporting period are presented in Table 2.1.

Table 2.1 Summary of Major Construction Activities in the Reporting Period

| Works Contract | Site | Construction Activities |
|---|---|---|
| 1109 | Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW)) | To Kwa Wan Station - ABWF works;<br>• Ma Tau Wai Road – Removal of D-wall;<br>• Ventilation Shaft and Entrance A – Reinstatement of Lok Shan Road and To Kwa Wan Complex Playground;<br>• Entrance B – Footpath reinstatement works;<br>• Entrance C – Installation of gully and street lighting, and footpath reinstatement works;<br>• Entrance D – Reinstatement of Ma Tau Wai Road/ To Kwa Wan Road Garden;<br>• All Work Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |
| | Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW)) | • Olympic Avenue – Reinstatement works;<br>• Sung Wong Toi Station – ABWF works; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement |

| Works Contract | Site | Construction Activities |
|---|---|---|
| | | works for the structure within 1109 Contract Boundary due to social activities. |
| 1112 | Hung Hom Station (HUH) | • Minor services connection at G.L J of HUH;<br>• Platform ABWF and E&M works;<br>• Remedial works at HUH/HHS |
| | SAT Ventilation Shaft | • Landscape preparation works |
| | Concourse level & Mid-level walkway | • Modification works |

2.1.4 Impact monitoring for air quality and construction noise were conducted in accordance with the EM&A Manual in the reporting period. Continuous noise monitoring was not required in the reporting period for all Works Contracts according to the Continuous Noise Monitoring Plan (CNMP). The air quality and construction noise for this reporting month are summarised in Tables 2.2 and 2.3. Details of the monitoring requirements, locations, equipment, methodology and QA/QC procedures are presented in the EM&A Reports as provided in Appendices A to B.

2.1.5 Water quality monitoring was not carried out during this reporting period since no dredging activity was conducted in the reporting month.

2.1.6 No environmental complaint, exceedance of limit level, notification of summons or successful prosecutions was received during the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in **Table 2.4**.

2.1.7 Regular site inspections were conducted by the respective ETs on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance was identified in the reporting period.

Table 2.2 Summary of 24-Hour TSP Monitoring Results in the Reporting Period

| Monitoring Station ID | Location | TSP Concentration ($\mu g/m^3$) | Action Level ($\mu g/m^3$) | Limit Level ($\mu g/m^3$) | Exceedance due to the Project Construction (Yes/ No/ N/A) |
|---|---|---|---|---|---|
| Works Contracts 1102 and 1103 | | | | | |
| DMS-1(11) | C.U.H.K.A.A. Thomas Cheung School | N/A | 148.7 | 260 | N/A |
| Works Contract 1103 | | | | | |
| DMS-2(12) | Price Memorial Catholic Primary School | N/A | 167.4 | 260 | No |
| Works Contracts 1103 and 1106 | | | | | |
| DMS-3(13) | Hong Kong S.K.H Nursing Home (1) | N/A | 159.1 | 260 | No |
| Works Contract 1106(10) | | | | | |
| DMS-4(13) | Block 1, Rhythm Garden | N/A | 160.4 | 260 | No |
| Works Contract 1108 (5) | | | | | |
| Works Contract 1109 | | | | | |
| DMS-6 | Katherine Building (2) | 23 – 80 | 156.8 | 260 | No |
| DMS-7 | Parc 22 (3) | 28 – 52 | 166.7 | 260 | No |
| DMS-8 | SKH Good Shepherd Primary School | 30 – 59 | 152.2 | 260 | No |
| DMS-9 | No. 12 Pau Chung Street (4)(9) | 37 – 74 | 160.9 | 260 | No |
| DMS-10 | Chat Ma Mansion | 37 – 67 | 170.4 | 260 | No |
| Works Contract 1111 | | | | | |
| AM1(6)(14) | No. 234 – 238 Chatham Road North (7) | NA | 183.9 | 260 | No |
| Works Contract 1112 | | | | | |
| AM2 | Site Boundary of Finger Pier Adjacent To Harbourfront Horizon (8) | 42.2 – 57.4 | 182 | 260 | No |
| Works Contract 11240 (5) | | | | | |

Notes:

(1) Alternative monitoring location to Shek On House
(2) Alternative monitoring location to Prosperity House
(3) Alternative monitoring location to Skytower Tower 2
(4) Alternative monitoring location to Lucky Building
(5) No TSP monitoring is required under this contract
(6) AM1 named as HUH-1-3 in SCL(TAW-HUH) and SCL(HHS) EIA Reports.
(7) Alternative monitoring location to Wing Fung Building
(8) Alternative monitoring location to Harbourfront Horizon
(9) Alternative monitoring location of No. 26 Kowloon City Road
(10) The 24-hour TSP monitoring works would be taken up by Works Contract 1106 since the completion of Works Contract 1107 in Feb 2018.
(11) The cessation of monitoring works at DMS-1 was approved by EPD and the last monitoring was conducted on 16 Jul 2018.

(12) The temporary cessation of monitoring works at DMS-2 was approved by EPD in end-June 2019. The last monitoring date was 27 June 2019.
(13) The cessation of monitoring works at DMS-3 and DMS-4 was approved by EPD on 31 Jul 2019. The last monitoring was conducted on 30 Jul 2019.
(14) The cessation of monitoring works at AM1 was proposed on 25 Jul 2019 and EPD expressed no objection on 31 Jul 2019.

Table 2.3 Summary of Construction Noise Monitoring Results in the Reporting Period

| Monitoring Station ID | Location | Noise Level ($L_{Aeq,30mins}$, dB(A)) | | | Limit Level (dB(A)) | Exceedance due to the Project Construction (Yes/No) |
|---|---|---|---|---|---|---|
| | | Measured | Baseline | Corrected [7] | | |
| Works Contracts 1102 and 1103 | | | | | | |
| NMS-CA-1[12] | C.U.H.K.A.A. Thomas Cheung School | N/A | 57.0 | N/A | 70 (65 during examination period) | No |
| Works Contract 1103 | | | | | | |
| NMS-CA-2[13] | Price Memorial Catholic Primary School | N/A | 66.0 | N/A | 70 (65 during examination period) | No |
| Works Contracts 1103 and 1106 | | | | | | |
| NMS-CA-3[14] | Hong Kong S.K.H Nursing Home [1] | NA | 73.0 | NA | 70 | No |
| Works Contracts 1106[11] | | | | | | |
| NMS-CA-4[14] | Block 1, Rhythm Garden (north-eastern façade) | N/A | 71.0 | N/A | 75 | No |
| NMS-CA-5[14] | Block 1, Rhythm Garden (northern façade)[2] | N/A | 74.0 | N/A | 70 (65 during examination period) | No |
| Works Contract 1108 [6] | | | | | | |
| Works Contract 1109 | | | | | | |
| NMS-CA-6 | No. 16-23 Nam Kok Road [3] | 60.6 – 62.1 | 76.1 | < Baseline | 75 | No |
| NMS-CA-7 | Skytower Tower 2 | 65.2 – 66.0 | 70.0 | < Baseline | 75 | No |
| NMS-CA-8 | SKH Good Shepherd Primary School | 70.9 – 73.1 | 75.4 | < Baseline | 70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring) [8] | No |
| NMS-CA-9 | Kong Yiu Mansion [4] | 69.1 – 71.7 | 69.2 | < Baseline – 68.1 | 75 | No |
| NMS-CA-10 | Chat Ma Mansion | 74.8 – 76.2 | 76.6 | < Baseline | 75 | No |
| Works Contract 1111 | | | | | | |

| Monitoring Station ID | Location | Noise Level ($L_{Aeq,30mins}$, dB(A)) | | | Limit Level (dB(A)) | Exceedance due to the Project Construction (Yes/No) |
|---|---|---|---|---|---|---|
| | | Measured | Baseline | Corrected (7) | | |
| NM1(15) | Carmel Secondary School (South Block) | NA | 68.0 | < Baseline | 70 (65 during examination period) (68 during the period of conducting the continuous noise monitoring) (9) | No |
| NM2(15) | No. 234 – 238 Chatham Road North (5) | NA | 79.0 | < Baseline | 75 (77) (10) | No |
| Works Contract 1112 (6) | | | | | | |
| Works Contract 11240 (6) | | | | | | |

Notes:

(1) Alternative monitoring location to Shek On House.
(2) Alternative monitoring location to Canossa Primary School (San Po Kong).
(3) Alternative monitoring location to Prosperity House.
(4) Alternative monitoring location to Lucky Building.
(5) Alternative monitoring location to Wing Fung Building.
(6) No construction noise monitoring is required under this contract.
(7) The measured noise levels are corrected against the corresponding baseline noise levels.
(8) The Limit Level of 79 dB(A) was updated on 22 Aug 2013 as per the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) which were approved by EPD.
(9) The Limit of 68 dB(A) was updated on 20 Jan 2014 as per the latest CNMMP and CNMP which were approved by EPD.
(10) Daytime noise Limit Level of 77 dB(A) applies during the continuous noise monitoring period.
(11) The construction noise monitoring works would be taken up by Works Contract 1106 since the completion of Works Contract 1107 in Feb 2018.
(12) The cessation of monitoring works at NMS-CA-1 was approved by EPD and the last monitoring was conducted on 17 Jul 2018.
(13) The temporary cessation of monitoring works at NMS-CA-2 was approved by EPD in end-June 2019. The last monitoring date was 24 Jun 2019.
(14) The cessation of monitoring works at NMS-CA-3, NMS-CA-4 and NMS-CA-5 was approved by EPD on 31 Jul 2019. The last monitoring proposed on 31 Jul 2019 was rescheduled to 1 Aug 2019 due to adverse weather and the hoist of Typhoon Signal No.8 (Typhoon “Wipha”).
(15) The cessation of monitoring works at NM1 and NM2 were proposed on 25 Jul 2019 and EPD expressed no objection on 31 Jul 2019.

Table 2.4 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

| Works Contract | Environmental Complaints | Notification of Summons | Successful Prosecutions |
|---|---|---|---|
| 1109 | 0 | 0 | 0 |
| 1112 | 0 | 0 | 0 |

# 3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The respective Contractors have implemented all mitigation measures and requirements as stated in the EIA Reports, EM&A Manuals and EP (EP-438/2012/K). The status of required submissions under the EP as of the reporting period are summarised in Tables 3.1.

Table 3.1 Summary of Status of Required Submissions for EP-438/2012/K

| EP Condition (EP-438/2012/K) | Submission | Submission date |
|---|---|---|
| Condition 1.12 | Notification of Commencement Date of Construction of the Project | 1 Aug 2012 |
| Condition 2.3 | Notification of Information of Community Liaison Groups | 13 Jul 2012 (1st submission)<br>31 Aug 2012 (2nd submission)<br>30 Nov 2012 (3rd submission) |
| Condition 2.7 | Management Organisation of Main Construction Companies | 27 Jul 2012 (1st submission)<br>21 Aug 2012 (2nd submission)<br>19 Dec 2012 (3rd submission)<br>22 Jan 2013 (4th submission)<br>30 Apr 2013 (5th submission)<br>21 May 2013 (6th submission) |
| Condition 2.8 | Construction Programme and EP Submission Schedule | 27 Jul 2012 |
| Condition 2.9 | Construction Noise Mitigation Measures Plan (CNMMP) | 1 Aug 2012 (1st submission)<br>28 Sep 2012 (2nd submission)<br>30 Nov 2012 (3rd submission)<br>11 Jan 2013 (4th submission)<br>8 Feb 2013 (Approved)<br>8 Feb 2013 (5th submission)<br>26 Apr 2013 (6th submission)<br>11 Jun 2013 (7th submission)<br>12 Jul 2013 (Approved)<br>26 Jul 2013 (8th submission)<br>22 Aug 2013 (Approved)<br>23 Aug 2013 (9th submission)<br>13 Sep 2013 (Approved)<br>20 Jan 2014 (10th submission)<br>26 Feb 2014 (Approved)<br>31 Mar 2015 (Contract 1106 submission only)<br>13 Apr 2015 (Contract 1106 submission only)<br>15 Apr 2015 (Approved) |
| Condition 2.10 | Continuous Noise Monitoring Plan (CNMP) | 1 Aug 2012 (1st submission)<br>28 Sep 2012 (2nd submission)<br>30 Nov 2012 (3rd submission)<br>11 Jan 2013 (4th submission)<br>8 Feb 2013 (Approved)<br>8 Feb 2013 (5th submission)<br>26 Apr 2013 (6th submission)<br>11 Jun 2013 (7th submission)<br>12 Jul 2013 (Approved)<br>26 Jul 2013 (8th submission)<br>22 Aug 2013 (Approved)<br>23 Aug 2013 (9th submission)<br>13 Sep 2013 (Approved)<br>20 Jan 2014 (10th submission)<br>26 Feb 2014 (Approved)<br>7 Oct 2014 (11th submission) |

| EP Condition (EP-438/2012/K) | Submission | Submission date |
|---|---|---|
| | | 23 Oct 2014 (Approved) |
| Condition 2.11 | Construction and Demolition Materials Management Plan (C&DMMP) | 6 Jul 2012 (1st submission)<br>12 Sep 2012 (2nd submission)<br>10 Oct 2012 (Approved) |
| Condition 2.12 | Sediment Management Plan | 6 Jul 2012 (1st submission)<br>12 Sep 2012 (2nd submission)<br>5 Oct 2012 (3rd submission)<br>10 Oct 2012 (Approved)<br>4 Mar 2013 (4th submission)<br>9 May 2013 (5th submission)<br>24 Jul 2013 (6th submission)<br>26 Jul 2013 (Approved) |
| Condition 2.13 | Visual, Landscape, Tree Planting & Tree Protection Plan | 6 Jul 2012 (1st submission)<br>30 Aug 2012 (2nd submission)<br>3 Oct 2012 (3rd submission)<br>13 Nov 2013 (Approved)<br>14 Nov 2012 (4th submission)<br>8 Feb 2013 (5th submission)<br>18 Mar 2013 (6th submission)<br>18 Jun 2013 (7th submission)<br>12 Jul 2013 (Approved)<br>23 Mar 2017 (8th submission)<br>7 Mar 2018 (9th submission)<br>30 Jul 2018 (10th submission)<br>28 Feb 2019 (11th submission)<br>5 Mar 2019 (12th submission)<br>29 May 2019 (13th submission)<br>19 Jul 2019 (Approved) |
| Condition 2.14 | Transplantation Proposal for Plant Species of Conservation Importance | 22 Aug 2012 (1st submission)<br>5 Oct 2012 (2nd submission)<br>26 Nov 2012 (3rd submission)<br>4 Dec 2012 (Approved) |
| Condition 2.15 | Conservation Plan | 31 Jan 2013 (1st submission)<br>18 Mar 2013 (2nd submission)<br>24 Apr 2013 (Approved) |
| Condition 2.16 | Archaeological Action Plan(s) (AAP(s)) for Works Contract 1109 | 10 Aug 2012 (1st submission)<br>3 Sep 2012 (2nd submission)<br>21 Sep 2012 (Approved)<br>11 Oct 2013 (3rd submission)<br>1 Nov 2013 (Approved) |
| Condition 2.16 | Archaeological Action Plan(s) (AAP(s)) for Works Contract 1106 | 29 Jan 2013 (1st submission)<br>19 Mar 2013 (2nd submission)<br>8 Apr 2013 (Approved) |
| Condition 2.23 | Supplementary Contamination Assessment Report for New Territories South Animal Centre | 28 Sep 2012<br>25 Oct 2012 (Approved) |
| Condition 2.27 | Operational Ground-borne Noise Mitigation Measures Plan | 18 Mar 2016 (Batch 1 Version A submission)<br>28 Apr 2016 (Batch 1 Version B submission)<br>28 Apr 2016 (Batch 2 Version A submission)<br>1 Jun 2016 (Batch 1 Version C submission)<br>1 Jun 2016 (Batch 2 Version B submission) |

| EP Condition (EP-438/2012/K) | Submission | Submission date |
|---|---|---|
| | | 23 Jun 2016 (Batch 1 Version D submission)<br>23 Jun 2016 (Batch 2 Version C submission)<br>15 Jul 2016 (Batch 1 Version D approved)<br>15 Jul 2016 (Batch 2 Version C approved)<br>15 Sep 2016 (Batch 3 Version A submission)<br>4 Oct 2016 (Batch 3 Version A approved)<br>8 Mar 2017 (Batch 4 Version A)<br>7 Apr 2017 (Batch 4 Version A approved)<br>7 Jun 2017 (Final)<br>20 Jul 2017 (Approved) |
| Condition 2.28 | As-built Drawings for Operational Ground-borne Noise Mitigation Measures | 10 Aug 2017 (1st submission) |
| Condition 2.30 | As-built Drawings for Operational Air-borne Noise Mitigation Measures | 4 Dec 2015 (1st submission)<br>28 Dec 2015 (2nd submission)<br>4 Feb 2016 (Approved)<br>20 Mar 2018 (3rd submission) |
| Condition 2.31 | Performance Test Report for Train Noise – Operational Airborne Railway and Ground-borne Noise | 15 Nov 2018 (Batch 1 Version A submission)<br>30 Jan 2019 (Batch 2 Version A submission)<br>29 Mar 2019 (Batch 1 Version A & Batch 2 Version B submission)<br>15 April 2019 (Approved) |
| Condition 2.32 | Proposal for Updating Maximum Allowable Sound Power Levels of Fixed Plant Sources | 30 Jan 2019 (Batch 1 Version A submission)<br>27 Feb 2019 (Batch 1 Version B submission)<br>13 Mar 2019 (Batch 1 Version B approved)<br>15 Mar 2019 (Batch 2 Version A submission)<br>8 Apr 2019 (Batch 2 Version A approved)<br>24 April 2019 (Batch 3 & 4 Version A submission)<br>21 May 2019 (Batch 3 Version B submission)<br>11 Jun 2019 (Batch 3 Version B & Batch 4 Version A approved)<br>21 Jun 2019 (Batch 5 Version A submission)<br>17 Jul 2019 (Batch 5 Version A approved)<br>19 Jul 2019 (Batch 6 Version A submission)<br>26 Jul 2019 (Batch 7 Version A submission)<br>29 Jul 2019 (Batch 6 Version A approved) |

| EP Condition (EP-438/2012/K) | Submission | Submission date |
|---|---|---|
| | | 14 Aug 2019 (Batch 7 Version A approved) |
| Condition 2.32 | Fixed Plant Noise Audit Report | 30 Jan 2019 (Batch 1 Version A submission)<br>15 Mar 2019 (Batch 1 Version B submission)<br>4 Apr 2019 (Batch 1 Version B approved)<br>16 Apr 2019 (Batch 2 Version A submission)<br>7 May 2019 (Batch 2 Version A approved)<br>24 Jun 2019 (Batch 3 Version A and Batch 4 Version A submission)<br>6 Jul 2019 (Batch 3 Version A and Batch 4 Version A approved)<br>2 Aug 2019 (Batch 5 Version A submission)<br>27 Aug 2019 (Batch 6 Version A submission)<br>29 Aug 2019 (Batch 7 Version A submission)<br>3 Sep 2019 (Batch 5 Version A approved)<br>13 Sep 2019 (Batch 6 Version B approved)<br>23 Sep 2019 (Batch 7 Version B submission)<br>11 Oct 2019 (Batch 7 Version B approved) |
| Condition 2.33 | As-built Drawings for Landscape and Visual Mitigation Measures | 4 Dec 2015 (1st submission)<br>28 Dec 2015 (2nd submission)<br>4 Feb 2016 (Approved)<br>22 Aug 2018 (3rd submission)<br>5 Nov 2018 (4th submission)<br>6 Sep 2019 (5th submission)<br>27 Sep 2019 (6th submission) |
| Condition 2.36 | Contamination Assessment Plan (CAP) for the Temporary Magazine Site at TKO Area 137 | 23 Mar 2016 (1st submission)<br>20 Apr 2016 (2nd submission)<br>22 Apr 2016 (Approved) |
| Condition 2.36 | Contamination Assessment Report (CAR) for the Temporary Magazine Site at TKO Area 137 | 19 May 2016 (1st submission)<br>3 Jun 2016 (2nd submission)<br>15 Jun 2016 (Approved) |
| Condition 3.1 | Proposal for Termination of Environmental Monitoring and Audit (EM&A) Programme for Kai Tak Barging Point Facilities | 7 Oct 2016 (Approved) |
| Condition 3.1 | Proposal for Cessation of EM&A Works at Hin Keng | 9 May 2018 (1st submission)<br>16 July 2018 (Approved) |
| Condition 3.1 | Proposal for Cessation of EM&A Programme at Diamond Hill Station | 25 July 2019 (1st submission)<br>31 July 2019 (Approved) |

| EP Condition (EP-438/2012/K) | Submission | Submission date |
|---|---|---|
| Condition 3.1 | Proposal for Cessation of EM&A Programme at Hung Hom North Approach Tunnels | 25 July 2019 (1st submission)<br>31 July 2019 (Approved) |
| Condition 3.3 | Baseline Monitoring Report (Works Contract 1109 - Stations and Tunnels of Kowloon City Section ) | 27 Jul 2012 |
| Condition 3.3 | Baseline Monitoring Report (Works Contract 1108A – Kai Tak Barging Point Facilities) | 31 Jul 2012 |
| Condition 3.3 | Baseline Monitoring Report (Works Contracts 1103, 1106 and 1111 – Hin Keng to Diamond Hill Tunnels, Diamond Hill Station, and Hung Hom North Approach Tunnels) | 19 Oct 2012 |
| Condition 3.4 | Monthly EM&A Reports No. 1-85<br><br>Monthly EM&A Report No. 86 | Reported in previous Monthly EM&A Reports<br><br>14 Nov 2019 |

Appendix A

87th Monthly EM&A Report for Works Contract 1109 –
Stations and Tunnels of Kowloon City Section

MTR Corporation Limited

# Shatin to Central Link –
# Tai Wai to Hung Hom Section

## Monthly EM&A Report No. 87

[Period from 1 to 30 November 2019]

Works Contract 1109 - Stations and Tunnels of Kowloon City Section

(12 December 2019)

Certified by:  Mandy To

Position: Environmental Team Leader

Date: 12 December 2019

Samsung-Hsin Chong JV

# Shatin to Central Link (SCL) - Tai Wai to Hung Hom Section: Works Contract 1109 – Stations and Tunnels of Kowloon City Section

*Monthly EM&A Report No.87*

November 2019

**Environmental Resources Management**
16/F Berkshire House
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Samsung-Hsin Chong JV

# Shatin to Central Link (SCL) - Tai Wai to Hung Hom Section: Works Contract 1109 – Stations and Tunnels of Kowloon City Section

*Monthly EM&A Report No.87*

November 2019

Reference 0171181

| | |
|---|---|
| For and on behalf of<br>ERM-Hong Kong, Limited | |
| Approved by: | Frank Wan |
| Signed: |  |
| Position: | Partner |
| Date: | 12 December 2019 |

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**EXECUTIVE SUMMARY**

The construction works of **MTR Shatin to Central Link Works Contract 1109 – Stations and Tunnels of Kowloon City Section** commenced on 1 September 2012. This is the eighty-seventh monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 November 2019 to 30 November 2019 in accordance with the EM&A Manual.

Summary of the Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

| **Construction Activities undertaken** |
|---|
| *Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))* |
| • To Kwa Wan Station - ABWF works;<br>• Ma Tau Wai Road – Removal of D-wall;<br>• Ventilation Shaft and Entrance A - Reinstatement of Lok Shan Road and To Kwa Wan Complex Playground;<br>• Entrance B – Footpath reinstatement works;<br>• Entrance C – Installation of gully and street lighting, and footpath reinstatement works;<br>• Entrance D - Reinstatement of Ma Tau Wai Road / To Kwa Wan Road Garden; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |
| *Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))* |
| • Olympic Avenue – Reinstatement works;<br>• Sung Wong Toi Station – ABWF works; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |

Regular Construction Noise and Construction Dust Monitoring

A summary of the monitoring activities in this reporting period is listed below:

- Regular construction noise monitoring during normal working hours
  - *NMS-CA-6* 4 *times*
  - *NMS-CA-7* *4 times*
  - *NMS-CA-8* *4 times*
  - *NMS-CA-9* *4 times*
  - *NMS-CA-10* *4 times*
- Construction dust (24-hour TSP) monitoring
  - *DMS-6* *6 times*
  - *DMS-7* *6 times*
  - *DMS-8* *6 times*
  - *DMS-9* *6 times*
  - *DMS-10* *6 times*

Continuous Noise Monitoring

No continuous noise monitoring was required during this reporting month, according to the schedule presented in the latest approved CNMP.

Cultural Heritage

A License to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been obtained from Antiquities and Monuments Office (AMO) on 29 October 2012. The archaeological survey-cum-excavation and additional investigation at the Sacred Hill (North) commenced on 1 November 2012 and was conducted in accordance with the License and the approved Archaeological Action Plan (AAP). An updated AAP was submitted to AMO for renewal of the 1 year archaeological license. The license was renewed and granted by AMO on 24 October 2013. The updated AAP was submitted to EPD for approval on 11 October 2013 and it was approved on 1 November 2013. The fieldworks of the archaeological survey-cum-excavation and additional investigation were completed on 27 December 2013. The Interim Archaeological Report was provided to AMO in April 2014. The Final Archaeological Report was accepted by AMO in June 2017. Artefacts handover to AMO was completed on 27 April 2018.

No vibration monitoring was conducted during the reporting period as relevant tunnelling work for this Works Contract had been completed in vicinity of the historical structures listed in EM&A Manual.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. 1,371 $m^3$ of inert C&D material was generated from the Project during the reporting month. 123 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 123 $m^3$ of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. 9,680 kg of metal waste was generated during this reporting month. 338 kg of paper/ cardboard packaging was generated and sent to recyclers for recycling during the reporting period. No chemical waste was generated during this reporting month.

Landscape and Visual

Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 4 and 18 November 2019. No audit findings were observed during the reporting month. The implementation status is presented in *Section 5*.

Environmental Site Inspection

Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 4, 11, 18 and 25 November 2019. The representative of the IEC joined the site inspection on 18 November 2019. Details of the audit findings and implementation status are presented in *Section 6*.

Environmental Exceedance/Non-conformance/Complaint/Summons and Prosecution

No exceedance of the Action and Limit Levels of regular construction noise monitoring was recorded during the reporting period.

No exceedance of the Action and Limit Levels of 24-hour TSP monitoring was recorded during the reporting period.

No complaint was received during the reporting month.

No summon or prosecution was received in this reporting period.

Future Key Issues

The major construction works to be undertaken in the next reporting month include:

| **Construction Activities to be undertaken** |
|---|
| Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW)) |
| • To Kwa Wan Station - ABWF works;<br>• Ma Tau Wai Road – Removal of D-walll;<br>• Ventilation Shaft and Entrance A - Reinstatement of Lok Shan Road and To Kwa Wan Complex Playground;<br>• Entrance B – Footpath reinstatement works;<br>• Entrance C – Installation of street lighting and footpath reinstatement works;<br>• Entrance D - Reinstatement of Ma Tau Wai Road / To Kwa Wan Road Garden and bus stop installaion; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |
| Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW)) |
| • Sung Wong Toi Station – ABWF works; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |

# 1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Samsung-Hsin Chong JV (SSHCJV) as the Environmental Team (Contractor's ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during the construction phase of the **MTR Shatin to Central Link (SCL) Works Contract 1109 – Stations and Tunnels of Kowloon City Section** (the Project).

## 1.1 PURPOSE OF THE REPORT

This is the eighty-seventh EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 November to 30 November 2019.

## 1.2 STRUCTURE OF THE REPORT

Section 1 : **Introduction**
It details the purpose and structure of the report.

Section 2 : **Project Information**
It summarises the background and scope of the project, site description, project organisation and contact details, construction programme, construction works undertaken and status of the Environmental Permits/Licenses during the reporting period.

Section 3 : **Environmental Monitoring Requirement**
It summarises the monitoring parameters, programmes, methodologies, frequency, locations, Action and Limit Levels, Event / Action Plans.

Section 4 : **Implementation Status of the Environmental Protection Requirements**
It summarises the implementation of environmental protection measures during the reporting period.

Section 5 : **Monitoring Results**
It summarises the monitoring results obtained in the reporting period.

Section 6 : **Environmental Site Inspection**
It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

Section 7 : **Environmental Non-conformance**
It summarises any monitoring exceedance, environmental complaints and summons within the reporting period.

Section 8 : **Future Key Issues**
It summarises the forecast of environmental impact and monitoring schedule for the next three months.

Section 9 : **Conclusions**

# 2 PROJECT INFORMATION

## 2.1 BACKGROUND

The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an extension of the Ma On Shan Line and is approximately 11 km long. It links up with the West Rail Line at Hung Hom forming a strategic east-west rail corridor. It is a Designated Project under the *Environmental Impact Assessment Ordinance* (Cap. 499) (EIAO).

The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts and this Works Contract 1109 covers the construction of stations in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW)) and To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW)), and the tunnels between the SUW station and Ho Man Tin station (HOM).

## 2.2 GENERAL SITE DESCRIPTION

For the Works Contract 1109, the alignment runs from SUW station below Ma Tau Chung Road/Ma Tau Wai Road towards the west, reaching the TKW station. After leaving TKW station, the alignment passes Ko Shan Road and joins the HOM station at the intersection of Fat Kwong Street and Shun Yung Street. The underground sections of the alignment between SUW and HOM stations will be constructed by bored tunneling. Both the SUW and TKW stations will be constructed by cut-and-cover method.

The alignment and works area for the Works Contract 1109 are shown in ***Annex A***.

## 2.3 CONSTRUCTION PROGRAMME AND ACTIVITIES

A summary of the major construction activities undertaken in this reporting period is shown in ***Table 2.1***. The construction programme is presented in ***Annex B***.

***Table 2.1 Summary of the Construction Activities Undertaken during the Reporting Month***

| **Construction Activities undertaken** |
|---|
| *Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))* |
| • To Kwa Wan Station - ABWF works;<br>• Ma Tau Wai Road – Removal of D-wall;<br>• Ventilation Shaft and Entrance A - Reinstatement of Lok Shan Road and To Kwa Wan Complex Playground;<br>• Entrance B – Footpath reinstatement works;<br>• Entrance C – Installation of gully and street lighting, and footpath reinstatement works;<br>• Entrance D - Reinstatement of Ma Tau Wai Road / To Kwa Wan Road Garden; and |

| Construction Activities undertaken |
|---|
| • All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |
| *Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))* |
| • Olympic Avenue – Reinstatement works;<br>• Sung Wong Toi Station – ABWF works; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |

## 2.4 PROJECT ORGANISATION

The project organisational chart and contact details are shown in ***Annex C***.

## 2.5 STATUS OF ENVIRONMENTAL LICENCES, NOTIFICATION AND PERMITS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in ***Table 2.2***.

***Table 2.2 Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations***

| Permit/ Licences/ Notification | Reference | Validity Period | Remarks |
|---|---|---|---|
| Environmental Permit | EP-438/2012/K | Throughout the Contract | Permit granted on 4 October 2016 |
| Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA) | 348516 | 13 August 2012 – 30 April 2017 | - |
| Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation (Form NB) | 351125 | 16 October 2012 – 30 April 2017 | - |
| Wastewater Discharge Licence | | | |
| *Site at Sung Wong Toi* | *WT00028970-2017* | *11-September-2017* | - |
| *Site at To Kwa Wan* | *WT00029103-2017* | *18-September-2017* | - |
| Chemical Waste Producer Registration | | | |
| *Site at Sung Wong Toi* | *5213-286-S3682-01* | *Throughout the Contract* | - |
| *Site at To Kwa Wan* | *5213-242-S3682-02* | *Throughout the Contract* | - |
| Construction Noise Permit | | | |
| - *PME at TKW Station* | *GW-RE0617-19* | *5 August 2019 – 03 February 2020* | - |
| - *PME at TKW Road TTMS* | *GW-RE0851-19* | *1 November 2019 – 19 January 2020* | - |
| - *PME at Lok Shan Road and Kiang Su Street* | *GW-RE0602-19* | *4 August 2019 – 03 February 2020* | - |
| SP-Licence for TBM operation | L-3-249(1) | 19 May 2015 – 18 May 2018 | Notification for the cancellation of the Specified Process |

| Permit/ Licences/ Notification | Reference | Validity Period | Remarks |
|---|---|---|---|
| | | | Licence has been given to EPD in Nov 2016 |
| Billing Account for Disposal of Construction Waste | 7015758 | Throughout the Contract | - |

# 3 ENVIRONMENTAL MONITORING REQUIREMENT

## 3.1 REGULAR CONSTRUCTION NOISE MONITORING

### 3.1.1 Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was either rejected or unavailable; alternative locations were proposed and agreed by the ER (Engineer's Representative), IEC (Independent Environmental Checker) and EPD (Environmental Protection Department). The construction noise monitoring locations are listed in ***Table 3.1*** and shown in ***Annex D***. The noise sensitive receivers (NSRs) related to this Works Contract are also shown in ***Annex D***.

*Table 3.1 Regular Construction Noise Monitoring Location*

| Proposed Regular Construction Noise Monitoring Location | Description | Type of Measurement |
|---|---|---|
| NMS–CA-6 (a) | No.16-23 Nam Kok Road | Façade |
| NMS–CA-7 | Skytower Tower 2 | Façade |
| NMS–CA-8 | SKH Good Shepherd Primary School | Façade |
| NMS–CA-9 (b) | Kong Yiu Mansion | Façade |
| NMS–CA-10 | Chat Ma Mansion | Façade |

**Notes:**

(a) Access to the monitoring location at Prosperity House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. Furthermore, the alternative location, No. 420 Prince Edward Road West, used in the baseline monitoring was also not available as access permission was rejected by the owner of the building. An alternative location (No.16-23 Nam Kok Road) was proposed and approved by the ER and agreed by the IEC and EPD.

(b) As the Incorporated Owners Association of the monitoring location at Lucky Building (originally proposed in the approved EM&A Manual) did not reply to our request for access to their premise, an alternative location, Kong Yiu Mansion, was proposed and approved by the ER and agreed by the IEC and EPD.

### 3.1.2 Monitoring Parameter and Frequency

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed. The monitoring schedule for this reporting period is shown in ***Annex E***.

The construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level ($L_{Aeq}$) in decibels dB(A). $L_{Aeq\ (30min)}$ was used as the monitoring metric for the time period between 0700 – 1900 hours on normal weekdays. The measured noise levels were logged every 5 minutes throughout the monitoring period.

### *3.1.3 Monitoring Equipment and Methodology*

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap 400).

The sound level meters and calibrator used for the noise measurement, as listed in ***Table 3.2***, compile with the IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in ***Annex F***.

***Table 3.2 Noise Monitoring Equipment***

| Monitoring Stations | Monitoring Equipment (Sound Level Meter and Calibrator) |
|---|---|
| NMS-CA-6, NMS–CA-7, NMS–CA-8, NMS–CA-9 and NMS–CA-10 | Calibrator: CAL 200 (Serial No. 11333)<br>Sound Level Meter: NL 18 (Serial No. 00360030) |

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Measurements were accepted when the calibration level from before and after the noise measurement agreed to be within 1.0 dB(A).

### *3.1.4 Action and Limit Levels*

The Action and Limit Levels are presented in ***Table 3.3*** and the Event / Action Plan (EAP) for noise monitoring is presented in ***Annex G.***

*Table 3.3 Action and Limit Levels for Noise Monitoring*

| Time Period | Regular Noise Monitoring Location | Action Level | Limit Level |
|---|---|---|---|
| 0700 - 1900 hours on normal weekdays | NMS– CA-6 | When one documented valid complaint is received | 75 dB(A) |
| | NMS– CA-7 | When one documented valid complaint is received | 75 dB(A) |
| | NMS– CA-8 | When one documented valid complaint is received | 70 dB(A)<br>65 dB(A) during examination periods<br>79 dB(A) [(b)] during the period of conducting the continuous noise monitoring |
| | NMS– CA-9 | When one documented valid complaint is received | 75 dB(A) |
| | NMS– CA-10 | When one documented valid complaint is received | 75 dB(A) |

**Notes:**
(a) If works are to be carried out during restricted hours (ie, outside 0700 – 1900 from Monday to Saturday), the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(b) The Limit Level of 79 dB(A) was updated on 22 August 2013 as per the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP), which were approved by EPD.

## 3.2 CONTINUOUS NOISE MONITORING

### 3.2.1 Monitoring Locations

With reference to the Continuous Noise Monitoring Plan (CNMP) and EP Condition 2.10, continuous noise monitoring should be conducted during the construction of the SCL (TAW-HUH) under Works Contract 1109 at eight noise sensitive receivers (NSRs), where the predicted residual air-borne construction noise impacts exceed the relevant noise criteria. The proposed continuous noise monitoring locations are presented in ***Table 3.4*** and shown in ***Annex D***.

*Table 3.4 Proposed Continuous Noise Monitoring Locations*

| Continuous Noise Monitoring Location[(a)] | Description |
|---|---|
| TKW-3-2(B) | Hing Fu Building |
| MTW-12-3(A) | SKH Good Shepherd Primary School |
| MTW-12-4(A) | Kong Yiu Mansion |
| MTW-12-4-1(A) | 59 Maidstone Road |
| MTW-12-10 | Lucky Building (South Façade) |
| MTW-12-10-1 | Lucky Building (East Façade) |
| MTW-12-11(A) | SKH Good Shepherd Primary School |
| MTW-16-1 | SKH Good Shepherd Primary School |

**Note:**
(a) Subject to the latest Continuous Noise Monitoring Plan approved in October 2014 and

| Continuous Noise Monitoring Location[a] | Description |
|---|---|
| review in March 2015. | |

### *3.2.2 Monitoring Parameter and Frequency*

Continuous monitoring of $L_{Aeq(30min)}$ noise levels are required to be carried out at the eight proposed continuous noise monitoring locations identified in ***Table 3.4*** during the normal construction working hours (0700 – 1900 Monday to Saturday) in the period that presented in the CNMP. The recommended measurement period for the continuous noise monitoring programme in the CNMP are presented in ***Table 3.6***. If works are to be carried out during restricted hours (ie, outside 0700 – 1900 from Monday to Saturday), the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

### *3.2.3 Monitoring Equipment and Methodology*

In accordance 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 will be used for carrying out the noise monitoring. Immediately prior to the noise measurement, the accuracy of the sound level meter will be checked using an acoustic calibrator, which generated a known sound pressure level at a known frequency. The accuracy of the sound level meter will also be checked on an annual-basis. Measurements will be accepted as valid only if the calibration level before and after the noise measurement agrees to be within 1.0 dB(A). Noise measurements will be made in accordance with standard acoustical principles and practices in relation to weather conditions.

### *3.2.4 Action and Limit Levels*

The Action/Limit Levels for the continuous noise monitoring programme recommended in the latest CNMP are presented in ***Table 3.6.***

*Table 3.6 Action/Limit Levels for Continuous Noise Monitoring [(a)]*

| Proposed Continuous Noise Monitoring Stations | Description | Action / Limit Level [(a)] | Measurement Period [(a)] |
|---|---|---|---|
| TKW-3-2(B) | Hing Fu Building | 80 | September 2014 – December 2014[(b)] |
| MTW-12-3(A) | SKH Good Shepherd Primary School | 80 | August 2014 – January 2015[(b)], March 2015 – June 2015 |
| MTW-12-4(A) | Kong Yiu Mansion | 80 | August 2014 – June 2015[(b)] |
| MTW-12-4-1(A) | 59 Maidstone Road | 82 | October 2014, December 2014 – June 2015 |
| MTW-12-10 | Lucky Building (South Façade) | 84 | March 2015 – April 2015, September 2015 – January 2016 |
| MTW-12-10-1 | Lucky Building (East Façade) | 80 | December 2014 – May 2015, September 2015 – January 2016 |
| MTW-12-11(A) | SKH Good Shepherd Primary School | 81 | September 2014 – June 2015 [(b)] |
| MTW-16-1 | SKH Good Shepherd Primary School | 78 | December 2012 – January 2013; April 2013 – 21 August 2013, |
| | | 79 [(c)] | 22 August 2013 – December 2013, August 2014 – March 2016 |

**Notes:**

(a) The A/L Levels and Measurement Periods will be subject to the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP).

(b) The latest CNMP was approved by EPD in October 2014. Continuous noise monitoring at TKW-3-2 (B), MTW-12-3(A), MTW-12-4(A) and MTW-12-11(A) commenced in October 2014.

(c) The A/L Level of 79 dB(A) was updated on 22 August 2013 as per the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) which were approved by EPD.

The Event/Action Plan (EAP) of the latest CNMP for continuous noise monitoring is presented in ***Annex G***.

## *3.3 CONSTRUCTION DUST MONITORING*

### *3.3.1 Monitoring Location*

The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in ***Table 3.7*** and shown in ***Annex D***. The proposed locations have been agreed with the ER, EPD and IEC.

*Table 3.7 Construction Dust Monitoring Location*

| Proposed Construction Dust Monitoring Location | Description |
|---|---|
| DMS-6 (a) | Katherine Building |
| DMS-7 | Parc 22 |
| DMS-8 | SKH Good Shepherd Primary School |
| DMS-9 (b) | No. 12 Pau Chung Street |
| DMS-10 | Chat Ma Mansion |

**Notes:**

(a) Access to the monitoring location at Prosperity House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. Furthermore, the alternative location at No. 420 Prince Edward Road West, which was used in the baseline monitoring, was also not available as access permission was not granted by the owner of the building. An alternative location, Katherine Building, was proposed and had been approved by the ER and agreed by the IEC and EPD.

(b) As the Incorporated Owners Association of the originally proposed monitoring location at Lucky Building did not reply to our request for access to their premise, an alternative location, No. 26 Kowloon City Road, was proposed and had been approved by the ER and agreed by the IEC and EPD. However, 24-hour averaged dust monitoring had been suspended at DMS-9 No. 26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise. No. 12 Pau Chung Street, as an alternative monitoring location, was formally approved by EPD on 19 May 2014. Impact dust monitoring at No. 12 Pau Chung Street commenced on 12 June 2014.

### *3.3.2 Monitoring Parameter and Frequency*

The construction dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in ***Table 3.8***. The TSP monitoring was conducted as per the schedule presented in ***Annex E***.

*Table 3.8 Construction Dust Monitoring Parameters and Frequency*

| Monitoring Period | Duration | Parameter | Frequency |
|---|---|---|---|
| Dust Monitoring | Throughout the construction period of the Project | 24-hour TSP | Once per 6 days |

### *3.3.3 Monitoring Equipment*

24-hour averaged TSP monitoring was performed at designated monitoring stations using High Volume Samplers (HVS) with the appropriate sampling inlets installed. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. ***Table 3.9*** summarises the equipment that was deployed for the 24-hour averaged monitoring.

*Table 3.9 Construction Dust Monitoring Equipment*

| Monitoring Location | Monitoring Equipment (HVS and Calibrator) |
|---|---|
| DMS-6 | TE-5170 (Serial No. 0107), CM-AIR-43 (Orifice ID 2454) |
| DMS-7 | TE-5170 (Serial No. 3574), CM-AIR-43 (Orifice ID 2454) |
| DMS-8 | TE-5170 (Serial No. 3572), CM-AIR-43 (Orifice ID 2454) |
| DMS-9 (a) | TE-5170 (Serial No. 0814), CM-AIR-43 (Orifice ID 2454) |
| DMS-10 | TE-5170 (Serial No. 3573), CM-AIR-43 (Orifice ID 2454) |

**Note:**

(a) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road had been suspended since March 2014 due to denied access by the occupant of the premise. However, No. 12 Pau Chung Street, as an alternative monitoring location, was formally approved by EPD on 19 May 2014. Impact dust monitoring at No. 12 Pau Chung Street commenced on 12 June 2014.

### *3.3.4 Monitoring Methodology*

All HVSs were free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind needed to be provided at the monitoring stations;
- a minimum of 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues was nearby;
- airflow around the sampler was unrestricted; and
- permission could be obtained to set up the samplers and gain access to the monitoring stations.

*Preparation of Filter Papers*

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25°C and not varied by more than ± 3°C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implemented comprehensive quality assurance and quality control programmes on the filters.

*Field Monitoring*

- the power supply was checked to ensure that the HVSs were working properly;

- the filter holder and area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- the shelter lid was closed and secured with an aluminium strip;
- the HVS was warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flow rate record sheet was inserted into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 $m^3min^{-1}$ , which was within the range specified in the EM&A Manual (i.e. 0.6 – 1.7 $m^3min^{-1}$);
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folded in half so that only surfaces with collected particulate matter were in contact;
- the filter paper was placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- the filters were sent to SGS Hong Kong Ltd for analysis.

*Maintenance and Calibration*

- the HVSs and their accessories were maintained in a good working condition. For example, motor brushes were replaced routinely and electrical wiring was checked to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated every six-month. The calibration records for the HVSs are given in ***Annex F***.

*Wind Data Monitoring*

- Average wind data (wind speed and direction) at the Kai Tak meteorological station during the monitoring period were obtained from the Hong Kong Observatory (HKO) and presented in ***Annex J***.

### *3.3.5 Action and Limit Levels*

The Action and Limit levels have been established and are presented in ***Table 3.10***.

***Table 3.10 Action and Limit Levels for Dust Monitoring***

| Parameters | Dust Monitoring Station | Action Level (μg $m^{-3}$) [a] | Limit Level (μg $m^{-3}$) [a] |
|---|---|---|---|
| 24-hour TSP | DMS-6 | 156.8 | 260 |
| | DMS-7 | 166.7 | 260 |
| | DMS-8 | 152.2 | 260 |
| | DMS-9 [c] | 160.9 | 260 |
| | DMS-10 | 170.4 | 260 |
| 1-hour TSP [b] | DMS-6 | 288.8 | 500 |
| | DMS-7 | 289.7 | 500 |
| | DMS-8 | 300.0 | 500 |
| | DMS-9 [c] | 303.0 | 500 |
| | DMS-10 | 294.7 | 500 |

**Notes:**

(a) Reference to the Baseline Monitoring Report submitted in July 2012.

(b) Action and Limit Levels for 1-hour TSP will only be used when 1-hour TSP is required to be monitored when a valid complaint is received.

(c) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road had been suspended since March 2014 due to denied access by the occupant of the premise. However, No. 12 Pau Chung Street, as an alternative monitoring location, was formally approved by EPD on 19 May 2014. Impact dust monitoring at No. 12 Pau Chung Street commenced on 12 June 2014.

The Event/Action Plan (EAP) for dust monitoring is presented in ***Annex G***.

## *3.4 CULTURAL HERITAGE*

A License to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance was obtained from the Antiquities and Monuments Office (AMO) on 29 October 2012. The archaeological survey-cum-excavation and additional investigation at the Sacred Hill (North) commenced on 1 November 2012 and was conducted in accordance with the Licence and the approved Archaeological Action Plan (AAP). An updated AAP was submitted to AMO for renewal of the 1 year archaeological license. The license was renewed and granted by AMO on 24 October 2013. The updated AAP was submitted to EPD for approval on 11 October 2013 and it was approved on 1 November 2013. The fieldworks of the archaeological survey-cum-excavation and additional investigation were completed on 27 December 2013. The Interim Archaeological Report was provided to AMO in April

2014. The Final Archaeological Report was accepted by AMO in June 2017. Artefacts handover to AMO was completed on 27 April 2018.

In accordance with the EM&A Manual, appropriate vibration monitoring on the identified built heritage will be agreed with the Building Department (BD)/Geotechnical Engineering Office (GEO) under the requirement of Buildings Ordinance and/or Blasting Permit as appropriate. Vibration levels will be controlled to appropriate levels. Vibration monitoring will be carried out by the Contractor. The structures requiring vibration monitoring during the relevant tunneling work for this Works Contract include S.K.H. Holy Trinity Church and Old Fast East Flying Training School.

## *3.5 LANDSCAPE AND VISUAL MITIGATION MEASURES*

In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The implementation status is given in ***Annex H***.

# 4 IMPLEMENTATION STATUS OF THE ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented all the environmental mitigation measures and requirements as stated in the EIA Report, Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures for this Works Contract during the reporting period is summarised in ***Annex H***. The status of the required submissions under the EP for this Works Contract during this reporting month is presented in ***Table 4.1***.

***Table 4.1 Status of Required Submission under Works Contract 1109***

| EP Condition | Submission | Submission Date |
|---|---|---|
| Condition 3.4 | Eighty-sixth Monthly EM&A Report | 14 November 2019 |

# 5 MONITORING RESULTS

## 5.1 REGULAR CONSTRUCTION NOISE MONITORING

A total of 20 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period. The noise level recorded at all five monitoring locations during the whole reporting period are below baseline level or below limit level after baseline-level correction.

The monitoring results together with their graphical presentations are presented in ***Annex I-1.***

No exceedance of the Action and Limit Levels of construction noise was recorded during the reporting period.

## 5.2 CONTINUOUS NOISE MONITORING

No continuous noise monitoring was required during the reporting period in accordance with the schedule presented in the latest approved CNMP.

## 5.3 CONSTRUCTION DUST MONITORING

A total of 30 sets of 24-hr TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period. The monitoring results together with their graphical presentations are presented in ***Annex J*** and a summary of the dust monitoring results in this reporting month is given in ***Table 5.1***.

***Table 5.1 Summary of the Dust Monitoring Results in this Reporting Month***

| Monitoring Station | 24-hour TSP Monitoring Results measured, $\mu gm^{-3}$ [(a)] | | Action Level, $\mu gm^{-3}$ | Limit Level, $\mu gm^{-3}$ |
|---|---|---|---|---|
| | Average | Range | | |
| DMS-6 | 46 | 23 – 80 | 156.8 | 260 |
| DMS-7 | 40 | 28 – 52 | 166.7 | 260 |
| DMS-8 | 45 | 30 – 59 | 152.2 | 260 |
| DMS-9 [(a)] | 61 | 37 – 74 | 160.9 | 260 |
| DMS-10 | 48 | 37 – 67 | 170.4 | 260 |

**Note:**

(a) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road has been suspended since March 2014 due to denied access by the occupant of the premise. However, No. 12 Pau Chung Street, as an alternative monitoring location, was approved by EPD. 24-hour averged dust monitoring commenced on 12 June 2014.

No exceedance of the Action and Limit Levels of the 24-hr TSP was recorded during the reporting period.

## 5.4 CULTURAL HERITAGE

A License to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance was obtained from Antiquities and Monuments Office (AMO) on 29 October 2012. The archaeological survey-cum-excavation and additional investigation at the Sacred Hill (North) commenced on 1 November 2012 and was conducted in accordance with the License and the approved Archaeological Action Plan (AAP). An updated AAP was submitted to AMO for renewal of the 1 year archaeological license. The license was renewed and granted by AMO on 24 October 2013. The updated AAP was submitted to EPD for approval on 11 October 2013 and it was approved on 1 November 2013. The fieldworks of the archaeological survey-cum-excavation and additional investigation were completed on 27 December 2013. The Interim Archaeological Report was provided to AMO in April 2014. The Final Archaeological Report was accepted by AMO in June 2017. Artefacts handover to AMO was completed on 27 April 2018.

No vibration monitoring was conducted during the reporting period as relevant tunnelling work for this Works Contract had been completed in vicinity of the historical structures listed in EM&A Manual.

## 5.5 WASTE MANAGEMENT

The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in ***Table 5.2***. Details of waste management data are presented in ***Annex K.***

***Table 5.2 Quantities of Waste Generated from the Project***

| Reporting Month | Quantity | | | | | |
|---|---|---|---|---|---|---|
| | Inert C&D Materials [a] [b] | Chemical Waste [c] | Non-inert C&D Materials | | | |
| | | | General Refuse/Vegetative Waste | Recycled materials | | |
| | | | | Paper/card board | Plastics | Metals |
| November 2019 | 1,371 $m^3$ | 0 kg | 123 $m^3$ | 338 kg | 123 kg | 9,680 kg |

**Notes:**

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(b) 1,371 $m^3$ of inert C&D materials was generated from the Project during the reporting month.

(c) Chemical waste includes waste oil. It is assumed density of waste oil to be 0.8 kg/L.

## *5.6 LANDSCAPE AND VISUAL MITIGATION MEASURES*

Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 4 and 18 November 2019. Most of the mitigation measures given in ***Annex H*** have been implemented. Required Actions that were found are listed below:

4 November 2019

- There was no major observation during the site inspection.

18 November 2019

- There was no major observation during the site inspection.

Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 4, 11, 18 and 25 November 2019. The representative of the IEC joined the site inspection on 18 November 2019. No non-compliance was recorded during the site inspections.

Findings and recommendations for the site inspection in this reporting month are summarised as follows:

4 November 2019

- There was no major observation during the site inspection.

11 November 2019

- Environmental permit was missing at one of the entrances in the Ma Tai Road site area;
- NRMM label of a plant was missed in MTW Road works area; and
- NRMM label of a road roller were missed in SUW area.

18 November 2019

- The Contractor was reminded to provide the NRMM label of a plant in MTW Road works area.

25 November 2019

- The Contractor was reminded to regularly water the haul roads at SUW works area to avoid dust generation;
- The Contractor was reminded to cover the stockpiles with impervious sheeting at SUW works area to avoid dust generation; and
- The Contractor was reminded to provide NRMM labels of a plant at MTW Road works area and bulldozer at SUW works area.

All follow-up actions requested by Contractor's ET and IEC during the site inspections were undertaken as reported by the Contractor. The abovementioned environmental issues had been addressed and mitigated during the reporting period.

# 7 ENVIRONMENTAL NON-CONFORMANCE

## 7.1 SUMMARY OF MONITORING EXCEEDANCE

No exceedance of the Action and Limit Levels of the regular construction noise was recorded during the reporting period.

No exceedance of the Action and Limit Levels of 24-hour TSP monitoring was recorded during the reporting month.

## 7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was recorded during the reporting month.

## 7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting month. The cumulative environmental complaint log is shown in ***Annex M***.

## 7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summon was received during the reporting month. The cumulative summon/prosecution log is shown in ***Annex M.***

# 8 FUTURE KEY ISSUES

## 8.1 KEY ISSUES FOR THE COMING MONTH

Works to be undertaken in the next reporting month are summarised in ***Table 8.1***.

***Table 8.1 Construction Works to be undertaken in the Next Reporting Month***

| **Construction Activities to be undertaken** |
|---|
| *Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))* |
| • To Kwa Wan Station - ABWF works;<br>• Ma Tau Wai Road – Removal of D-walll;<br>• Ventilation Shaft and Entrance A - Reinstatement of Lok Shan Road and To Kwa Wan Complex Playground;<br>• Entrance B – Footpath reinstatement works;<br>• Entrance C – Installation of street lighting and footpath reinstatement works;<br>• Entrance D - Reinstatement of Ma Tau Wai Road / To Kwa Wan Road Garden and bus stop installaion;<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |
| *Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))* |
| • Sung Wong Toi Station – ABWF works; and<br>• All Works Areas – Maintenance, repairing, rectification and protection improvement works for the structure within 1109 Contract Boundary due to social activities. |

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise and waste management.

## 8.2 MONITORING SCHEDULE FOR THE NEXT MONTH

The tentative schedule of regular construction noise monitoring and 24-hour TSP monitoring in the next reporting period is presented in ***Annex E***. The regular construction noise monitoring and 24-hour TSP monitoring will be conducted at the same monitoring locations in the next reporting period.

## 8.3 CONSTRUCTION PROGRAMME FOR THE NEXT MONTH

The construction programme for the Project for the next reporting month is presented in ***Annex B.***

# 9 CONCLUSIONS

This 87th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 November 2019 to 30 November 2019 in accordance with the EM&A Manual and the requirement under EP-438/2012/K.

No exceedance of the Action and Limit Levels of the regular construction noise was recorded during the reporting period.

No exceedance of the Action and Limit Levels of 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting period.

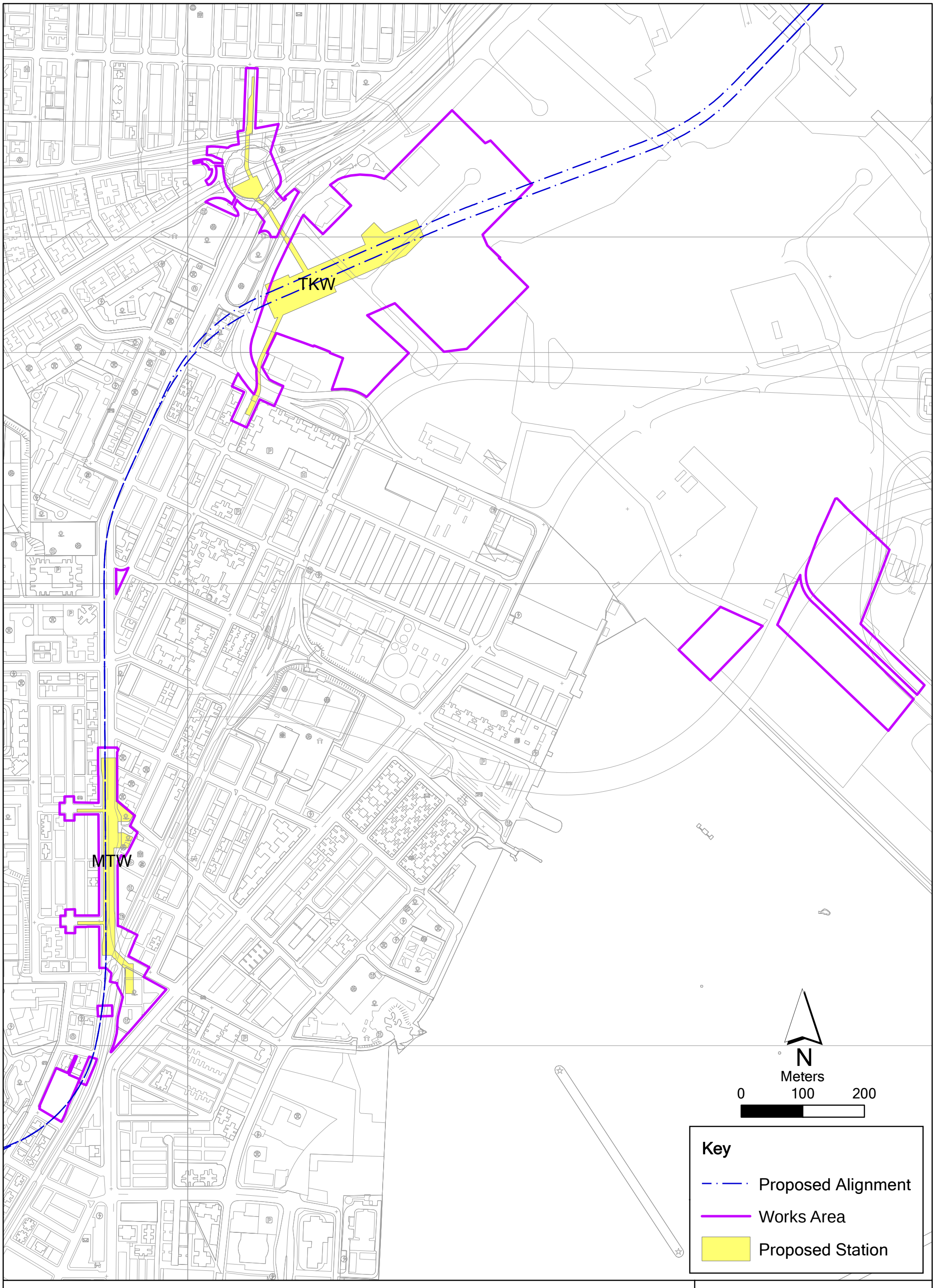
No complaint was received during the reporting month.

No summon or prosecution was received during the reporting period.

The Contractor has implemented possible and feasible mitigation measures to mitigate the potential environmental impacts during construction. The Contractor's ET will continue to keep track of the EM&A programme to ensure compliance of environmental requirements and the effectiveness and efficiency of the mitigation measures implemented. If necessary, the Contractor will provide more mitigation measures to further alleviate the impacts.

Annex A

# The Alignment and Works Area for Works Contract




Annex A

Alignment, Stations and Works Area of SCL Works Contract 1109

Name: 0171181_Works_Area_Annex.mxd
Date: 12/08/2014

Environmental Resources Management

ERM

Annex B

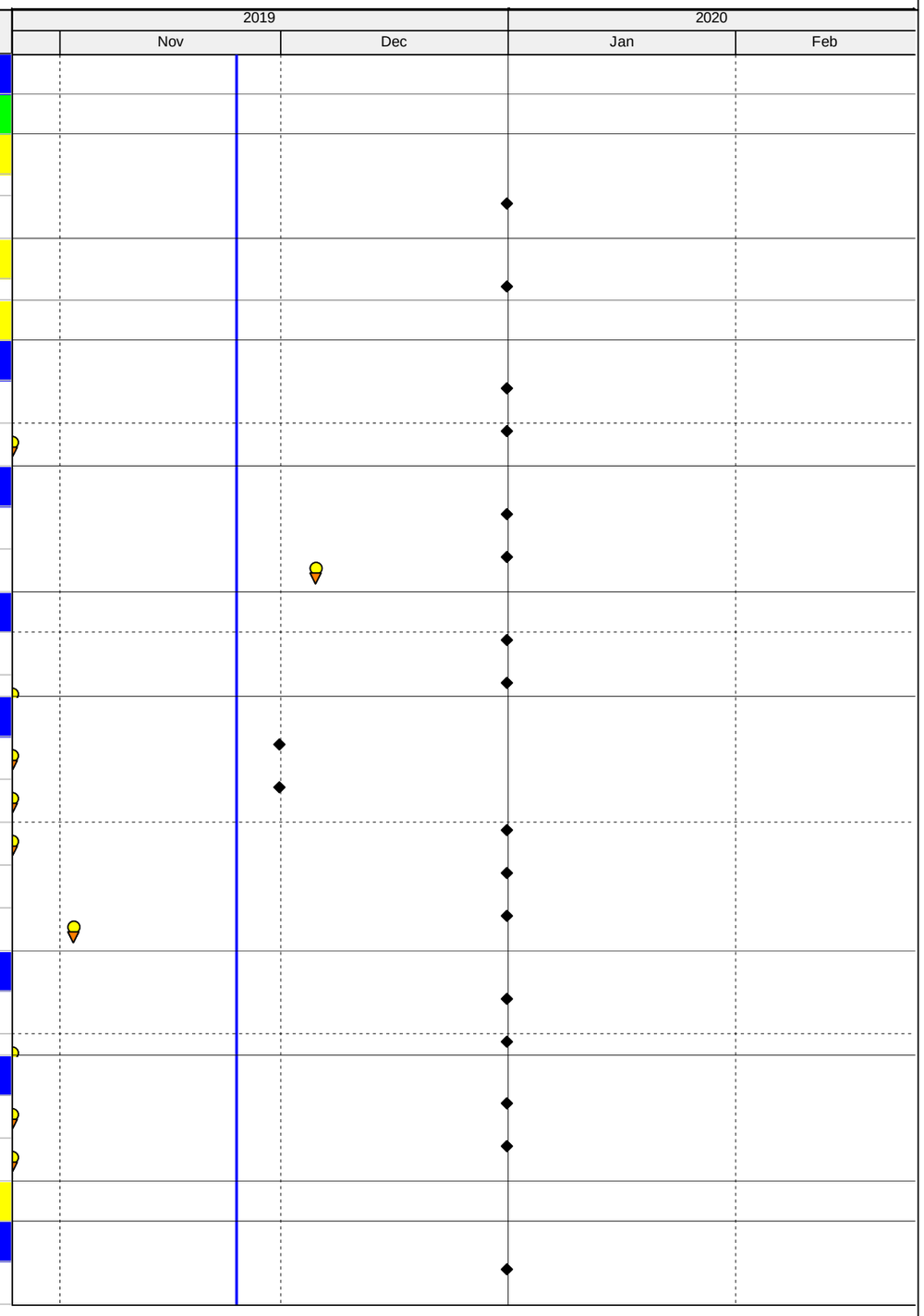
# Construction Programme for the Reporting Month and the Coming Month

Data Date: 25-Nov-19

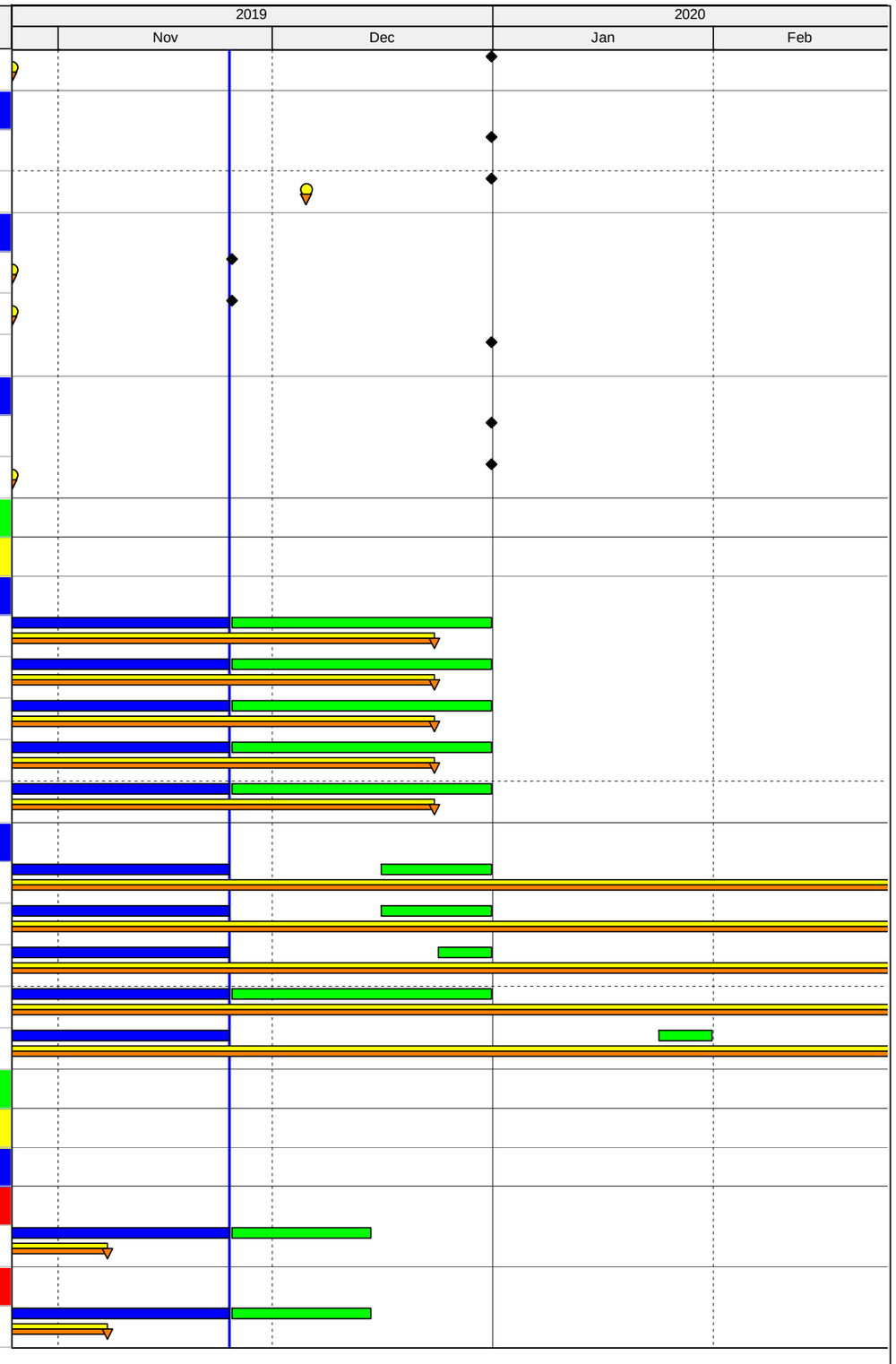
# SAMSUNG - HSIN CHONG JOINT VENTURE

## THREE MONTH ROLLING PROGRAMME - NOV 2019

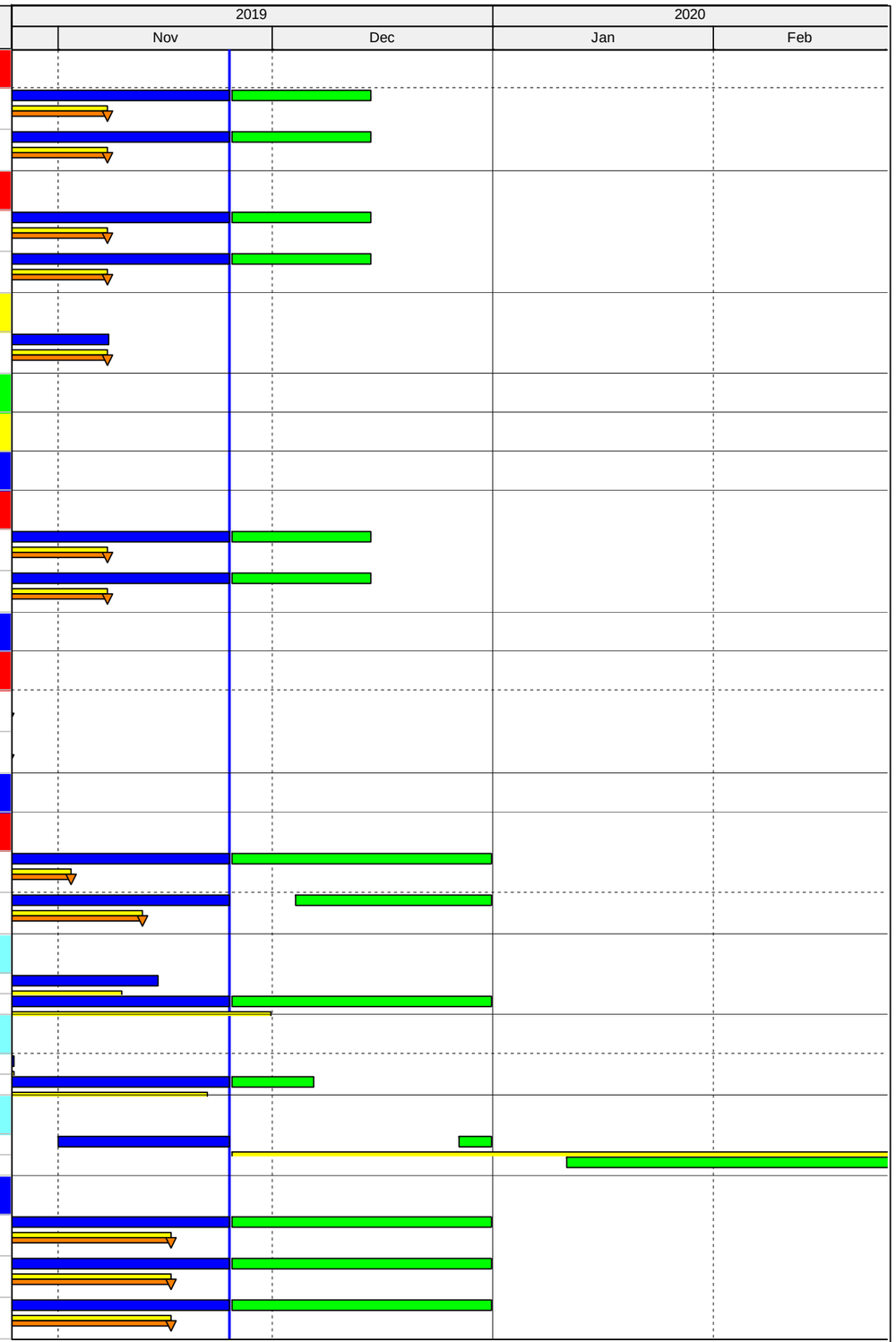
| Activity ID | Activity Name | Remaining Duration | Physical % Complete | Planned / Actual Start | Planned / Actual Finish |
|---|---|---|---|---|---|
| **1109 - SUW & TKW Stations and Tunnels Nov 2019 (MPR2)** | | | | | |
| **PROJECT DATES** | | | | | |
| **Table 1 - The Whole of the Works** | | | | | |
| 01109.CD1020 | Substantial Completion for the Whole of the Works (DRM: 16 Sep 18, 37/18) | 0 | 0% | | 27-May-20* |
| 01109.CD1020C | Substantial Completion for the Whole of the Works (DRM: 16 Sep 18, 37/18), excl TKW RRIW & Work area hand over | 0 | 0% | | 31-Dec-19* |
| **Table 2 - Completion of Specified Parts of the Works** | | | | | |
| 01109.CD1050A | Complete reinstatement of TKW Gardens | 0 | 0% | | 31-Dec-19* |
| **Specified Milestone Dates (Revised)** | | | | | |
| **CC-B Milestones** | | | | | |
| 01109.MSB24i-P | B24(i) - All Operations & Maintenance manuals & As Built dwgs submitted. (DRM: 29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| 01109.MSB24ii-P | B24(ii) - All works complete & stat inspections successfully undertaken Eng's satisfaction .(29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| **CC-C Milestones** | | | | | |
| 01109.MSC23i-P | C23(i) - All Operations & Maintenance manuals & As Built dwgs submitted (DRM: 29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| 01109.MSC23ii-P | C23(ii) - All works complete & stat inspections successfully undertaken to Eng's satisfaction (29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| **CC-D Milestones** | | | | | |
| 01109.MSD20i-P | D20(i) - (29 Apr 2018) => D18 -All Operations & Maintenance manuals & As Built dwgs submitted | 0 | 0% | | 31-Dec-19* |
| 01109.MSD20ii-P | D20(ii) - (29 Apr 2018) => D17- All ABWF works at TKA complete | 0 | 0% | | 31-Dec-19* |
| **CC-E Milestones** | | | | | |
| 01109.MSE06ii-P | E06(ii) - All civil and structural wks at Lok Shan Rd & TKW complex playground complete(1 Oct 2017) | 0 | 0% | | 30-Nov-19* |
| 01109.MSE06ii-P10 | E06(ii) - All civil and structural wks at Lok Shan Rd & TKW complex playground complete(1 Oct 2017) | 0 | 0% | | 30-Nov-19* |
| 01109.MSE07iii-P10 | E07(iii)(a) - 80% of civil and structural works at Ma Tau Wai/TKW Rd Garden complete | 0 | 0% | | 31-Dec-19* |
| 01109.MSE08i-P | E08(i) - All ABWF & E&M wks for reprovisioned LCSD toilet at Ma Tau Wai Rd/TKW Rd Gdn comp (25 Feb 2018) | 0 | 0% | | 31-Dec-19* |
| 01109.MSE08i-P10 | E08(i) - All ABWF & E&M wks for reprovisioned LCSD toilet at Ma Tau Wai Rd/TKW Rd Gdn comp (25 Feb 2018) | 0 | 0% | | 31-Dec-19* |
| **CC-F Milestones** | | | | | |
| 01109.MSF03i-P | F03(i) - All Operations & Maintenance manuals & As Built dwgs submitted. (DRM: 29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| 01109.MSF03i-P10 | F03(iii) - All Operations & Maintenance manuals & As Built dwgs submitted. | 0 | 0% | | 31-Dec-19* |
| **CC-J Milestones** | | | | | |
| 01109.MSJ06I | J6i-All Operations and Maintenance Manuals and as-built drawings submitted (29 Apr 2018) | 0 | 0% | | 31-Dec-19* |
| 01109.MSJ06II | J6ii-All works complete and statutory inspections successfully undertaken tot the satisfaction of the Engr. (29 Apr 2016 | 0 | 0% | | 31-Dec-19* |
| **Specified Milestone Dates (AMP)** | | | | | |
| **CC-B Milestones** | | | | | |
| 01109.MSB21i | B21(i)-All Operations & Maintenance manuals & As Built dwgs submitted.(Wk7/18;18Feb18) | 0 | 0% | | 31-Dec-19 |



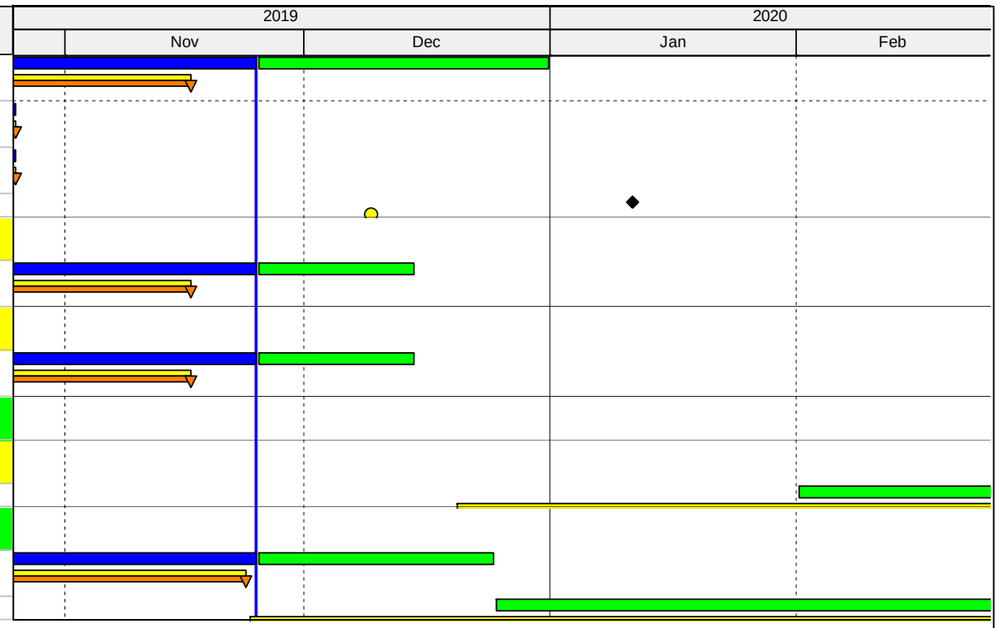
| Activity ID | Activity Name | Remaining Duration | Physical % Complete | Planned / Actual Start | Planned / Actual Finish |
|---|---|---|---|---|---|
| 01109.MSB21ii | B21(ii)-All works complete & stat inspections successfully undertaken Eng's satisfaction .(Wk7/18;18Feb18) | 0 | 0% | | 31-Dec-19 |
| **CC-C Milestones** | | | | | |
| 01109.MSC21i | C21(i)-All Operations & Maintenance manuals & As Built dwgs submitted.(Wk07/18;18Feb18) | 0 | 0% | | 31-Dec-19 |
| 01109.MSC21ii | C21(ii)-All works complete & stat inspections successfully undertaken to Eng's satisfaction (Wk7/18;18Feb18) | 0 | 0% | | 31-Dec-19 |
| **CC-E Milestones** | | | | | |
| 01109.MSE05i | E05(i) - Reinstatement of SWT playground complete incl sub of all relevant O&M & As-built dwg (32/16;14Aug16) | 0 | 0% | | 25-Nov-19 |
| 01109.MSE05ii | E05(ii) - All civil and structural wks at Lok Shan Rd & TKW complex playground complete (32/16;14Aug16) | 0 | 0% | | 25-Nov-19 |
| 01109.MSE07i | E07(i) - All ABWF & E&M wks for reprovisioned LCSD toilet at Ma Tau Wai Rd/TKW Rd Gdn comp (24/17;18Jun17) | 0 | 0% | | 31-Dec-19 |
| **CC-F Milestones** | | | | | |
| 01109.MSF04i | F04(i) - All Operations & Maintenance manuals & As Built dwgs submitted.(Wk7/18;18Feb18) | 0 | 0% | | 31-Dec-19 |
| 01109.MSF04ii | F04(ii)- All works complete & stat inspections successfully undertaken to the satisfaction of the Eng.(Wk7/18;18Feb18) | 0 | 0% | | 31-Dec-19 |
| **CC-A - PRELIMINARIES AND GENERAL REQUIREMENTS** | | | | | |
| **Management Systems** | | | | | |
| **Other Specified Requirements - Submission** | | | | | |
| 01109.PDA3410 | Prepare and submit Operations & Maintenance manuals & As Built dwgs for TKW | 37 | 40% | 18-Feb-18 A | 31-Dec-19 |
| 01109.PDA3430 | Prepare and submit Operations & Maintenance manuals & As Built dwgs for SUW | 37 | 40% | 19-Mar-18 A | 31-Dec-19 |
| 01109.PDA3440 | Prepare and submit Operations & Maintenance manuals & As Built dwgs for HOM | 37 | 40% | 19-Mar-18 A | 31-Dec-19 |
| 01109.PDA3441 | Prepare and submit Operations & Maintenance manuals & As Built dwgs for TKA, EEP and Tunnel | 37 | 40% | 19-Mar-18 A | 31-Dec-19 |
| 01109.PDA3450 | Prepare and submit Operations & Maintenance manuals & As Built dwgs for remaining | 37 | 40% | 19-Mar-18 A | 31-Dec-19 |
| **Other Specified Requirements - Approval** | | | | | |
| 01109.PDA3500 | Review & Approve - Operations & Maintenance manuals & As Built dwgs for TKW (DRM: 29 Apr 2018) | 16 | 35% | 06-Jul-19 A | 31-Dec-19 |
| 01109.PDA3520 | Review & Approve - Operations & Maintenance manuals & As Built dwgs for SUW(DRM: 29 Apr 2018) | 16 | 35% | 06-Jul-19 A | 31-Dec-19 |
| 01109.PDA3530 | Review & Approve - Operations & Maintenance manuals & As Built dwgs for HOM (DRM: 29 Apr 2018) | 8 | 35% | 06-Jul-19 A | 31-Dec-19 |
| 01109.PDA3531 | Review & Approve - Operations & Maintenance manuals & As Built dwgs for TKA, EEP and Tunnel (DRM: 29 Apr 2018) | 37 | 35% | 06-Jul-19 A | 31-Dec-19 |
| 01109.PDA3540 | Review & Approve - Operations & Maintenance manuals & As Built dwgs for remaining (DRM: 19 Aug 2018) | 8 | 35% | 06-Jul-19 A | 31-Jan-20 |
| **CC-B - SUW STATION, ENTRANCES AND ADITS** | | | | | |
| **SUW Station Construction Works** | | | | | |
| **Station - ABWF Works - Degree 3** | | | | | |
| **GL 1 - 5 - Works to Degree 3, Platform Level** | | | | | |
| 01109.PDB17160B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |
| **GL 5 - 23 - Works to Degree 3, Platform Level** | | | | | |
| 01109.PDB18120B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |



| Activity ID | Activity Name | Remaining Duration | Physical % Complete | Planned / Actual Start | Planned / Actual Finish |
|---|---|---|---|---|---|
| **GL 1 - 5 - Works to Degree 3, Concourse Level** | | | | | |
| 01109.PDB18340B | Rectify and Complete all ABWF Defect and outstanding work (BoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |
| 01109.PDB18440B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |
| **GL 5 - 23 - Works to Degree 3, Concourse Level** | | | | | |
| 01109.PDB18660B | Rectify and Complete all ABWF Defect and outstanding work (BoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |
| 01109.PDB18760B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 18 | 97% | 01-Dec-18 A | 14-Dec-19 |
| **Entrance B & Adit B** | | | | | |
| 01109.3MS10220B4 | Rectify and Complete all ABWF Defect and outstanding work (NKR) | 0 | 100% | 01-Dec-18 A | 08-Nov-19 A |
| **CC-C - TKW STATION, ENTRANCES AND ADITS** | | | | | |
| **TKW Station** | | | | | |
| **Station - ABWF Works (Concourse Level and Above)** | | | | | |
| **Major Works to Degree 3** | | | | | |
| 01109.PDC27000B | Rectify and Complete all ABWF Defect and outstanding work (BoH) | 18 | 98% | 01-Dec-18 A | 14-Dec-19 |
| 01109.PDC27930B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 18 | 98% | 01-Dec-18 A | 14-Dec-19 |
| **Station - ABWF Works (Lower Platform Level)** | | | | | |
| **Major Works to Degree 3** | | | | | |
| 01109.PDC28460B | Rectify and Complete all ABWF Defect and outstanding work (BoH) | 0 | 100% | 01-Dec-18 A | 25-Oct-19 A |
| 01109.PDC28560B | Rectify and Complete all ABWF Defect and outstanding work (FoH) | 0 | 100% | 01-Dec-18 A | 25-Oct-19 A |
| **TKW Station External Landscaping Works** | | | | | |
| **RRIW (TKW)** | | | | | |
| 01109.PDC1440 | TKW - Re-construct new LCSD Public Toilet | 30 | 99% | 20-Nov-17 A | 31-Dec-19 |
| 01109.PDE1100 | ABWF & E&M wks for reprovisioned LCSD toilet at Ma Tau Wai Rd/TKW Rd Gdn | 22 | 80% | 13-May-19 A | 31-Dec-19 |
| **TKW Road Garden, D-Wall and TTMS (TKW Entrance D)** | | | | | |
| 01109.PDC1460A | TKW Road Garden Stage 1 | 0 | 100% | 31-Mar-19 A | 15-Nov-19 A |
| 01109.PDC1470A | TKW Road Garden Stage 2 | 37 | 55% | 07-Oct-19 A | 31-Dec-19 |
| **Covered Walkway, Volley Ball Court, Garden, D-Wall and TTMS (TKW Vent Shaft)** | | | | | |
| 01109.PDC1450A | Covered Walkway | 0 | 100% | 01-Feb-19 A | 25-Oct-19 A |
| 01109.PDC1450D | RemainingDrainage Work / Finishing | 11 | 74% | 03-Apr-19 A | 06-Dec-19 |
| **Sheung Heung Road Garden, D-Wall next to SKH Good Shepherd Primary School and TTMS** | | | | | |
| 01109.PDE1130A11 | D-Wall & Drainage at West (Bay 13) | 4 | 63% | 01-Nov-19 A | 31-Dec-19 |
| 01109.PDE1130A20 | D-Wall & Drainage at East (next to SKH Good Shepherd Primary School) | 86 | 0% | 11-Jan-20 | 20-Apr-20 |
| **Watermain Reinstatement** | | | | | |
| 01109.PDC29365 | Phase 1 - Watermains along MTW Rd (GL3-GL20) | 30 | 95% | 14-Sep-17 A | 31-Dec-19 |
| 01109.PDC29385 | Phase 1 - Watermains along MTW Rd (GL20-GL28) | 30 | 95% | 13-Nov-17 A | 31-Dec-19 |
| 01109.PDC29535 | Phase 2 - SW at North bound side (GL8-24) | 30 | 95% | 14-Sep-17 A | 31-Dec-19 |



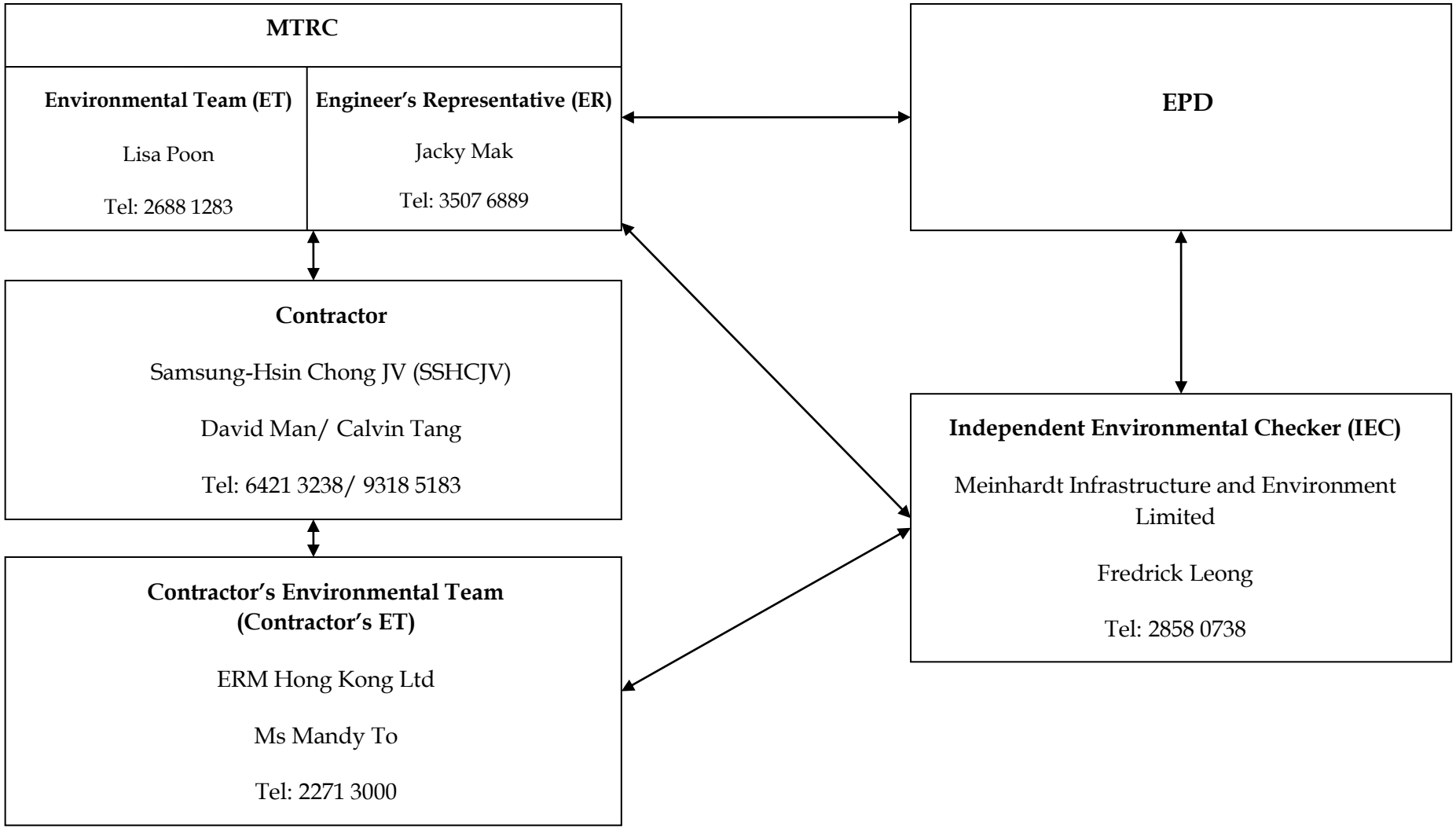
| Activity ID | Activity Name | Remaining Duration | Physical % Complete | Planned / Actual Start | Planned / Actual Finish |
|---|---|---|---|---|---|
| 01109.PDC29545 | Phase 2 - FW at North bound side (GL8-24) | 30 | 95% | 14-Sep-17 A | 31-Dec-19 |
| 01109.PDC30090 | Implement TTMS S3P6A - West 2+2 lane system (along full station) | 0 | 100% | 25-Oct-19 A | 25-Oct-19 A |
| 01109.PDC30100 | Implement TTMS S3P7 - 2 West + 2 East road lane system | 0 | 100% | 25-Oct-19 A | 25-Oct-19 A |
| 01109.PDC30110 | Implement TTMS S3P8 - Central divider | 0 | 0% | 11-Jan-20 | |
| **Entrance A & Vent Shaft A** | | | | | |
| 01109.PDC27510B | Rectify and Complete all ABWF Defect and outstanding work (Vent Shaft) | 18 | 94% | 01-Dec-18 A | 14-Dec-19 |
| **Entrance D & Vent Shaft** | | | | | |
| 01109.3MT10060B | Rectify and Complete all ABWF Defect and outstanding work (Entrance D) | 18 | 96% | 01-Dec-18 A | 14-Dec-19 |
| **CC-E - REPROVISIONING, REMEDIAL AND IMPROVEMENT WORKS (RRIW)** | | | | | |
| **Goverment Statutory Acceptance Inspections** | | | | | |
| 01109.PDE1150 | Finalize all O&M manuals and As Built drawings | 100 | 0% | 01-Feb-20 | 27-May-20 |
| **TESTING & COMMISSIONING** | | | | | |
| 01109.PDT1210 | Dynamic Testing (TBC by MTRC) | 30 | 0% | 01-Feb-19 A | 24-Dec-19 |
| 01109.PDT1220 | Test Running (TBC by MTRC) | 106 | 0% | 25-Dec-19 | 08-Apr-20 |



Annex C

# Project Organization Chart and Contact Detail

*Annex C* *Project Organization of SCL Works Contract 1109*



Annex D

# Locations of Noise and Dust Monitoring Stations

NMS-CA-6

TKW

NMS-CA-7

NMS-CA-8

MTW

NMS-CA-9

NMS-CA-10

N

Meters

0 100 200

**Key**

- Noise Monitoring Station
- Proposed Alignment
- Works Area
- Proposed Station

Annex D1

# Location of Regular Construction Noise Monitoring Stations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Airborne_Noise_Monitoring_Stations_Annex.mxd
Date: 12/08/2014

**Environmental Resources Management**

ERM

DMS-6

TKW

DMS-7

DMS-8

DMS-9

MTW

DMS-10

N

Meters

0 100 200

**Key**

- Dust Monitoring Stations
- Proposed Alignment
- Works Area
- Proposed Station

Annex D2

Location of Dust Monitoring Stations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Dust_Monitoring_Station_Annex.mxd
Date: 12/08/2014

**Environmental Resources Management**

ERM

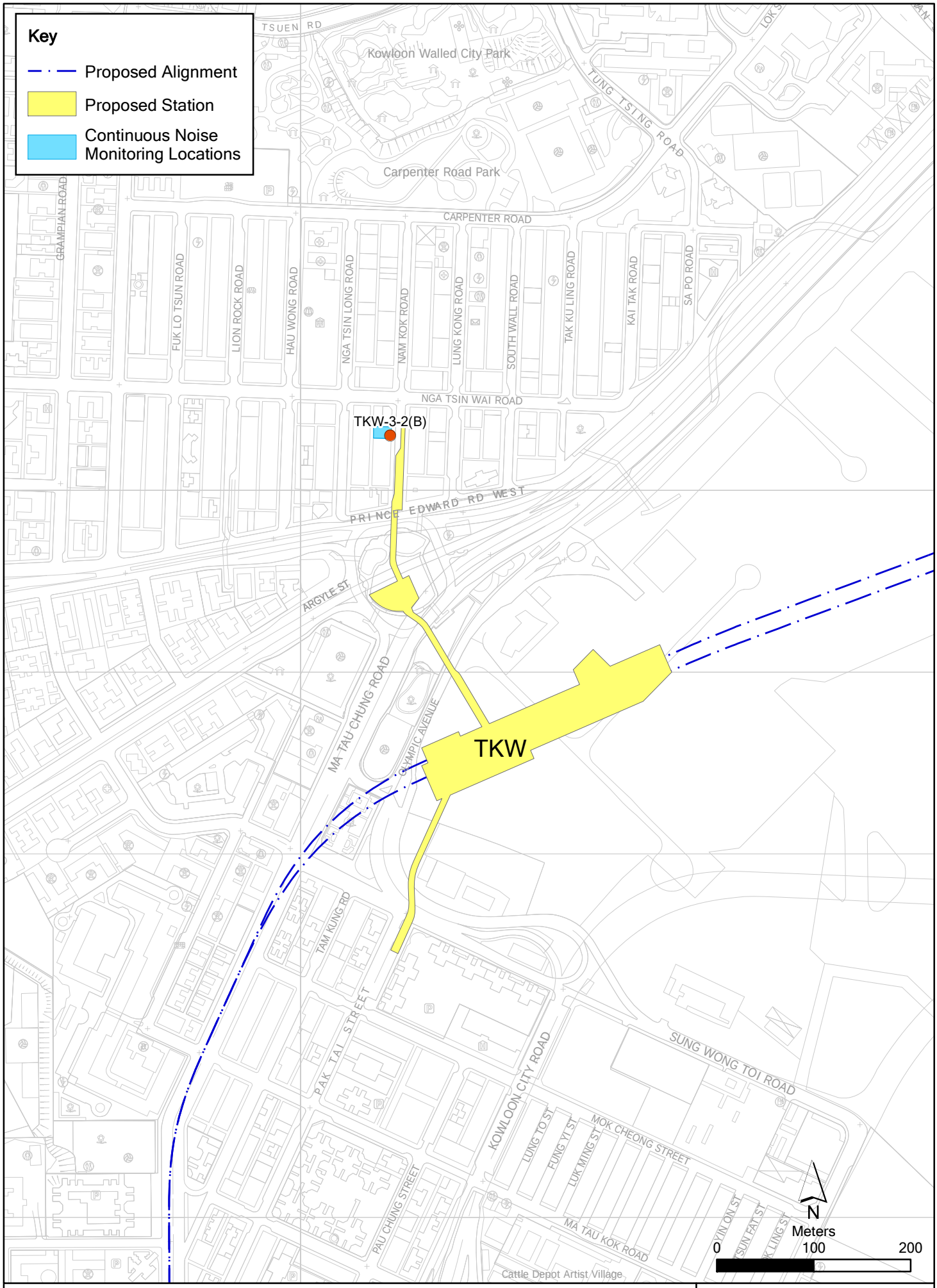



Figure 2.2a

Continuous Noise Monitoring Locations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Continuous_Noise_Monitoring_Locations_TKW.mxd
Date: 5/11/2014

Environmental Resources Management

ERM

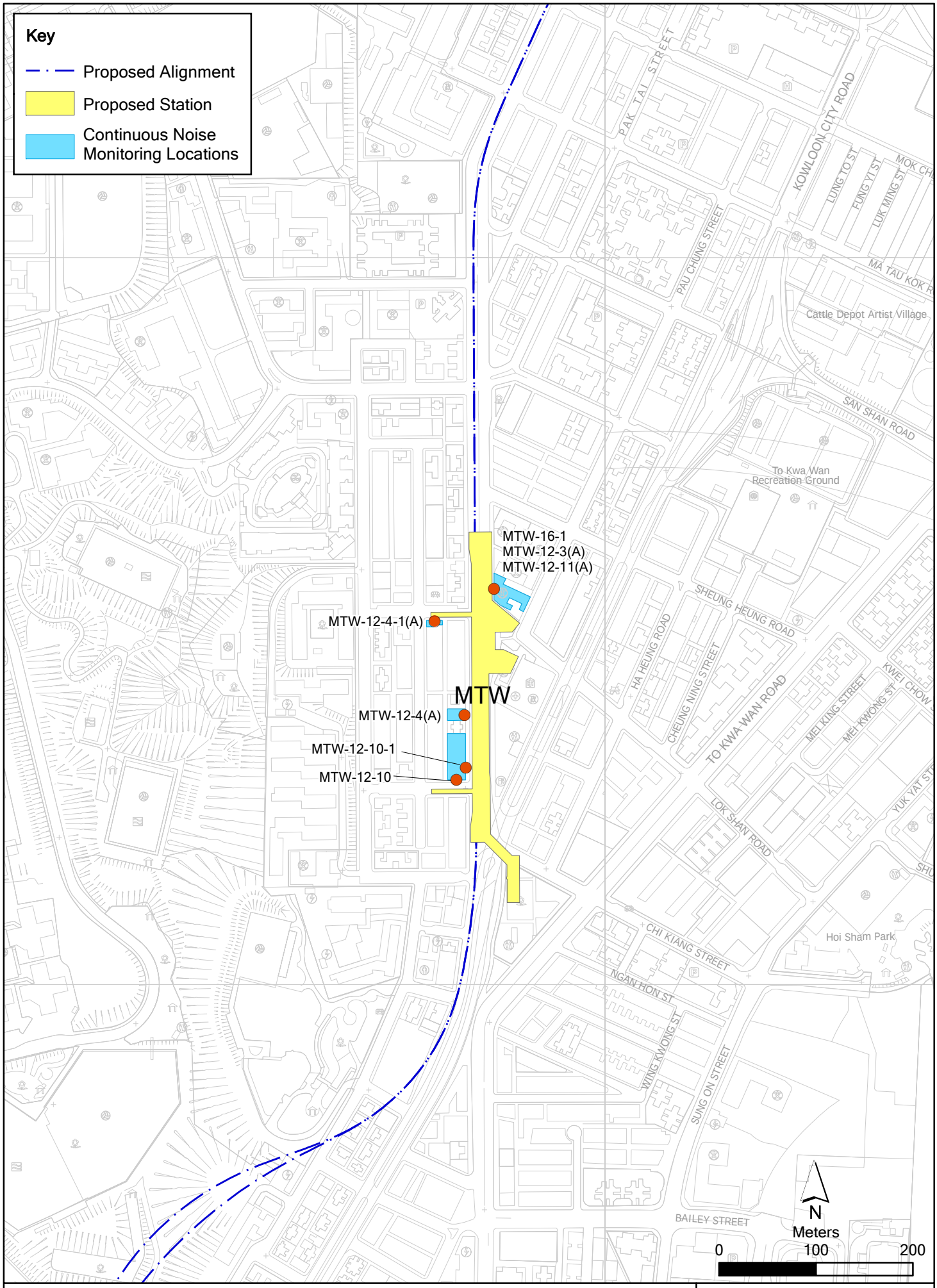



Figure 2.2b

Continuous Noise Monitoring Locations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Continuous_Noise_Monitoring_Locations_MTW_v2.mxd
Date: 5/11/2014

Environmental Resources Management

ERM

Annex E

# Monitoring Schedule of the Reporting Period and the Next Month

**Shatin to Central Link**
**Works Contract 1109**
**Stations and Tunnels of Kowloon City Section**
**Regular Noise Monitoring Schedule**

**Noise Monitoring Stations:**
**NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10**
**Monitoring Month : November 2019**

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

**Shatin to Central Link**
**Works Contract 1109**
**Stations and Tunnels of Kowloon City Section**
**Regular Noise Monitoring Schedule**

**Noise Monitoring Stations:**
**NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10**
**Monitoring Month : December 2019**

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

**Shatin to Central Link**
**Works Contract 1109**
**Stations and Tunnels of Kowloon City Section**
**Regular Dust Monitoring Schedule**

**24-hr TSP Monitoring Stations:**
**DMS-6, DMS-7, DMS-8, DMS-9 and DMS-10**
**Monitoring Month: November 2019**

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

**Shatin to Central Link**
**Works Contract 1109**
**Stations and Tunnels of Kowloon City Section**
**Regular Dust Monitoring Schedule**

**24-hr TSP Monitoring Stations:**
**DMS-6, DMS-7, DMS-8, DMS-9 and DMS-10**
**Monitoring Month: December 2019**

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

Annex F

# Calibration Reports

## *Annex F Calibration Reports*

### *Dust Monitoring Equipment*

| Monitoring Station ID | Location | Monitoring Equipment | | Last Calibration Date | Next Calibration Date |
|---|---|---|---|---|---|
| *24-hr TSP* | | **HVS** | **Calibrator** | | |
| DMS-6 | Katherine Building | TE-5170 (S/N 0107) | CM-AIR-43 (Orifice I.D. 2454) | 5 May 2019 | 5 November 2019 |
| DMS-6 | Katherine Building | TE-5170 (S/N 0107) | CM-AIR-43 (Orifice I.D. 2454) | 5 November 2019 | 5 May 2020 |
| DMS-7 | Parc 22 | TE-5170 (S/N 3574) | CM-AIR-43 (Orifice I.D. 2454) | 5 May 2019 | 5 November 2019 |
| DMS-7 | Parc 22 | TE-5170 (S/N 3574) | CM-AIR-43 (Orifice I.D. 2454) | 5 November 2019 | 5 May 2020 |
| DMS-8 | SKH Good Shepherd Primary School | TE-5170 (S/N 3572) | CM-AIR-43 (Orifice I.D. 2454) | 5 May 2019 | 5 November 2019 |
| DMS-8 | SKH Good Shepherd Primary School | TE-5170 (S/N 3572) | CM-AIR-43 (Orifice I.D. 2454) | 5 November 2019 | 5 May 2020 |
| DMS-9 | No. 12 Pau Chung Street | TE-5170 (S/N 0814) | CM-AIR-43 (Orifice I.D. 2454) | 5 May 2019 | 5 November 2019 |
| DMS-9 | No. 12 Pau Chung Street | TE-5170 (S/N 0814) | CM-AIR-43 (Orifice I.D. 2454) | 5 November 2019 | 5 May 2020 |
| DMS-10 | Chat Ma Mansion | TE-5170 (S/N 3573) | CM-AIR-43 (Orifice I.D. 2454) | 5 May 2019 | 5 November 2019 |
| DMS-10 | Chat Ma Mansion | TE-5170 (S/N 3573) | CM-AIR-43 (Orifice I.D. 2454) | 5 November 2019 | 5 May 2020 |

### *Noise Monitoring Equipment*

| Monitoring Station ID | Monitoring Equipment | Model & Serial No. | Last Calibration Date | Next Calibration Date |
|---|---|---|---|---|
| NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10 | Calibrator | LARSON DAVIS CAL 200 (S/N 11333) | 26 May 2019 | 26 May 2020 |
| | Sound Level Meter | Rion NL-18 (S/N 00360030) | 17 March 2019 | 17 March 2020 |

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-6(Katherine Building) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/05/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 0107 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1010 |
| Ta(K) | : | 295 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.8 | 3.591 | 1.748 | 54 | 54.19 |
| 2 | 13 holes | 9.4 | 3.077 | 1.500 | 48 | 48.17 |
| 3 | 10 holes | 7.2 | 2.693 | 1.315 | 38 | 38.14 |
| 4 | 7 holes | 4.4 | 2.105 | 1.031 | 28 | 28.10 |
| 5 | 5 holes | 3.0 | 1.738 | 0.854 | 20 | 20.07 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):38.943 Intercept(b): -12.477 Correlation Coefficient(r): 0.9949

Checked by: Magnum Fan Date: 09/05/2019

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-6(Katherine Building) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/11/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 0107 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1016 |
| Ta(K) | : | 297 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.6 | 3.561 | 1.734 | 55 | 55.17 |
| 2 | 13 holes | 9.0 | 3.009 | 1.467 | 44 | 44.14 |
| 3 | 10 holes | 6.6 | 2.577 | 1.259 | 36 | 36.11 |
| 4 | 7 holes | 4.2 | 2.056 | 1.007 | 28 | 28.09 |
| 5 | 5 holes | 2.8 | 1.679 | 0.825 | 16 | 16.05 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):41.188 Intercept(b): -15.913 Correlation Coefficient(r): 0.9940

Checked by: Magnum Fan Date: 09/11/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-7(Parc 22) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/05/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3574 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1010 |
| Ta(K) | : | 295 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.4 | 3.534 | 1.721 | 64 | 64.23 |
| 2 | 13 holes | 9.6 | 3.109 | 1.516 | 56 | 56.20 |
| 3 | 10 holes | 7.8 | 2.803 | 1.368 | 50 | 50.18 |
| 4 | 7 holes | 4.4 | 2.105 | 1.031 | 40 | 40.14 |
| 5 | 5 holes | 3.0 | 1.738 | 0.854 | 30 | 30.11 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):37.706 Intercept(b):-0.757 Correlation Coefficient(r): 0.9960

Checked by: Magnum Fan Date: 09/05/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-7(Parc 22) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/11/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3574 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1016 |
| Ta(K) | : | 297 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.2 | 3.504 | 1.706 | 64 | 64.20 |
| 2 | 13 holes | 8.4 | 2.907 | 1.418 | 50 | 50.16 |
| 3 | 10 holes | 6.2 | 2.498 | 1.220 | 40 | 40.13 |
| 4 | 7 holes | 4.0 | 2.006 | 0.983 | 30 | 30.09 |
| 5 | 5 holes | 2.6 | 1.619 | 0.795 | 20 | 20.06 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):47.985 Intercept(b):-17.832 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 09/11/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-8(SHK Good Shepherd Primary School) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/05/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3572 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1010 |
| Ta(K) | : | 295 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.4 | 3.534 | 1.721 | 62 | 62.22 |
| 2 | 13 holes | 9.6 | 3.109 | 1.516 | 56 | 56.20 |
| 3 | 10 holes | 7.6 | 2.767 | 1.350 | 50 | 50.18 |
| 4 | 7 holes | 4.6 | 2.152 | 1.054 | 40 | 40.14 |
| 5 | 5 holes | 3.2 | 1.795 | 0.881 | 30 | 30.11 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):37.426 Intercept(b):-1.042 Correlation Coefficient(r): 0.9935

Checked by: Magnum Fan Date: 09/05/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-8(SHK Good Shepherd Primary School) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/11/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3572 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1016 |
| Ta(K) | : | 297 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.2 | 3.504 | 1.706 | 60 | 60.19 |
| 2 | 13 holes | 8.6 | 2.942 | 1.435 | 52 | 52.16 |
| 3 | 10 holes | 6.4 | 2.538 | 1.240 | 40 | 40.13 |
| 4 | 7 holes | 4.2 | 2.056 | 1.007 | 30 | 30.09 |
| 5 | 5 holes | 2.8 | 1.679 | 0.825 | 20 | 20.06 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):46.395 Intercept(b):-17.115 Correlation Coefficient(r): 0.9941

Checked by: Magnum Fan Date: 09/11/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-9(No. 12 Pau Chung Street) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/05/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 0814 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1010 |
| Ta(K) | : | 295 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.8 | 3.591 | 1.748 | 68 | 68.24 |
| 2 | 13 holes | 9.8 | 3.142 | 1.531 | 58 | 58.21 |
| 3 | 10 holes | 7.6 | 2.767 | 1.350 | 50 | 50.18 |
| 4 | 7 holes | 4.6 | 2.152 | 1.054 | 40 | 40.14 |
| 5 | 5 holes | 2.8 | 1.679 | 0.825 | 28 | 28.10 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):42.207 Intercept(b): -5.962 Correlation Coefficient(r): 0.9978

Checked by: Magnum Fan Date: 09/05/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-9(No. 12 Pau Chung Street) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/11/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 0814 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1016 |
| Ta(K) | : | 297 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.5 | 3.547 | 1.727 | 64 | 64.20 |
| 2 | 13 holes | 8.8 | 2.976 | 1.451 | 52 | 52.16 |
| 3 | 10 holes | 6.4 | 2.538 | 1.240 | 40 | 40.13 |
| 4 | 7 holes | 4.2 | 2.056 | 1.007 | 30 | 30.09 |
| 5 | 5 holes | 2.6 | 1.618 | 0.795 | 18 | 18.06 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):49.470 Intercept(b): -20.609 Correlation Coefficient(r): 0.9989

Checked by: Magnum Fan Date: 09/11/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-10(Chat Ma Mansion) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/05/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3573 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1010 |
| Ta(K) | : | 295 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.4 | 3.534 | 1.721 | 60 | 60.21 |
| 2 | 13 holes | 9.4 | 3.077 | 1.500 | 52 | 52.19 |
| 3 | 10 holes | 7.2 | 2.693 | 1.315 | 46 | 46.16 |
| 4 | 7 holes | 4.8 | 2.199 | 1.076 | 34 | 34.12 |
| 5 | 5 holes | 2.8 | 1.679 | 0.825 | 26 | 26.09 |

Sampler Calibration Relationship (Linear Regression)

Slope(m): 38.997 Intercept(b): -6.442 Correlation Coefficient(r): 0.9973

Checked by: Magnum Fan Date: 09/05/2019

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | DMS-10(Chat Ma Mansion) |
| Calibrated by | : | K.T.Ho |
| Date | : | 05/11/2019 |

Sampler

| | | |
|---|---|---|
| Model | : | TE-5170 |
| Serial Number | : | S/N 3573 |

Calibration Orifice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 2454 |
| Service Date | : | 25 February 2019 |
| Slope (m) | : | 2.07076 |
| Intercept (b) | : | -0.02917 |
| Correlation Coefficient(r) | : | 1.00000 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1016 |
| Ta(K) | : | 297 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 11.6 | 3.417 | 1.664 | 60 | 60.19 |
| 2 | 13 holes | 8.0 | 2.837 | 1.384 | 52 | 52.16 |
| 3 | 10 holes | 5.6 | 2.374 | 1.160 | 46 | 46.15 |
| 4 | 7 holes | 3.4 | 1.850 | 0.907 | 36 | 36.11 |
| 5 | 5 holes | 2.0 | 1.419 | 0.699 | 28 | 28.09 |

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.263 Intercept(b): 5.853 Correlation Coefficient(r): 0.9961

Checked by: Magnum Fan Date: 09/11/2019

TISCH Environmental

| RECALIBRATION DUE DATE: |
|---|
| February 25, 2020 |

# Certificate of Calibration

| Calibration Certification Information | | | | | |
|---|---|---|---|---|---|
| **Cal. Date:** | February 25, 2019 | **Rootsmeter S/N:** 438320 | **Ta:** 294 | °K |
| **Operator:** | Jim Tisch | | **Pa:** 762.0 | mm Hg |
| **Calibration Model #:** | TE-5025A | **Calibrator S/N:** **2454** | | |

| Run | Vol. Init (m3) | Vol. Final (m3) | ΔVol. (m3) | ΔTime (min) | ΔP (mm Hg) | ΔH (in H2O) |
|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 1 | 1.4400 | 3.2 | 2.00 |
| 2 | 3 | 4 | 1 | 1.0200 | 6.4 | 4.00 |
| 3 | 5 | 6 | 1 | 0.9120 | 7.9 | 5.00 |
| 4 | 7 | 8 | 1 | 0.8700 | 8.8 | 5.50 |
| 5 | 9 | 10 | 1 | 0.7180 | 12.8 | 8.00 |

**Data Tabulation**

| Vstd (m3) | Qstd (x-axis) | $\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis) | Va | Qa (x-axis) | $\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis) |
|---|---|---|---|---|---|
| 1.0120 | 0.7028 | 1.4257 | 0.9958 | 0.6915 | 0.8784 |
| 1.0077 | 0.9880 | 2.0162 | 0.9916 | 0.9722 | 1.2423 |
| 1.0057 | 1.1028 | 2.2542 | 0.9896 | 1.0851 | 1.3889 |
| 1.0045 | 1.1546 | 2.3642 | 0.9885 | 1.1362 | 1.4567 |
| 0.9992 | 1.3916 | 2.8513 | 0.9832 | 1.3694 | 1.7569 |
| **QSTD** | **m=** | **2.07076** | **QA** | **m=** | **1.29667** |
| | **b=** | **-0.02917** | | **b=** | **-0.01797** |
| | **r=** | **1.00000** | | **r=** | **1.00000** |

**Calculations**

| | | | |
|---|---|---|---|
| **Vstd=** | ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta) | **Va=** | ΔVol((Pa-ΔP)/Pa) |
| **Qstd=** | Vstd/ΔTime | **Qa=** | Va/ΔTime |

**For subsequent flow rate calculations:**

**Qstd=** $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

**Qa=** $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

| Standard Conditions | |
|---|---|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |

| Key |
|---|
| ΔH: calibrator manometer reading (in H2O) |
| ΔP: rootsmeter manometer reading (mm Hg) |
| Ta: actual absolute temperature (°K) |
| Pa: actual barometric pressure (mm Hg) |
| b: intercept |
| m: slope |

**RECALIBRATION**

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

# Certificate of Calibration
# 校正證書

Certificate No. : C192695
證書編號

**ITEM TESTED / 送檢項目** ( Job No. / 序引編號 : IC19-0995 ) Date of Receipt / 收件日期 : 17 May 2019

Description / 儀器名稱 : Precision Acoustic Calibrator
Manufacturer / 製造商 : LARSON DAVIS
Model No. / 型號 : CAL200
Serial No. / 編號 : 11333
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

**TEST CONDITIONS / 測試條件**

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

**TEST SPECIFICATIONS / 測試規範**

Calibration check

**DATE OF TEST / 測試日期** : 26 May 2019

**TEST RESULTS / 測試結果**

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 29 May 2019



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里 1號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

# Certificate of Calibration
# 校正證書

Certificate No. : C192695
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

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

3. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| CL130 | Universal Counter | C183775 |
| CL281 | Multifunction Acoustic Calibrator | CDK1806821 |
| TST150A | Measuring Amplifier | C181288 |

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

| UUT Nominal Value | Measured Value (dB) | Mfr's Spec. (dB) | Uncertainty of Measured Value (dB) |
|---|---|---|---|
| 94 dB, 1 kHz | 93.8 | ± 0.2 | ± 0.2 |
| 114 dB, 1 kHz | 113.8 | | |

5.2 Frequency Accuracy

| UUT Nominal Value (kHz) | Measured Value (kHz) | Mfr's Spec. | Uncertainty of Measured Value (Hz) |
|---|---|---|---|
| 1 | 1.000 | 1 kHz ± 1 % | ± 1 |

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

Note :
Only the original copy or the laboratory's certified true copy is valid.

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



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

# Certificate of Calibration
# 校正證書

Certificate No. : C191409
證書編號

**ITEM TESTED / 送檢項目** ( Job No. / 序引編號 : IC19-0396 ) Date of Receipt / 收件日期 : 26 February 2019

| | | |
|---|---|---|
| Description / 儀器名稱 | : | Precision Integrating Sound Level Meter |
| Manufacturer / 製造商 | : | Rion |
| Model No. / 型號 | : | NL-18 |
| Serial No. / 編號 | : | 00360030 |
| Supplied By / 委託者 | : | Envirotech Services Co.<br>Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,<br>New Territories, Hong Kong |

**TEST CONDITIONS / 測試條件**

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

**TEST SPECIFICATIONS / 測試規範**

Calibration check

**DATE OF TEST / 測試日期** : 17 March 2019

**TEST RESULTS / 測試結果**

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee
Engineer

Certified By 核證 : H C Chan
Engineer

Date of Issue 簽發日期 : 18 March 2019



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration
# 校正證書

Certificate No. : C191409
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

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

4. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| CL280 | 40 MHz Arbitrary Waveform Generator | C190176 |
| CL281 | Multifunction Acoustic Calibrator | CDK1806821 |

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 60651 Type 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 50 - 110 | LA | A | Fast | 94.00 | 1 | 93.8 | ± 0.7 |

6.1.2 Linearity

| UUT Setting | | | | Applied Value | | UUT Reading (dB) |
|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | |
| 60 - 120 | LA | A | Fast | 94.00 | 1 | 93.9 (Ref.) |
| | | | | 104.00 | | 103.9 |
| | | | | 114.00 | | 113.9 |

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

6.2 Time Weighting

6.2.1 Continuous Signal

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 60651 Type 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 50 - 110 | LA | A | Fast | 94.00 | 1 | 93.8 | Ref. |
| | | | Slow | | | 93.8 | ± 0.1 |

# Certificate of Calibration
# 校正證書

Certificate No. : C191409
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6.2.2 Tone Burst Signal (2 kHz)

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 60651 Type 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Burst Duration | | |
| 50 -110 | LA | A | Fast | 106.00 | Continuous | 106.0 | Ref. |
| | LAmx | | | | 200 ms | 105.1 | -1.0 ± 1.0 |
| | LA | | Slow | | Continuous | 106.0 | Ref. |
| | LAmx | | | | 500 ms | 102.5 | -4.1 ± 1.0 |

6.3 Frequency Weighting

6.3.1 A-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 60651 Type 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 50 - 110 | LA | A | Fast | 94.00 | 31.5 Hz | 54.2 | -39.4 ± 1.5 |
| | | | | | 63 Hz | 67.5 | -26.2 ± 1.5 |
| | | | | | 125 Hz | 77.5 | -16.1 ± 1.0 |
| | | | | | 250 Hz | 85.1 | -8.6 ± 1.0 |
| | | | | | 500 Hz | 90.5 | -3.2 ± 1.0 |
| | | | | | 1 kHz | 93.8 | Ref. |
| | | | | | 2 kHz | 95.1 | +1.2 ± 1.0 |
| | | | | | 4 kHz | 94.9 | +1.0 ± 1.0 |
| | | | | | 8 kHz | 92.8 | -1.1 (+1.5 ; -3.0) |
| | | | | | 12.5 kHz | 89.6 | -4.3 (+3.0 ; -6.0) |

6.3.2 C-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 60651 Type 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 50 - 110 | LC | C | Fast | 94.00 | 31.5 Hz | 90.9 | -3.0 ± 1.5 |
| | | | | | 63 Hz | 93.0 | -0.8 ± 1.5 |
| | | | | | 125 Hz | 93.6 | -0.2 ± 1.0 |
| | | | | | 250 Hz | 93.8 | 0.0 ± 1.0 |
| | | | | | 500 Hz | 93.9 | 0.0 ± 1.0 |
| | | | | | 1 kHz | 93.8 | Ref. |
| | | | | | 2 kHz | 93.7 | -0.2 ± 1.0 |
| | | | | | 4 kHz | 93.1 | -0.8 ± 1.0 |
| | | | | | 8 kHz | 90.8 | -3.0 (+1.5 ; -3.0) |
| | | | | | 12.5 kHz | 87.6 | -6.2 (+3.0 ; -6.0) |

# Certificate of Calibration
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Certificate No. : C191409
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6.4 Time Averaging

| UUT Setting | | | | Applied Value | | | | | UUT | IEC 60804 |
|---|---|---|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Integrating Time | Freq. (kHz) | Burst Duration (ms) | Burst Duty Factor | Burst Level (dB) | Equivalent Level (dB) | Reading (dB) | Type 1 Spec. (dB) |
| 50 - 110 | LAeq | A | 10 sec. | 4 | 1 | 1/10 | 110 | 100 | 100.1 | ± 0.5 |
| | | | | | | $1/10^2$ | | 90 | 90.0 | ± 0.5 |
| | | | 60 sec. | | | $1/10^3$ | | 80 | 79.6 | ± 1.0 |
| | | | 5 min. | | | $1/10^4$ | | 70 | 69.8 | ± 1.0 |

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 307435

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

- Uncertainties of Applied Value :

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

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

Note :
Only the original copy or the laboratory's certified true copy is valid.

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



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c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Annex G

# Summary of Event/ Action Plans

## *Annex G1 Event and Action Plan for Regular Construction Noise Monitoring*

| EVENT | Action | | | |
|---|---|---|---|---|
| | **Contractor's Environmental Team (Contractor's ET)** | **Independent Environmental Checker (IEC)** | **Engineer Representative (ER)** | **The Contractor** |
| Exceeding Action Level | 1. Notify the IEC, Contractor and ER;<br>2. Discuss with the ER, IEC and Contractor on the remedial measures required;<br>3. Increase the monitoring frequency to check mitigation effectiveness. | 1. Review the investigation results submitted by the contractor;<br>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. | 1. Confirm receipt of notification of complaint in writing ;<br>2. Notify the Contractor, IEC and ET;<br>3. Review and agree on the remedial measures proposed by the Contractor;<br>4. Supervise the implementation of remedial measures. | 1. Investigate the complaint and propose remedial measures;<br>2. Report the results of investigation to the IEC, ET and ER;<br>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification;<br>4. Implement noise mitigation proposals. |
| Exceeding Limit Level | 1. Notify the IEC, Contractor and EPD;<br>2. Repeat measurement to confirm findings;<br>3. Increase the monitoring frequency;<br>4. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented;<br>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;<br>6. Inform the IEC, ER and EPD the causes and actions taken for the exceedances<br>7. Assess the effectiveness of the Contractor's remedial measures and keep the IEC, ER and EPD informed of the results | 1. Check the monitoring data submitted by the ET;<br>2. Check the Contractor's working method;<br>3. Discuss with the ET, ER, and Contractor on the potential remedial measures;<br>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify the Contractor, IEC and ET;<br>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;<br>4. Supervise the implementation of remedial measures;<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify reason(s) and investigate the causes of exceedance;<br>2. Take immediate action to avoid further exceedance;<br>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;<br>4. Implement the agreed proposals;<br>5. Revise and resubmit proposals if problem is still not under control;<br>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

## *Annex G2 Event and Action Plan for Continuous Noise Monitoring*

| Event | Action | | | |
|---|---|---|---|---|
| | **Works Contract 1109 ET** | **IEC** | **ER** | **Contractor** |
| Exceeding Action/Limit Level | 1. Identify source<br>2. Repeat measurement. If two consecutive measurements exceed Action/Limit Level, the exceedance is then confirmed<br>3. If exceedance is confirmed, notify IEC, ER and Contractor<br>4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented<br>5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures<br>6. Assess effectiveness of Contractor's remedial actions and keep IEC and ER informed of the results | 1. Check monitoring data submitted by the Works Contract 1109 ET<br>2. Check the Contractor's working method<br>3. Discuss with the ER, Works Contract 1109 ET and Contractor on the potential remedial measures<br>4. Review and advise the Works Contract 1109 ET and ER on the effectiveness of the remedial measures proposed by the Contractor | 1. Confirm receipt of notification of exceedance in writing<br>2. Notify the Contractor and IEC<br>3. In consultation with the Works Contract 1109 ET and IEC, agree with the Contractor on the remedial measures to be implemented<br>4. Ensure the proper implementation of remedial measures<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated | 1. Identify source with Works Contract 1109 ET<br>2. If exceedance is confirmed, investigate the cause of exceedance and take immediate action to avoid further exceedance<br>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification<br>4. Implement the agreed proposals<br>5. Liaise with ER to optimize the effectiveness of the agreed mitigation<br>6. Revise and resubmit proposals if problem still not under control<br>7. Stop the relevant portion of works as determined by the ER until the exceedance is abated |

## *Annex G3 Event and Action Plan for Construction Dust Monitoring*

| Event | Action | | | |
|---|---|---|---|---|
| | **Contractor's Environmental Team (Contractor's ET)** | **Independent Environmental Checker (IEC)** | **Engineer Representative (ER)** | **The Contractor** |
| **Action Level** | | | | |
| Exceedance for one sample | 1. Inform the IEC, Contractor and ER;<br>2. Discuss with the Contractor, IEC and ER on the remedial measures required;<br>3. Repeat measurement to confirm findings;<br>4. Increase the monitoring frequency | 1. Check the monitoring data submitted by the ET;<br>2. Check the Contractor's working method;<br>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. | 1. Confirm receipt of notifications of exceedance in writing; | 1. Identify reason(s), investigate the causes of exceedance and propose remedial measures;<br>2. Implement remedial measures;<br>3. Amend working methods and agree them with the ER as appropriate. |
| Exceedance for two or more consecutive samples | 1. Inform the IEC, Contractor and ER;<br>2. Discuss with the ER, IEC and Contractor on the remedial measures required;<br>3. Repeat measurements to confirm findings;<br>4. Increase the monitoring frequency to daily;<br>5. If exceedance continues, arrange meeting with the IEC, ER and Contractor;<br>6. If exceedance stops, the monitoring frequency will resume normal. | 1. Check the monitoring data submitted by the ET;<br>2. Check the Contractor's working method;<br>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify the Contractor, IEC and ET;<br>3. Review and agree on the remedial measures proposed by the Contractor;<br>4. Supervise the Implementation of remedial measures. | 1. Identify reasons and investigate the causes of exceedance;<br>2. Submit proposals of remedial measures to the ER with a copy to the ET and IEC within three working days of notification;<br>3. Implement the agreed proposals;<br>4. Amend the proposal as appropriate. |

| Event | Action | | | |
|---|---|---|---|---|
| | **Contractor's Environmental Team (Contractor's ET)** | **Independent Environmental Checker (IEC)** | **Engineer Representative (ER)** | **The Contractor** |
| **Limit Level** | | | | |
| Exceedance for one sample | 1. Inform the IEC, Contractor and ER;<br>2. Repeat measurement to confirm findings;<br>3. Increase the monitoring frequency to daily;<br>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. | 1. Check the monitoring data submitted by the ET;<br>2. Check the Contractor's working method;<br>3. Discuss with the ET, ER and Contractor on possible remedial measures;<br>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify the Contractor, IEC and ET;<br>3. Review and agree on the remedial measures proposed by the Contractor;<br>4. Supervise the implementation of remedial measures. | 1. Identify reason(s) and investigate the causes of exceedance;<br>2. Take immediate action to avoid further exceedance;<br>3. Submit proposals of remedial measures to ER with a copy to the ET and IEC within three working days of notification;<br>4. Implement the agreed proposals;<br>5. Amend proposal if appropriate. |
| Exceedance for two or more consecutive samples | 1. Notify the IEC, Contractor and EPD;<br>2. Repeat measurement to confirm findings;<br>3. Increase the monitoring frequency to daily;<br>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;<br>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;<br>6. Review the effectiveness of the Contractor's remedial measures and keep the IEC, EPD and ER informed of the results;<br>7. If exceedance stops, the monitoring frequency will return to normal. | 1. Check the monitoring data submitted by the ET;<br>2. Check the Contractor's working method;<br>3. Discuss with the ET, ER, and Contractor on the potential remedial measures;<br>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify the Contractor, IEC and ET;<br>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;<br>4. Supervise the implementation of remedial measures;<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify reason(s) and investigate the causes of exceedance;<br>2. Take immediate actions to avoid further exceedance;<br>3. Submit proposals of remedial measures to the ER with a copy to the IEC and ET within three working days of notification;<br>4. Implement the agreed proposals;<br>5. Revise and resubmit proposals if problem still not under control;<br>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

## *Annex G4 Event and Action Plan for Landscape and Visual Impacts during the Construction Phase*

| Event | Action | | | |
|---|---|---|---|---|
| | **Contractor's Environmental Team (Contractor's ET)** | **Independent Environmental Checker (IEC)** | **Engineer Representative (ER)** | **The Contractor** |
| Non-conformity on one occasion | 1. Inform the Contractor, the IEC and the ER.<br>2. Discuss remedial actions with the IEC, ER and Contractor.<br>3. Monitor remedial actions until rectification has been completed. | 1. Check the inspection report.<br>2. Check the Contractor's working method.<br>3. Discuss with the ET, ER and Contractor on possible remedial measures.<br>4. Advise the ER on the effectiveness of proposed remedial measures. | 1. Confirm receipt of notifications of nonconformity in writing.<br>2. Review and agree on the remedial measures proposed by the Contractor.<br>3. Supervise the implementation of remedial measures. | 1. Identify reasons and investigate the non-conformity.<br>2. Implement remedial measures<br>3. Amend working methods and agree them with the ER as appropriate.<br>4. Rectify the damage and undertake any necessary replacement. |
| Repeated Nonconformity | 1. Identify Reasons.<br>2. Inform the Contractor, IEC and ER.<br>3. Increase the inspection frequency.<br>4. Discuss remedial actions with the IEC, ER and Contractor.<br>5. Monitor remedial actions until rectification has been completed.<br>6. If non-conformity stops, the inspection frequency return to normal (ie,. Once every two weeks) | 1. Check the inspection report.<br>2. Check the Contractor's working method.<br>3. Discuss with the ET and Contractor on possible remedial measures.<br>4. Advise the ER on the effectiveness of proposed remedial measures. | 1. Notify the Contractor.<br>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented.<br>3. Supervise the implementation of remedial measures. | 1. Identify Reasons and investigate the non-conformity.<br>2. Implement remedial measures.<br>3. Amend working methods and agree them with the ER as appropriate.<br>4. Rectify the damage and undertake any necessary replacement.<br>5. Stop relevant works as determined by the ER until the non-conformity is abated. |

Annex H

# Summary of Implementation Status of Environmental Mitigation

## *Annex H Environmental Mitigation Implementation Status – SCL Works Contract 1109 (Stations and Tunnels of Kowloon City Section)*

**Note:**

* Reference has been made to the approved SCL (TAW-HUH) EM&A Manual.
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
▲ Non-compliance of Mitigation Measures but rectified by Samsung-Hsin Chong JV
Δ Deficiency of Mitigation Measures but rectified by Samsung-Hsin Chong JV
N/A Not Applicable in Reporting Period

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| **Cultural Heritage Impact** | | | | | | | |
| S4.9 | CH3 | Submit an Archaeological Action Plan<br>Conduct survey-cum-excavation and additional boreholes/trenches investigation at the Sacred Hill (North) Study Area prior to construction. | Salvage cultural remains at the Sacred Hill (North) Study Area | Contractor | Sacred Hill (North) Area | Prior to the Construction Phase of TKW and associated tunnels | √ |
| **Ecology (Construction Phase)** | | | | | | | |
| S5.7 | E5 | Good Site Practices<br>Impact on any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. | Minimise ecological impacts | Contractor | All construction sites | Construction Stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | The following good site practices should also be implemented:<br><br>• Erection of temporary geotextile silt or sediment fences/oil traps around earth-moving works to trap sediments and prevent them from entering watercourses;<br>• Avoidance of soil storage against trees or close to water bodies;<br>• Delineation of works site by erecting hoardings to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value e.g. tunnel on hill at top of slope stabilisation works;<br>• No on-site burning of waste;<br>• Store waste and refuse in appropriate receptacles. | | | | | |
| **Landscape & Visual (Construction Phase)** | | | | | | | |
| S6.9.3 | LV1 | The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:<br><br><u>Re-use of Existing Soil</u><br>• For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing | Minimize visual & landscape impact | Contractor | Within Project Site | Construction Stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | ground may be set up on-site as necessary.<br><br><u>No-intrusion Zone</u><br>• To maximize protection to existing trees, ground vegetation and associated under storey habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing . The contractor should closely monitor and restrict the site working staff from entering the "no-intrusion zone", even for indirect construction activities and storage of equipment.<br><br><u>Protection of Retained Trees</u><br>• All retained trees including trees in contractor's works sites should be recorded and photographed at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifies the tree protection requirement, submission and approval system, and the tree monitoring system.<br>• The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | trees in Contractor's works sites. | | | | | |
| S6.12 | LV2 | <u>Decorative Hoarding</u><br>• Erection of decorative screen in visual and landscape sensitive areas during the construction stage to screen off undesirable views of the construction site . Hoarding should be designed to be compatible with the existing urban context.<br><br><u>Management of facilities on work sites</u><br>• To provide proper management of the on-site facilities, control the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent Visual Sensitive Receivers (VSRs).<br><br><u>Tree Transplanting</u><br>• Trees of high to medium survival rates that would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including the final locations for the transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006. | Minimize visual & landscape impact | Contractor | Within Project Site | Construction Stage | √ |
| **Construction Dust** | | | | | | | |
| S7.6.5 | D1 | The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation. | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| S7.6.5 | D2 | Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul roads in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 l/m$^2$ to achieve the dust removal efficiency | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction stage | √ |
| S7.6.5 | D3 | • Proper watering of exposed spoil should be undertaken throughout the construction phase;<br>• Any excavated or stockpile of dusty material should be covered entirely by an impervious sheeting or sprayed with water to maintain an entirely wet surface and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;<br>• Any dusty materials remaining after a stockpile has been removed should be wetted with water and cleared from the surface of roads;<br>• A stockpile of dusty materials should not be extended beyond the pedestrian barriers, fencing or traffic cones.<br>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by an impervious | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction stage | <> |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | sheeting to ensure that the dusty materials do not leak from the vehicle;<br>• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;<br>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;<br>• The portion of any road which leads only to construction site and is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;<br>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operations take place should be sprayed with water or a dust suppression chemical continuously;<br>• Any area that involves demolition activities should be sprayed with water or | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain an entirely wet surface<br>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building upward, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;<br>• Any skip hoist for material transport should be totally enclosed by an impervious sheeting;<br>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by an impervious sheeting or placed in an area sheltered on the top and 3 sides;<br>• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;<br>• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | and<br>• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. | | | | | |
| S7.6.5 | D6 | Implement regular dust monitoring under EM&A programme during the construction stage. | Monitoring of dust impact | Contractor | Selected representative dust monitoring station | Construction stage | √ |
| EP Condition 2.18(a) | D7 | Watering once every working hour for active works areas, exposed areas and paved haul roads shall be provided in Kowloon area to keep these active works areas, exposed areas and paved haul roads wet. | Minimize construction dust impact | Contractor | All construction sites | Construction stage | <> |
| EP Condition 2.19 | D8 | All diesel fuelled construction plant, including marine vessels if possible, used by the contractors within the works areas of the Project shall be powered by ultra low sulphur diesel fuel. | Minimize aerial emissions of sulphur dioxide from construction plant | Contractor | All construction sites | Construction stage | √ |
| **Construction Noise (Airborne)** | | | | | | | |
| S8.3.6 | N1 | Implement the following good site practices:<br>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;<br>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work | Control construction airborne noise | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | periods or should be throttled down to a minimum;<br>• plant known to emit noise strongly in one direction, where possible, should be orientated so that the noise is directed away from nearby NSRs;<br>• silencers or mufflers on construction equipment should be properly fitted and maintained during the period of construction works;<br>• mobile plant should be sited as far away from NSRs as possible and practicable;<br>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. | | | | |
| S8.3.6 | N2 | Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period. | Reduce the construction noise levels at low-level zone of NSRs through partial screening. | Contractor | All construction sites | Construction stage | √ |
| S8.3.6 | N3 | Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw. | Screen the noisy plant items to be used at all construction sites | Contractor | All construction sites where practicable | Construction stage | √ |
| S8.3.6 | N4 | Use "Quiet plants" | Reduce the noise levels of plant items | Contractor | All construction sites where practicable | Construction stage | √ |
| S8.3.6 | N5 | Sequencing operation of construction plants | Operate sequentially within | Contractor | Contractor All | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | where practicable. | the same work site to reduce the construction airborne noise | | construction sites where practicable | | |
| S8.3.6 | N6 | Implement noise monitoring under EM&A programme. | Monitor the construction noise levels at the selected representative locations | Contractor | Selected representative noise monitoring station | Construction stage | √ |
| **Water Quality** | | | | | | | |
| S10.7.1 | W1 | In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:<br><u>Construction Runoffs and Site Drainage</u><br>• At the start of the site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of construction.<br>• The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to | To minimise water quality impact from construction site runoffs and general construction activities | Contractor | All construction sites where practicable | Construction stage | Δ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates.<br>• The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 $m^3/s$, a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 $m^3/s$ the basin would be 150 $m^3$. The detailed design of the sand/silt traps shall be undertaken by the Contractor prior to the commencement of construction.<br>• All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, and definitely, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means.<br>• The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | coarse stone ballast. An additional advantage from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.<br>• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operations at all times and particularly following rainstorms. Deposited silts and grits should be removed regularly and disposed of by spreading them evenly over stable, vegetated areas.<br>• Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, trenches should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.<br>• Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50$m^3$ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.<br>• Manholes (including newly constructed | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.<br>• Precautions should be taken at any time of year when rainstorms are likely. Actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoffs during storm events, especially for areas located near steep slopes.<br>• All vehicles and plant should be cleaned before leaving a construction site to ensure that no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | silty water to public roads and drains.<br>• Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.<br>• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.<br>• All fuel tanks and storage areas should be provided with locks and sited in sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching nearby water sensitive receivers.<br>• All the earth works should be conducted sequentially to limit the amount of construction runoffs generated from exposed areas during the wet season (April to September) as far as practicable.<br>• Adopt best management practices | | | | | |
| S10.7.1 | W2 | <u>Tunnelling Works</u><br>• Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge.<br>• The wastewater with a high concentration | To minimize construction water quality impact from tunnelling works | Contractor | All tunnelling portion | Construction stage | N/A |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | of suspended solids should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove oil, lubricants and grease from the wastewater.<br>• Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. The slurry should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities have been completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries. | | | | | |
| S10.7.1 | W3 | <u>Sewage Effluent</u><br>Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for their appropriate disposal and maintenance. | To minimize water quality from sewage effluent | Contractor | All construction sites where practicable | Construction stage | √ |
| S10.7.1 | W4 | <u>Groundwater from Contaminated Area in case contamination is found:</u><br>• No direct discharge of groundwater from | To minimize groundwater quality impact from contaminated area | Contractor | Excavation areas where contamination is found. | Construction stage | N/A |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | contaminated areas is allowed. Prior to the excavation works within potentially contaminated areas, the groundwater quality should be reviewed with reference to the site investigation data in the EIA report for compliance and the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-Water). The existence of prohibited substance should be confirmed. The review results should be submitted to EPD for examination if the review results indicate that the groundwater to be generated from the excavation works would be contaminated. The contaminated groundwater should be either properly treated in compliance with the requirements of the TM-Water or properly recharged into the ground.<br>• If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. total petroleum hydrocarbon (TPH)) to undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM Water and should be discharged into the foul sewers. | | | | | |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-Water. The baseline groundwater quality shall be determined prior to the selection of the recharge wells. It is necessary to submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than the pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the Water Pollution Control Ordinance (WPCO) through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater. | | | | | |
| S10.7.1 | W7 | In order to prevent accidental spillage of chemicals, the following is recommended: | To minimize water quality impact from accidental | Contractor | All construction sites where practicable | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
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| | | All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains.<br>• The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings.<br>• Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation. | spillage | | | | |
| **Waste Management (Construction Waste)** | | | | | | | |
| S11.4.1.1 | WM1 | <u>On-site sorting of C&D (Construction and Demolition) material</u><br>• Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored in the designated stockpile areas avoiding delivering them to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from | Separation of unsuitable rock from ending up at Concrete batching plants and be turned into concrete for structural use | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
|---|---|---|---|---|---|---|---|
| | | being ended up at concrete batching plants and turned into concrete for structural use. Details regarding control measures at source sites and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated. The traceability of delivery will be ensured via the implementation of Trip Ticket System and enforcement by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored. | | | | | |
| S11.5.1 | WM2 | <u>Construction and Demolition (C&D) Material</u><br>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;<br>• Carry out on-site sorting;<br>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;<br>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; | Good site practice to minimize waste generation and recycle C&D materials as far as practicable so as to reduce the amount for final disposal | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
|---|---|---|---|---|---|---|---|
| | | • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified;<br>• Implement an enhanced Waste management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and minimize waste generation during the course of construction.<br>• Disposal of the C&D materials to any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get his approval before implementation | | | | | |
| S11.5.1 | WM3 | <u>C&D Waste</u><br>• Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used. Metal hoarding should be used to enhance the possibility of recycling. The purchase of construction materials will be carefully planned in order to avoid over ordering and wastage.<br>• The Contractor should recycle as much of the C&D materials as possible on-site. | Good site practice to minimize waste generation and recycle C&D materials as far as practicable so as to reduce the amount for final disposal | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
|---|---|---|---|---|---|---|---|
| | | Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. | | | | | |
| S11.5.1 | WM4 | <u>General Refuse</u><br>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.<br>• A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.<br>• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.<br>• Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme | Minimize the production of general refuse and minimise odour, pest and litter impacts | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
|---|---|---|---|---|---|---|---|
| | | should be considered by the Contractor. | | | | | |
| S11.5.1 | WM7 | <u>Chemical Waste</u><br>• Chemical waste as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, that is produced should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.<br>• Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed. They should have a capacity of less than 450 litres unless the specification has been approved by the EPD. A label in English and Chinese should be displayed in accordance with instructions prescribed in Schedule 2 of the regulation.<br>• The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides. It should also have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest. It should have adequate ventilation and be covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. | Control the chemical waste and ensure proper storage, handling and disposal. | Contractor | All construction sites | Construction stage | √ |

| EIA Ref. | EM&A Log Ref* | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the measures? | Location of the implementation of measures | When to implement the measures? | Implementation Status |
|---|---|---|---|---|---|---|---|
| | | • Disposal of chemical waste should be via a licensed waste collector; to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre (which also offers a chemical waste collection service and can supply the necessary storage containers); or to a reuser of the waste, under the approval from the EPD. | | | | | |

Annex I

# Regular Noise Monitoring Results

**Annex I Regular Noise Monitoring Results**

Station NMS-CA-6 No. 16-23 Nam Kok Road

| Date | Start Time | End Time | Weather | Measured Noise level (dB(A)), $L_{Aeq}$(30 min) | Baseline (dB(A)), $L_{Aeq}$(30 min) | Corrected LAeq(dBA) [(a)] | Major Construction Noise Source(s) Observed | Other Noise Source(s) Observed | Temp. (°C) | Wind Speed (m/s) | Noise Meter Model / ID | Calibrator Model / ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-Nov-19 | 11:13 | 11:43 | Sunny | 61.9 | 76.1 | -(b) | - | Traffic noise | 24 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 13-Nov-19 | 11:16 | 11:46 | Sunny | 60.6 | 76.1 | -(b) | - | Traffic noise | 24 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 19-Nov-19 | 11:17 | 11:47 | Sunny | 61.6 | 76.1 | -(b) | - | Traffic noise | 19 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 25-Nov-19 | 11:19 | 11:49 | Sunny | 62.1 | 76.1 | -(b) | - | Traffic noise | 25 | 0.5 | NL-18 00360030 | CAL200 11333 |

Station NMS-CA-7 Skytower Tower 2

| Date | Start Time | End Time | Weather | Measured Noise level (dB(A)), $L_{Aeq}$(30 min) | Baseline (dB(A)), $L_{Aeq}$(30 min) | Corrected LAeq(dBA) [(a)] | Major Construction Noise Source(s) Observed | Other Noise Source(s) Observed | Temp. (°C) | Wind Speed (m/s) | Noise Meter Model / ID | Calibrator Model / ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-Nov-19 | 10:20 | 10:50 | Sunny | 66.0 | 70.0 | -(b) | - | Traffic noise | 23 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 13-Nov-19 | 10:21 | 10:51 | Sunny | 65.2 | 70.0 | -(b) | - | Traffic noise | 23 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 19-Nov-19 | 10:22 | 10:52 | Sunny | 65.2 | 70.0 | -(b) | - | Traffic noise | 18 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 25-Nov-19 | 10:20 | 10:50 | Sunny | 65.9 | 70.0 | -(b) | - | Traffic noise | 25 | 0.5 | NL-18 00360030 | CAL200 11333 |

Station NMS-CA-8 SKH Good Shepherd Primary School

| Date | Start Time | End Time | Weather | Measured Noise level (dB(A)), $L_{Aeq}$(30 min) | Baseline (dB(A)), $L_{Aeq}$(30 min) | Corrected LAeq(dBA) [(a)] | Major Construction Noise Source(s) Observed | Other Noise Source(s) Observed | Temp. (°C) | Wind Speed (m/s) | Noise Meter Model / ID | Calibrator Model / ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-Nov-19 | 8:05 | 8:35 | Sunny | 72.7 | 75.4 | -(b) | - | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 13-Nov-19 | 8:00 | 8:30 | Sunny | 70.9 | 75.4 | -(b) | Backhoe | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 19-Nov-19 | 8:05 | 8:35 | Sunny | 73.1 | 75.4 | -(b) | Backhoe | Traffic noise | 17 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 25-Nov-19 | 8:00 | 8:30 | Sunny | 73.0 | 75.4 | -(b) | Backhoe | Traffic noise | 25 | 0.5 | NL-18 00360030 | CAL200 11333 |

Station NMS-CA-9 Kong Yiu Mansion

| Date | Start Time | End Time | Weather | Measured Noise level (dB(A)), $L_{Aeq}$(30 min) | Baseline (dB(A)), $L_{Aeq}$(30 min) | Corrected LAeq(dBA) [(a)] | Major Construction Noise Source(s) Observed | Other Noise Source(s) Observed | Temp. (°C) | Wind Speed (m/s) | Noise Meter Model / ID | Calibrator Model / ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-Nov-19 | 9:28 | 9:58 | Sunny | 71.2 | 69.2 | 66.9 | Backhoe | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 13-Nov-19 | 9:27 | 9:57 | Sunny | 69.1 | 69.2 | -(b) | Backhoe | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 19-Nov-19 | 9:30 | 10:00 | Sunny | 69.3 | 69.2 | 52.9 | Backhoe | Traffic noise | 17 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 25-Nov-19 | 9:25 | 9:55 | Sunny | 71.7 | 69.2 | 68.1 | Backhoe | Traffic noise | 25 | 0.5 | NL-18 00360030 | CAL200 11333 |

Station NMS-CA-10 Chat Ma Mansion

| Date | Start Time | End Time | Weather | Measured Noise level (dB(A)), $L_{Aeq}$(30 min)[(c)] | Baseline (dB(A)), $L_{Aeq}$(30 min) | Corrected LAeq(dBA) [(a)] | Major Construction Noise Source(s) Observed | Other Noise Source(s) Observed | Temp. (°C) | Wind Speed (m/s) | Noise Meter Model / ID | Calibrator Model / ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-Nov-19 | 8:47 | 9:17 | Sunny | 75.9 | 76.6 | -(b) | Backhoe | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 13-Nov-19 | 8:45 | 9:15 | Sunny | 74.8 | 76.6 | -(b) | Backhoe | Traffic noise | 22 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 19-Nov-19 | 8:49 | 9:19 | Sunny | 74.9 | 76.6 | -(b) | Backhoe | Traffic noise | 17 | 0.5 | NL-18 00360030 | CAL200 11333 |
| 25-Nov-19 | 8:43 | 9:13 | Sunny | 76.2 | 76.6 | -(b) | Backhoe | Traffic noise | 25 | 0.5 | NL-18 00360030 | CAL200 11333 |

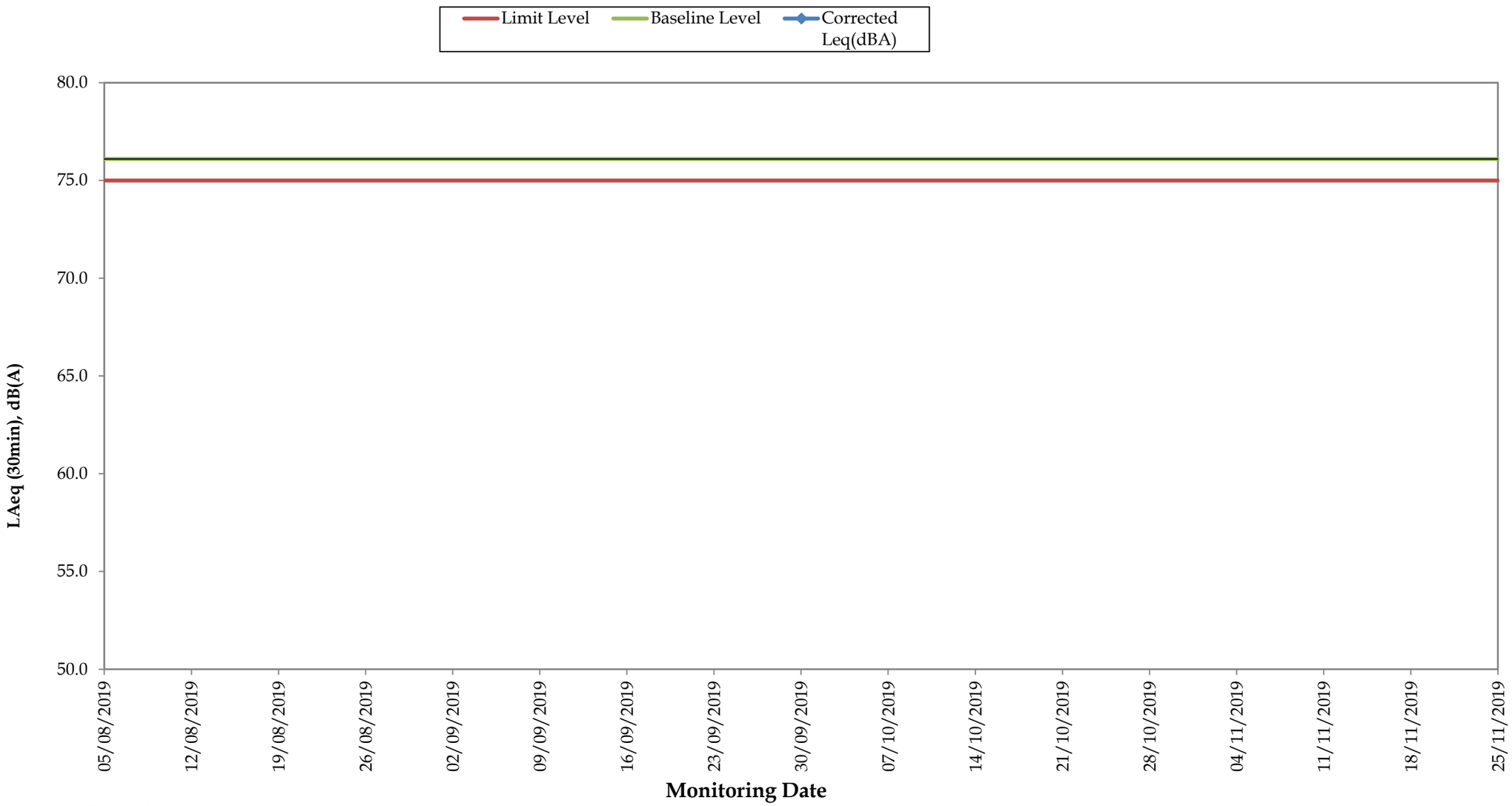
Remarks:

(a) The Measured LAeq is corrected against the corresponding Baseline Level.

(b) No correction was made as the measured noise levels were equal to or below the baseline noise levels.

(c) The noise monitoring results carried out at NMS-CA-8 on **7, 13, 19 and 25 November 2019** and NMS-CA-10 on **7 and 25 November 2019** are higher than the daytime construction noise criterion. However, those results are not considered as exceedances as they are below the limit level after deducting the baseline noise level.

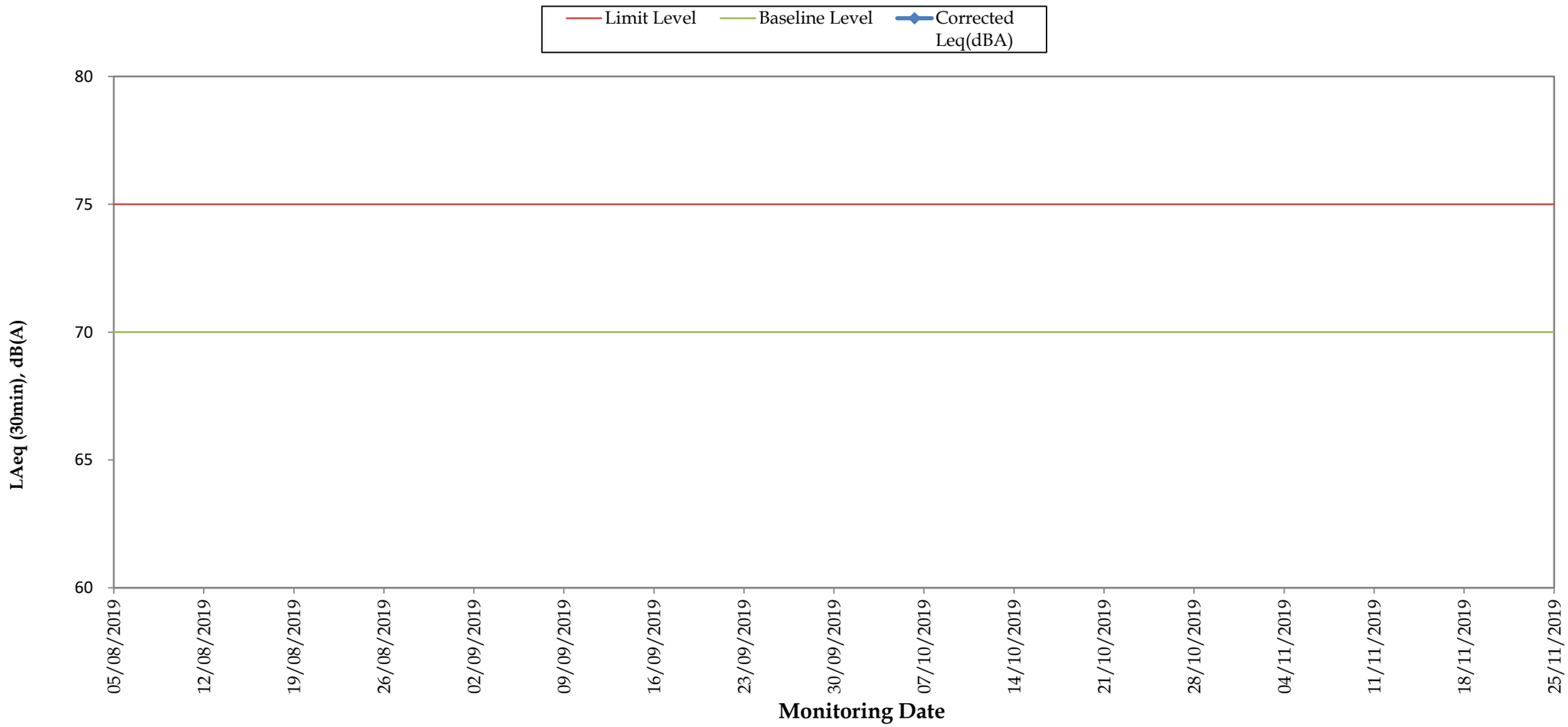
## Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months




Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are equal to or below baseline level.

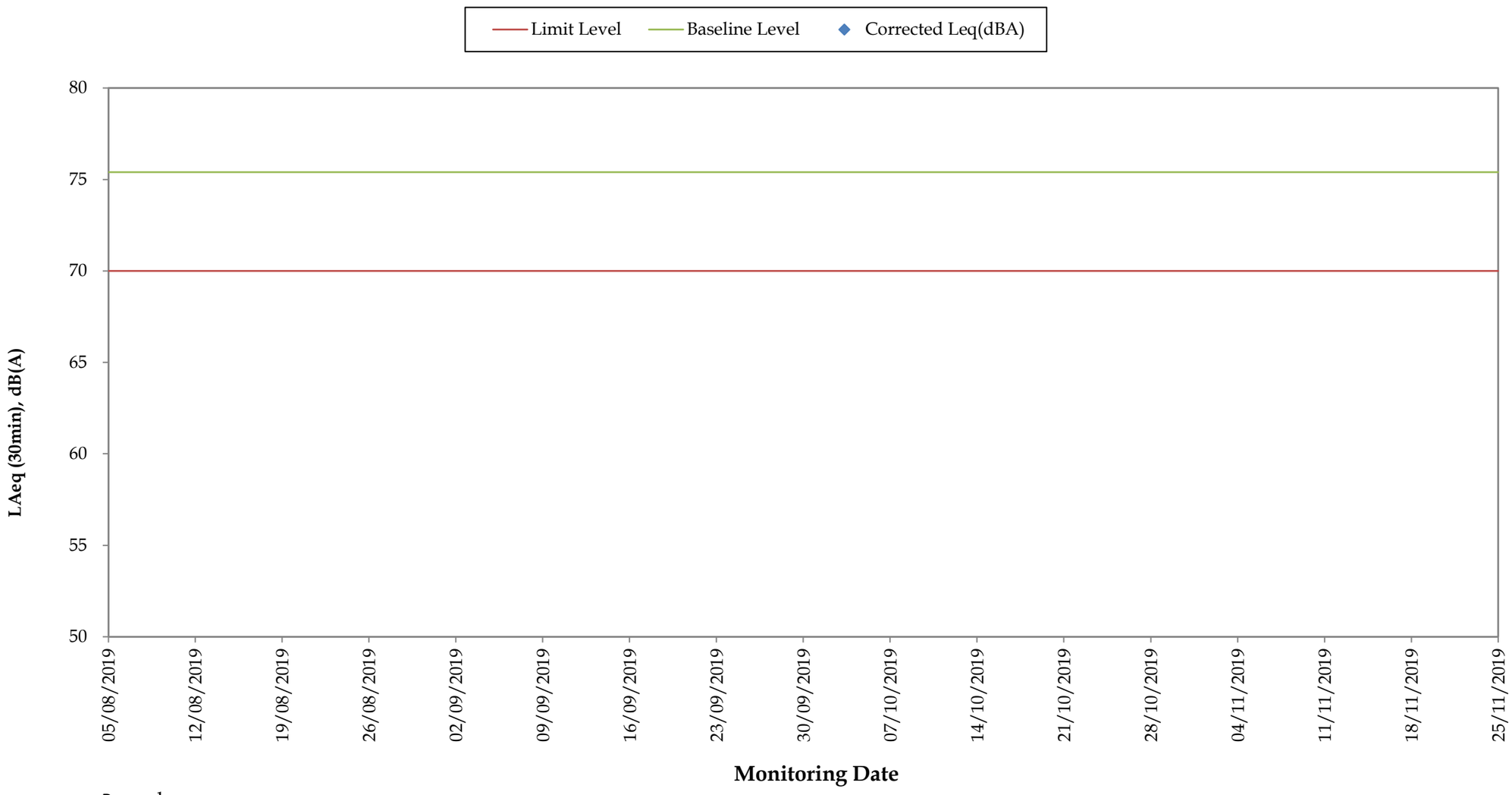
## Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min) for the Past 4 Months




Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are equal to or below baseline level.

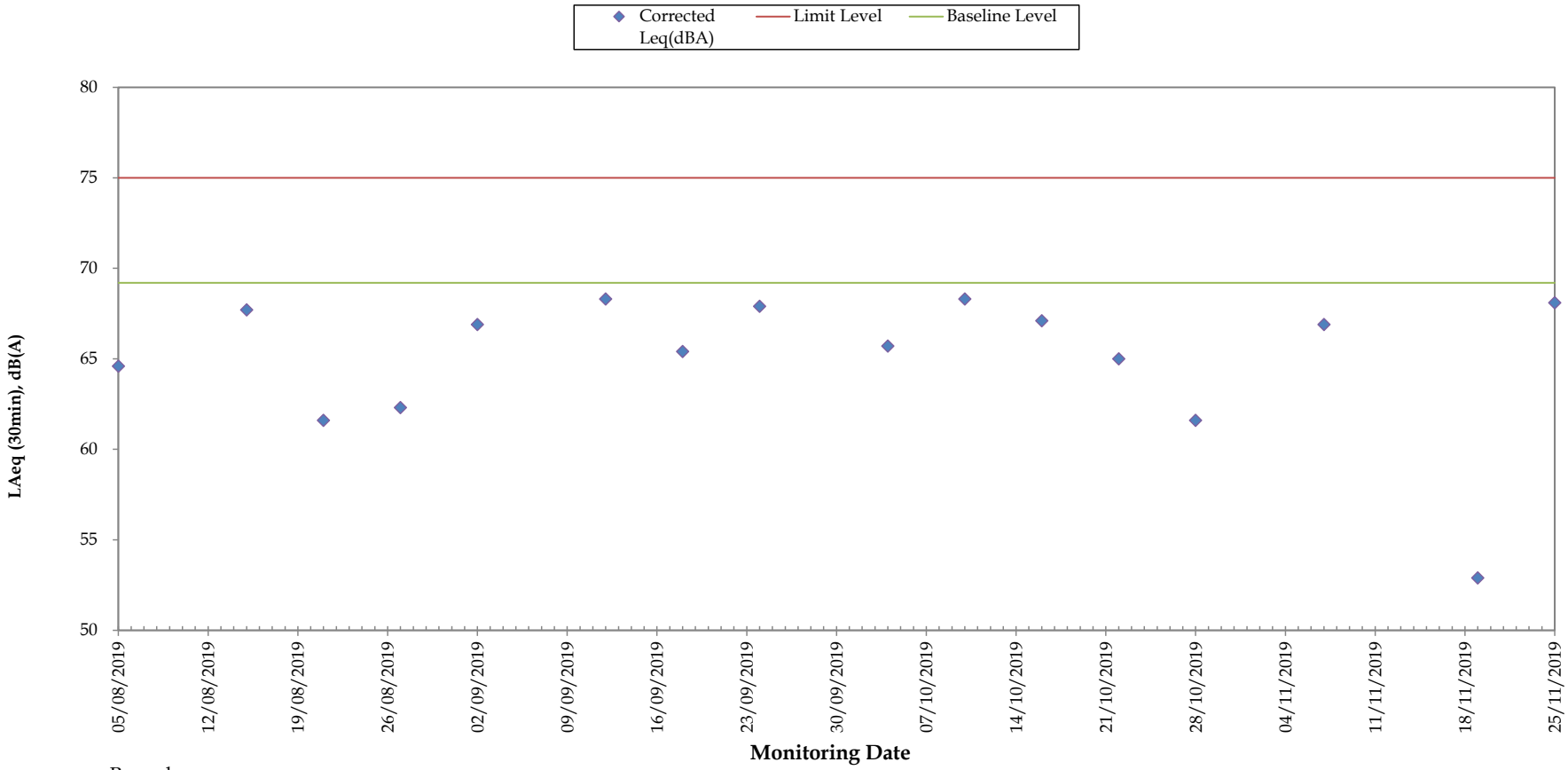
## Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months




Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are equal to or below baseline level.
- The limit level was updated from 78dB(A) to 79 dB(A) on 22 Aug 2013 as per the latest CNMP and CNMMP.
- The limit level was updated from 79dB(A) to 70dB(A)/65dB(A) (during normal/examination period) from April 2016, as the continuous noise monitoring was completed in March 2016 according to the latest CNMP

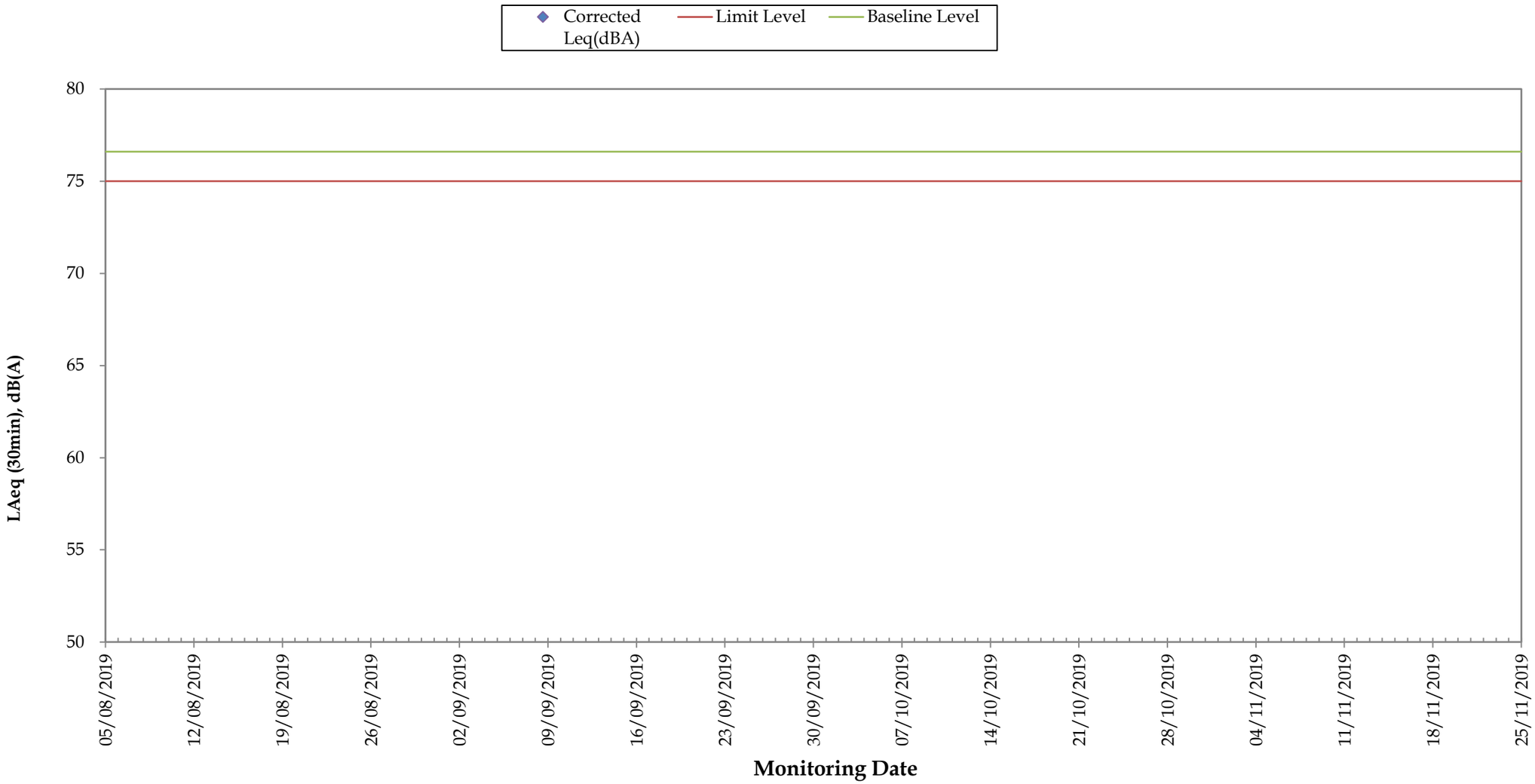
## Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min) ) for the Past 4 Months




Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are equal to or below baseline level.

## Regular Noise Monitoring Results at NMS-CA-10 (Chat Ma Mansion) (LAeq, 30min) for the Past 4 Months




Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are equal to or below baseline level.

Annex J

# Construction Dust Monitoring Results and Wind Data Monitoring Results

**Annex J** **Construction Dust Monitoring Results**

Station DMS-6 Katherine Building

| Start | | Finish | | Weather | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time | Flow Rate ($m^3$/min) | | | TSP Conc. | Action Level | Limit Level | Observations / Remarks | Sampler | Filter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | | Initial | Final | Initial | Final | (hrs) | Initial | Final | Average | ($\mu g/m^3$) | ($\mu g/m^3$) | ($\mu g/m^3$) | | ID | ID |
| 1-Nov-19 | 8:55 | 2-Nov-19 | 8:55 | Sunny | 2.7148 | 2.8367 | 21128.30 | 21152.30 | 24.00 | 1.30 | 1.30 | 1.30 | 65 | 156.8 | 260 | - | 0107 | 050116 |
| 7-Nov-19 | 11:02 | 8-Nov-19 | 11:02 | Sunny | 2.7147 | 2.7870 | 21152.30 | 21176.30 | 24.00 | 1.30 | 1.30 | 1.30 | 39 | 156.8 | 260 | - | 0107 | 050123 |
| 13-Nov-19 | 11:05 | 14-Nov-19 | 11:05 | Sunny | 2.7338 | 2.8838 | 21176.30 | 21200.30 | 24.00 | 1.30 | 1.30 | 1.30 | 80 | 156.8 | 260 | - | 0107 | 050130 |
| 19-Nov-19 | 11:05 | 20-Nov-19 | 11:05 | Sunny | 2.6991 | 2.7718 | 21200.30 | 21224.30 | 24.00 | 1.41 | 1.41 | 1.41 | 36 | 156.8 | 260 | - | 0107 | 050405 |
| 25-Nov-19 | 11:07 | 26-Nov-19 | 11:07 | Sunny | 2.7066 | 2.7524 | 21224.30 | 21248.30 | 24.00 | 1.41 | 1.41 | 1.41 | 23 | 156.8 | 260 | - | 0107 | 050412 |
| 29-Nov-19 | 8:39 | 30-Nov-19 | 8:39 | Sunny | 2.7087 | 2.7740 | 21248.30 | 21272.30 | 24.00 | 1.41 | 1.41 | 1.41 | 32 | 156.8 | 260 | - | 0107 | 050419 |
| | | | | | | | | | | | | Minimum | 23 | | | | | |
| | | | | | | | | | | | | Average | 46 | | | | | |
| | | | | | | | | | | | | Maximum | 80 | | | | | |

Station DMS-7 Parc 22

| Start | | Finish | | Weather | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time | Flow Rate ($m^3$/min) | | | TSP Conc. | Action Level | Limit Level | Observations / Remarks | Sampler | Filter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | | Initial | Final | Initial | Final | (hrs) | Initial | Final | Average | ($\mu g/m^3$) | ($\mu g/m^3$) | ($\mu g/m^3$) | | ID | ID |
| 1-Nov-19 | 8:40 | 2-Nov-19 | 8:40 | Sunny | 2.6851 | 2.7415 | 10376.17 | 10400.17 | 24.00 | 1.22 | 1.22 | 1.22 | 32 | 166.7 | 260 | - | 3574 | 050115 |
| 7-Nov-19 | 10:10 | 8-Nov-19 | 10:10 | Sunny | 2.7006 | 2.7810 | 10400.17 | 10424.17 | 24.00 | 1.22 | 1.22 | 1.22 | 46 | 166.7 | 260 | - | 3574 | 050122 |
| 13-Nov-19 | 10:10 | 14-Nov-19 | 10:10 | Sunny | 2.7295 | 2.8099 | 10424.17 | 10448.17 | 24.00 | 1.22 | 1.22 | 1.22 | 46 | 166.7 | 260 | - | 3574 | 050129 |
| 19-Nov-19 | 10:12 | 20-Nov-19 | 10:12 | Sunny | 2.6946 | 2.7635 | 10448.17 | 10472.17 | 24.00 | 1.25 | 1.25 | 1.25 | 38 | 166.7 | 260 | - | 3574 | 050404 |
| 25-Nov-19 | 10:10 | 26-Nov-19 | 10:10 | Sunny | 2.6842 | 2.7784 | 10472.17 | 10496.17 | 24.00 | 1.25 | 1.25 | 1.25 | 52 | 166.7 | 260 | - | 3574 | 050411 |
| 29-Nov-19 | 8:28 | 30-Nov-19 | 8:28 | Sunny | 2.6914 | 2.7422 | 10496.17 | 10520.17 | 24.00 | 1.25 | 1.25 | 1.25 | 28 | 166.7 | 260 | - | 3574 | 050418 |
| | | | | | | | | | | | | Minimum | 28 | | | | | |
| | | | | | | | | | | | | Average | 40 | | | | | |
| | | | | | | | | | | | | Maximum | 52 | | | | | |

Station DMS-8 SKH Good Shepherd Primary School

| Start | | Finish | | Weather | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time | Flow Rate ($m^3$/min) | | | TSP Conc. | Action Level | Limit Level | Observations / Remarks | Sampler | Filter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | | Initial | Final | Initial | Final | (hrs) | Initial | Final | Average | ($\mu g/m^3$) | ($\mu g/m^3$) | ($\mu g/m^3$) | | ID | ID |
| 1-Nov-19 | 8:25 | 2-Nov-19 | 8:25 | Sunny | 2.7209 | 2.7954 | 11335.11 | 11359.11 | 24.00 | 1.26 | 1.26 | 1.26 | 41 | 152.2 | 260 | - | 3572 | 050114 |
| 7-Nov-19 | 8:10 | 8-Nov-19 | 8:10 | Sunny | 2.7213 | 2.8156 | 11359.11 | 11383.11 | 24.00 | 1.26 | 1.26 | 1.26 | 52 | 152.2 | 260 | - | 3572 | 050121 |
| 13-Nov-19 | 8:05 | 14-Nov-19 | 8:05 | Sunny | 2.7306 | 2.8177 | 11383.11 | 11407.11 | 24.00 | 1.26 | 1.26 | 1.26 | 48 | 152.2 | 260 | - | 3572 | 050128 |
| 19-Nov-19 | 8:10 | 20-Nov-19 | 8:10 | Sunny | 2.7137 | 2.7900 | 11407.11 | 11431.11 | 24.00 | 1.27 | 1.27 | 1.27 | 42 | 152.2 | 260 | - | 3572 | 050403 |
| 25-Nov-19 | 8:05 | 26-Nov-19 | 8:05 | Sunny | 2.7142 | 2.8222 | 11431.11 | 11455.11 | 24.00 | 1.27 | 1.27 | 1.27 | 59 | 152.2 | 260 | - | 3572 | 050410 |
| 29-Nov-19 | 8:17 | 30-Nov-19 | 8:17 | Sunny | 2.7006 | 2.7563 | 11455.11 | 11479.11 | 24.00 | 1.27 | 1.27 | 1.27 | 30 | 152.2 | 260 | - | 3572 | 050417 |
| | | | | | | | | | | | | Minimum | 30 | | | | | |
| | | | | | | | | | | | | Average | 45 | | | | | |
| | | | | | | | | | | | | Maximum | 59 | | | | | |

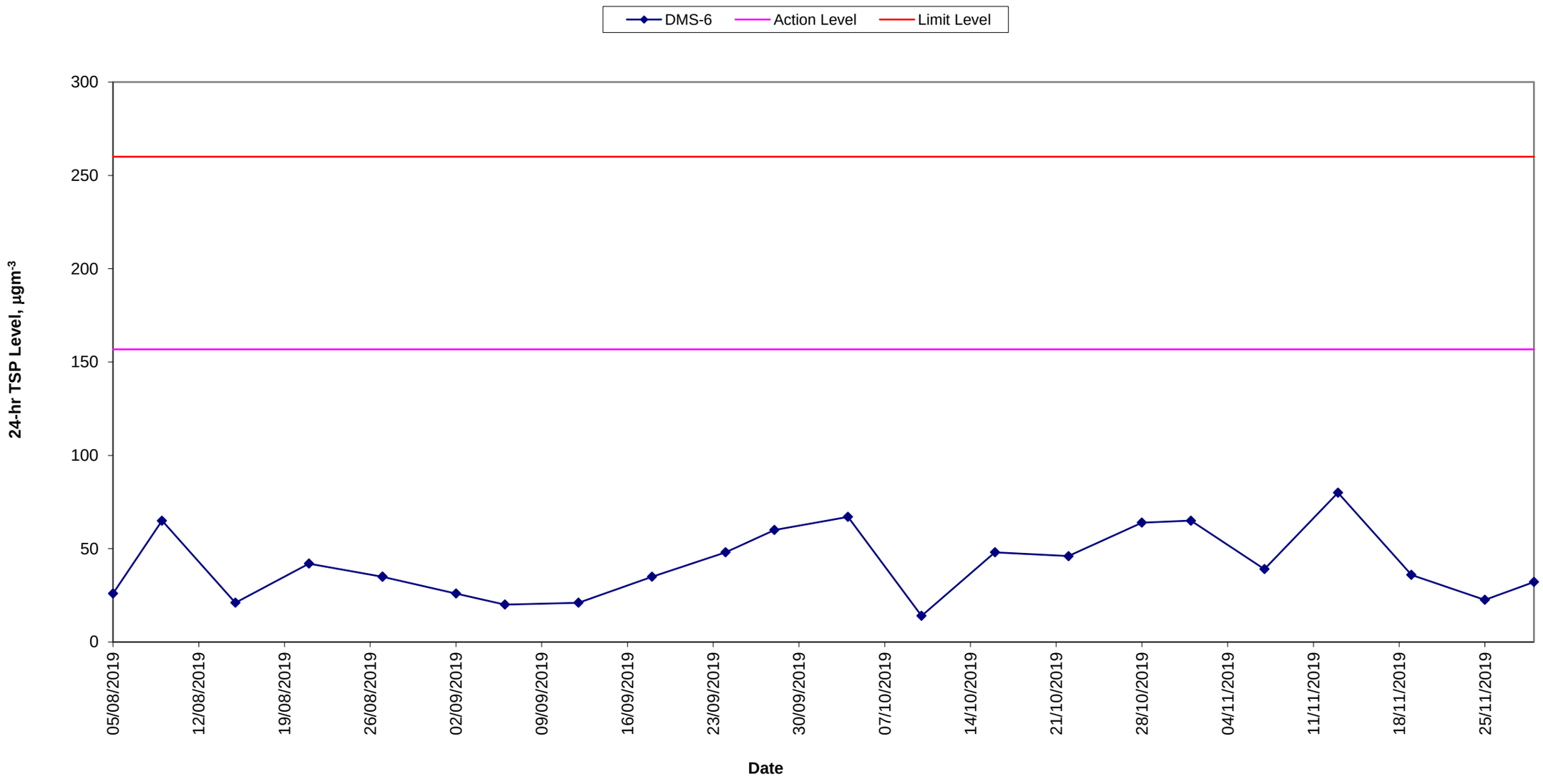
Station DMS-9 No. 12 Pau Chung Street

| Start | | Finish | | Weather | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time | Flow Rate ($m^3$/min) | | | TSP Conc. | Action Level | Limit Level | Observations / Remarks | Sampler | Filter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | | Initial | Final | Initial | Final | (hrs) | Initial | Final | Average | ($\mu g/m^3$) | ($\mu g/m^3$) | ($\mu g/m^3$) | | ID | ID |
| 1-Nov-19 | 8:15 | 2-Nov-19 | 8:15 | Sunny | 2.6948 | 2.7910 | 21300.40 | 21324.40 | 24.00 | 1.22 | 1.22 | 1.22 | 55 | 160.9 | 260 | - | 0814 | 050113 |
| 7-Nov-19 | 8:20 | 8-Nov-19 | 8:20 | Sunny | 2.7155 | 2.8386 | 21324.40 | 21348.40 | 24.00 | 1.22 | 1.22 | 1.22 | 70 | 160.9 | 260 | - | 0814 | 050120 |
| 13-Nov-19 | 8:15 | 14-Nov-19 | 8:15 | Sunny | 2.7519 | 2.8649 | 21348.40 | 21372.40 | 24.00 | 1.22 | 1.22 | 1.22 | 64 | 160.9 | 260 | - | 0814 | 050127 |
| 19-Nov-19 | 8:20 | 20-Nov-19 | 8:20 | Sunny | 2.7038 | 2.8190 | 21372.40 | 21396.40 | 24.00 | 1.27 | 1.27 | 1.27 | 63 | 160.9 | 260 | - | 0814 | 050402 |
| 25-Nov-19 | 8:15 | 26-Nov-19 | 8:15 | Sunny | 2.6944 | 2.8294 | 21396.40 | 21420.40 | 24.00 | 1.27 | 1.27 | 1.27 | 74 | 160.9 | 260 | - | 0814 | 050409 |
| 29-Nov-19 | 8:12 | 30-Nov-19 | 8:12 | Sunny | 2.7032 | 2.7717 | 21420.40 | 21444.40 | 24.00 | 1.27 | 1.27 | 1.27 | 37 | 160.9 | 260 | - | 0814 | 050416 |
| | | | | | | | | | | | | Minimum | 37 | | | | | |
| | | | | | | | | | | | | Average | 61 | | | | | |
| | | | | | | | | | | | | Maximum | 74 | | | | | |

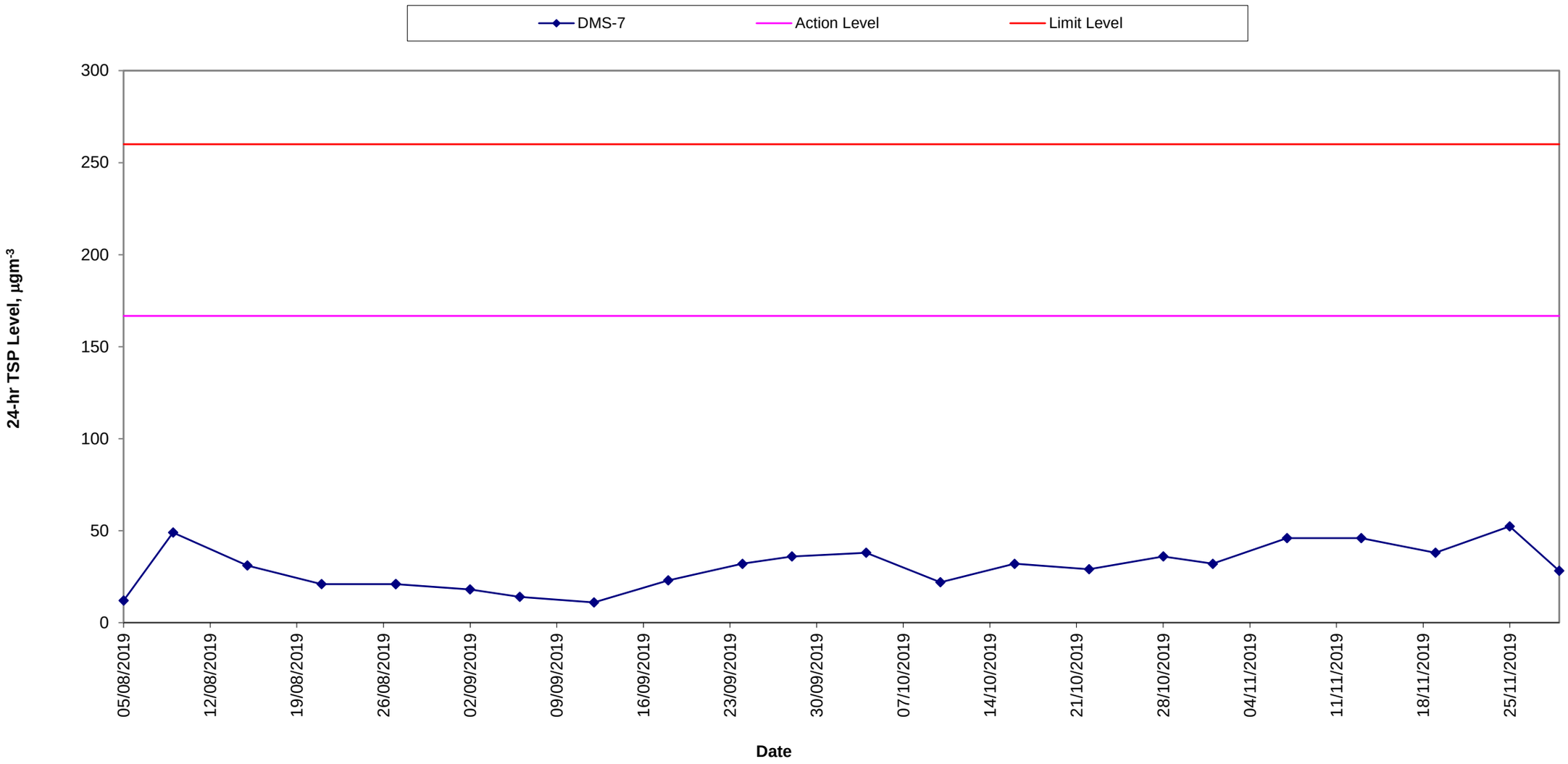
Station DMS-10 Chat Ma Mansion

| Start | | Finish | | Weather | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time | Flow Rate ($m^3$/min) | | | TSP Conc. | Action Level | Limit Level | Observations / Remarks | Sampler | Filter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | | Initial | Final | Initial | Final | (hrs) | Initial | Final | Average | ($\mu g/m^3$) | ($\mu g/m^3$) | ($\mu g/m^3$) | | ID | ID |
| 1-Nov-19 | 8:02 | 2-Nov-19 | 8:02 | Sunny | 2.7038 | 2.7655 | 11749.40 | 11773.40 | 24.00 | 1.13 | 1.13 | 1.13 | 38 | 170.4 | 260 | - | 3573 | 050112 |
| 7-Nov-19 | 8:50 | 8-Nov-19 | 8:50 | Sunny | 2.7122 | 2.8081 | 11773.40 | 11797.40 | 24.00 | 1.13 | 1.13 | 1.13 | 59 | 170.4 | 260 | - | 3573 | 050119 |
| 13-Nov-19 | 8:47 | 14-Nov-19 | 8:47 | Sunny | 2.7236 | 2.8044 | 11797.40 | 11821.40 | 24.00 | 1.13 | 1.13 | 1.13 | 50 | 170.4 | 260 | - | 3573 | 050126 |
| 19-Nov-19 | 8:47 | 20-Nov-19 | 8:47 | Sunny | 2.6984 | 2.7604 | 11821.40 | 11845.40 | 24.00 | 1.09 | 1.09 | 1.09 | 40 | 170.4 | 260 | - | 3573 | 050401 |
| 25-Nov-19 | 8:45 | 26-Nov-19 | 8:45 | Sunny | 2.7067 | 2.8112 | 11845.40 | 11869.40 | 24.00 | 1.09 | 1.09 | 1.09 | 67 | 170.4 | 260 | - | 3573 | 050408 |
| 29-Nov-19 | 8:02 | 30-Nov-19 | 8:02 | Sunny | 2.7007 | 2.7592 | 11869.40 | 11893.40 | 24.00 | 1.09 | 1.09 | 1.09 | 37 | 170.4 | 260 | - | 3573 | 050415 |
| | | | | | | | | | | | | Minimum | 37 | | | | | |
| | | | | | | | | | | | | Average | 48 | | | | | |
| | | | | | | | | | | | | Maximum | 67 | | | | | |

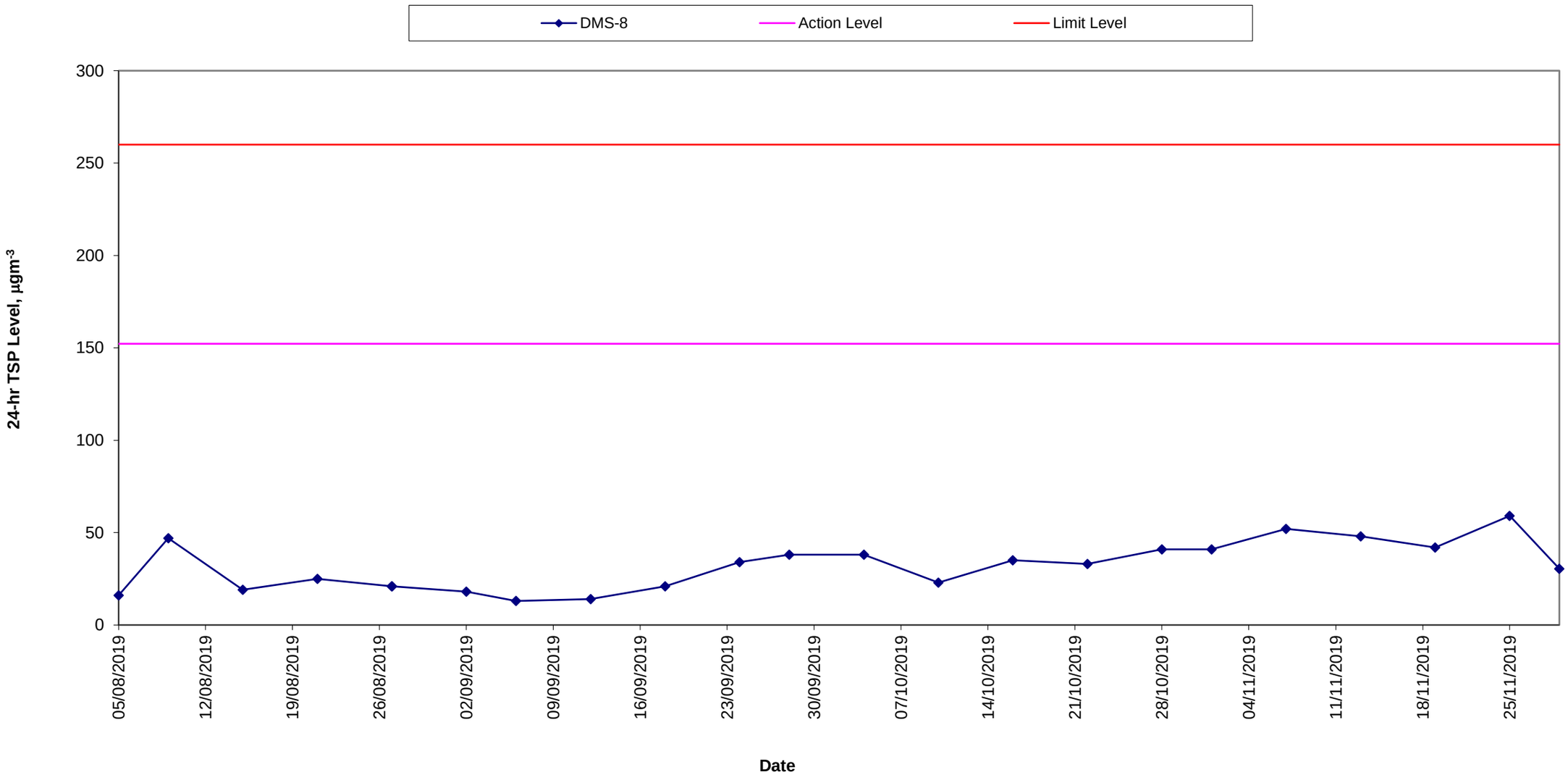
## Construction Dust Monitoring Results for the Past 4 Months
## DMS-6 (Katherine Building)



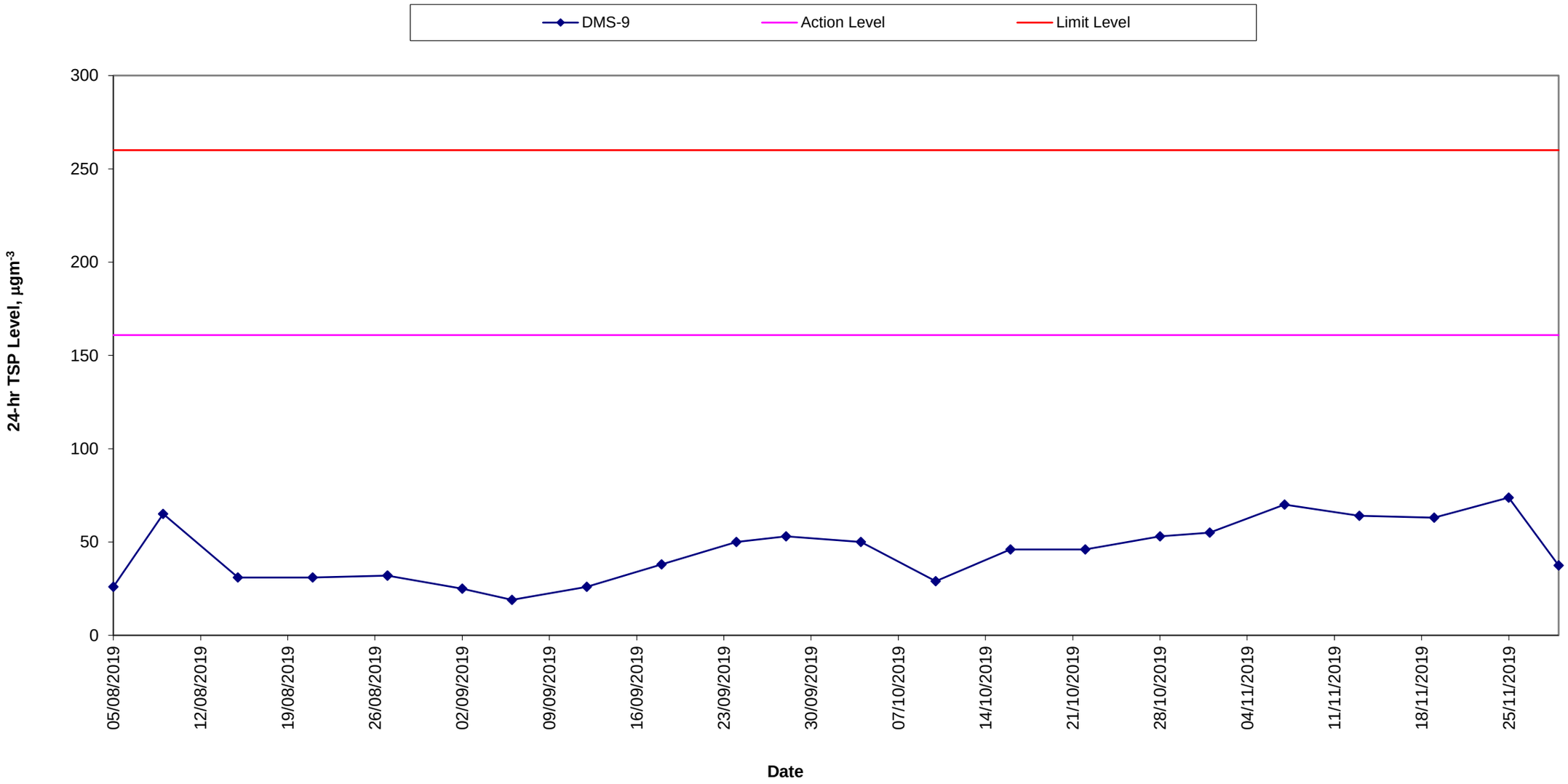
## Construction Dust Monitoring Results for the Past 4 Months
## DMS- 7 (Parc 22)



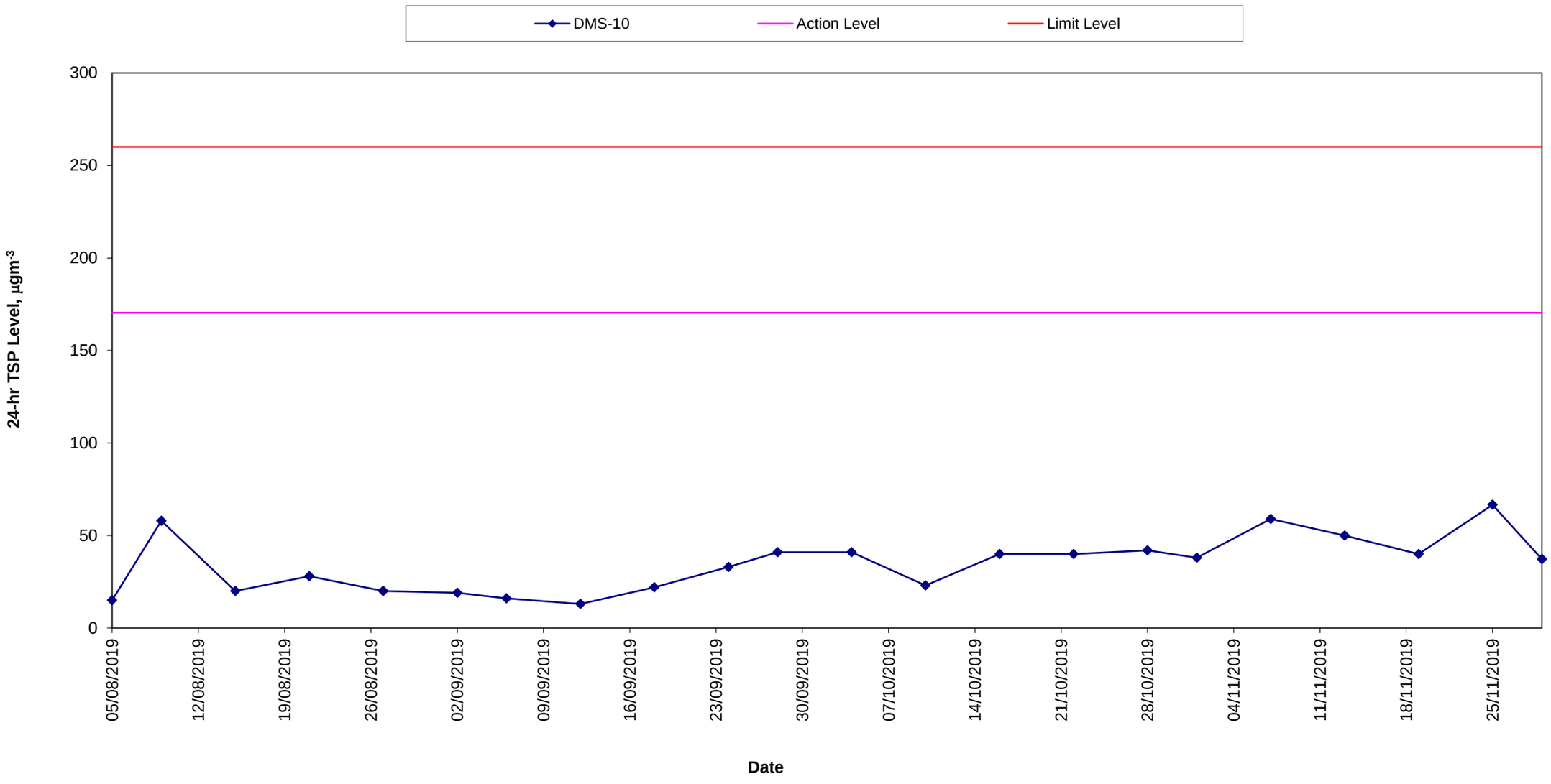
## Construction Dust Monitoring Results for the Past 4 Months
## DMS-8 (SKH Good Shepherd Primary School)



## Construction Dust Monitoring Results for the Past 4 Months
## DMS-9 (No.12 Pau Chung Street)



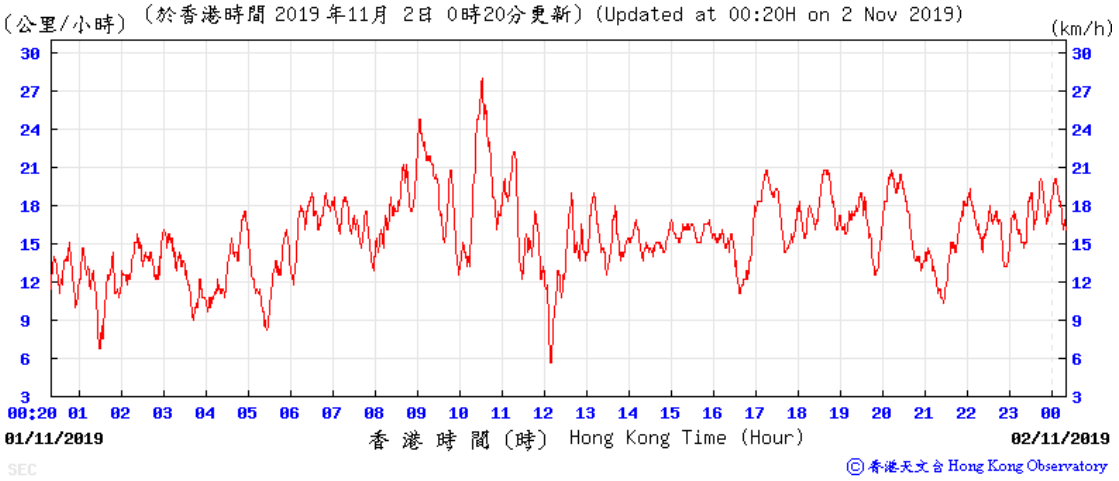
## Construction Dust Monitoring Results for the Past 4 Months
## DMS-10 (Chat Ma Mansion)



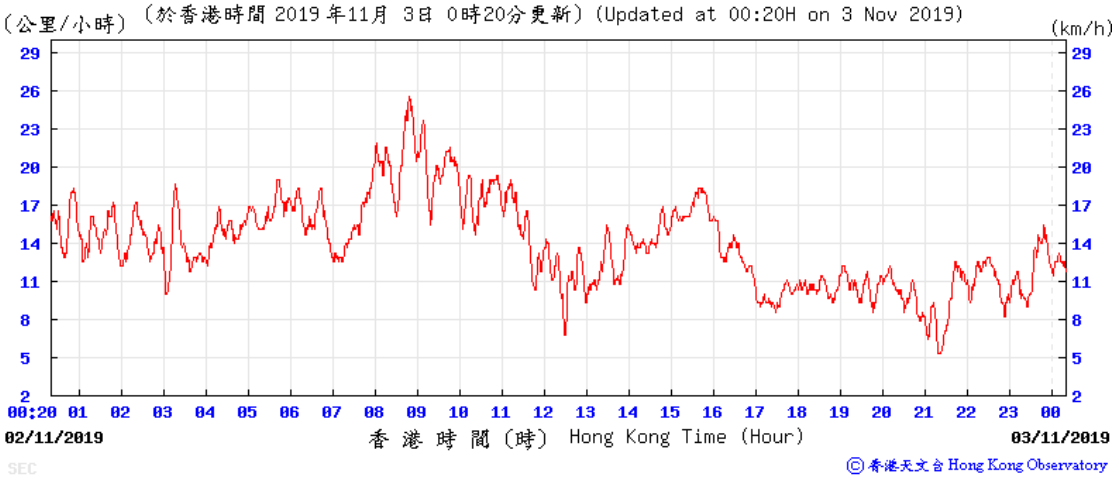
## Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

### 1-2 November 2019

Wind Speed:

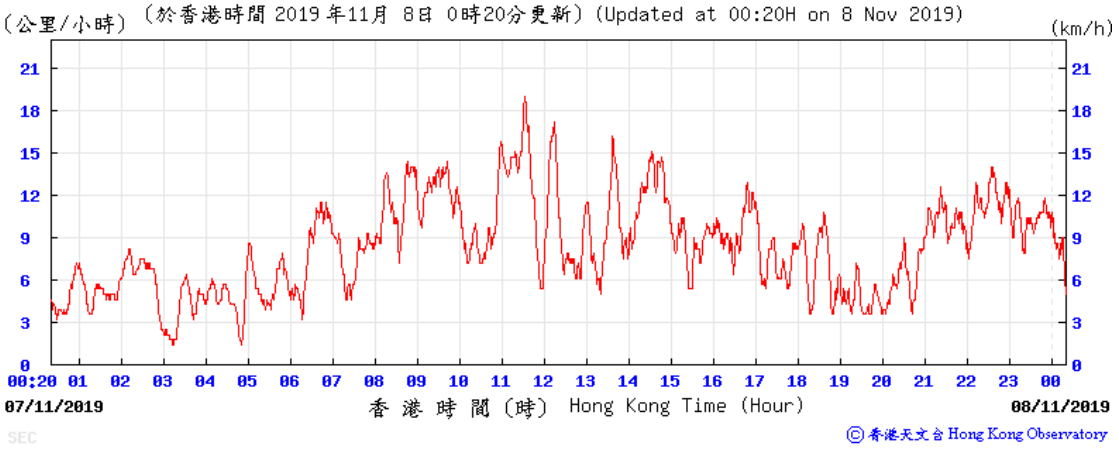



Wind Speed:

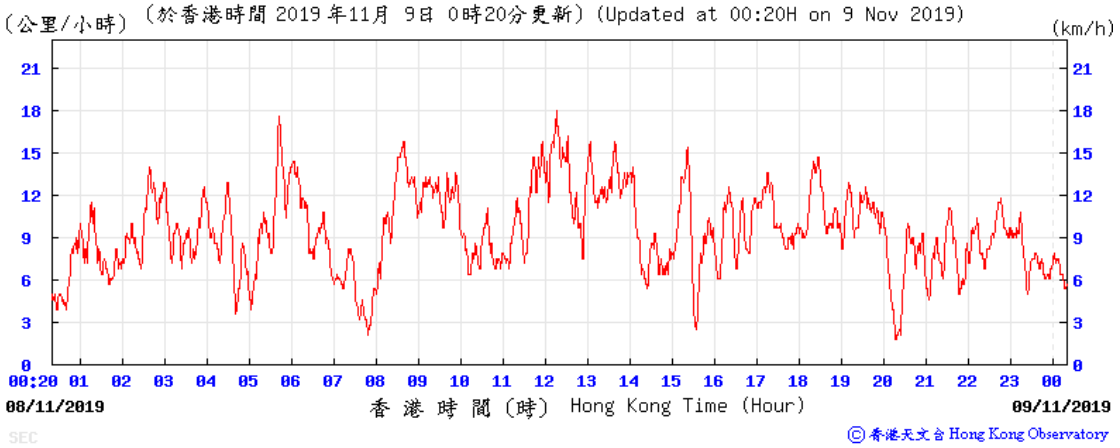



### 7-8 November 2019

Wind Speed:

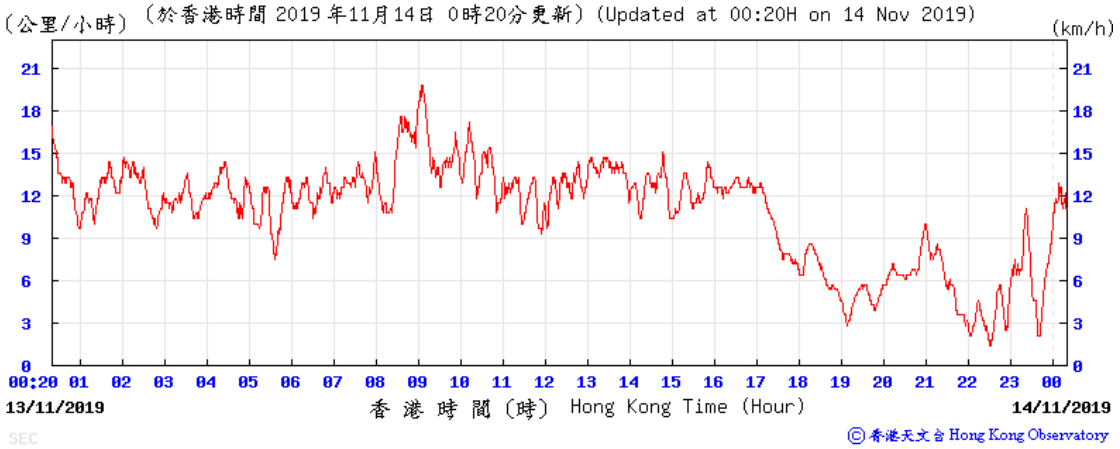


Wind Speed:

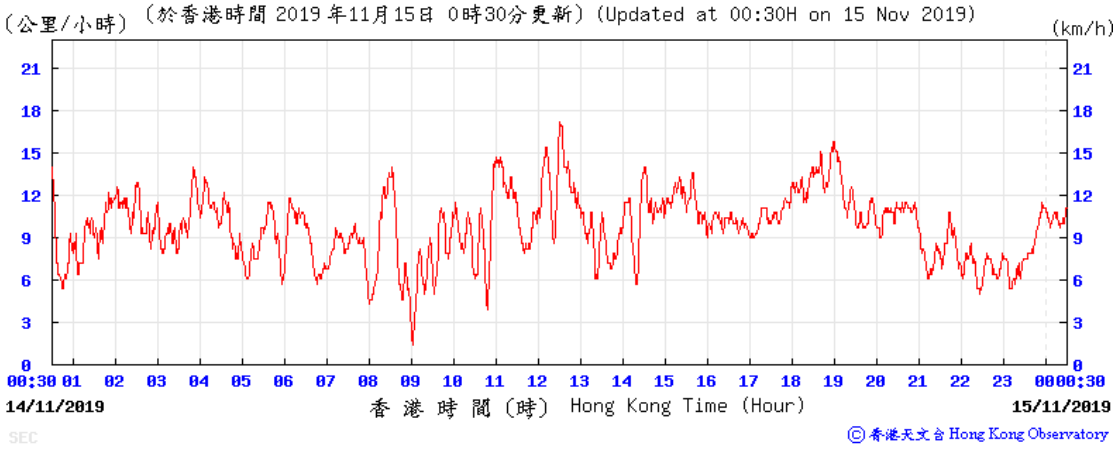



## 13-14 November 2019

Wind Speed:

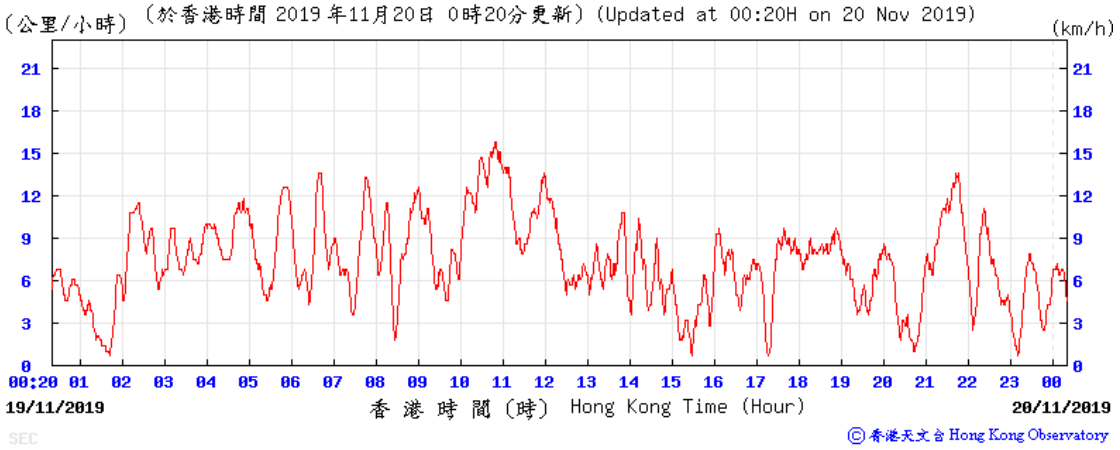



Wind Speed:

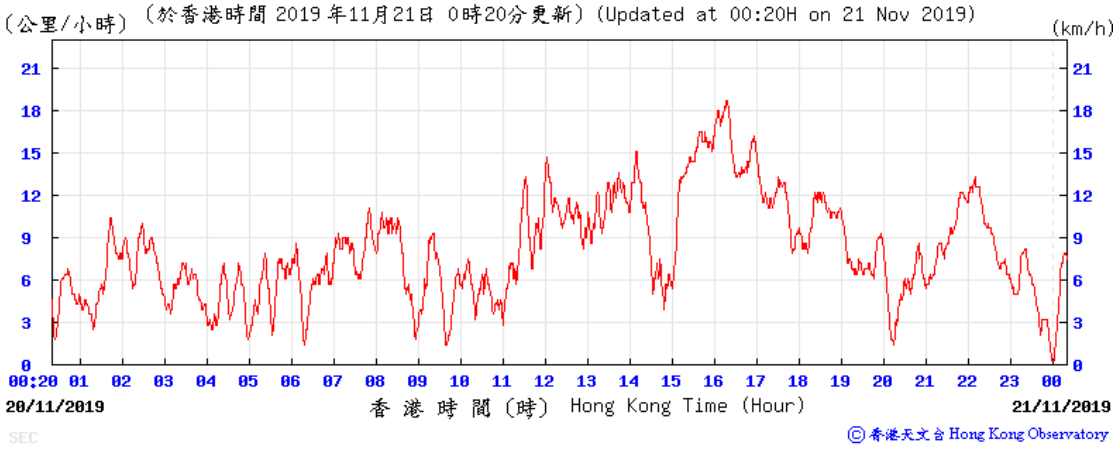


## 19-20 November 2019

Wind Speed:

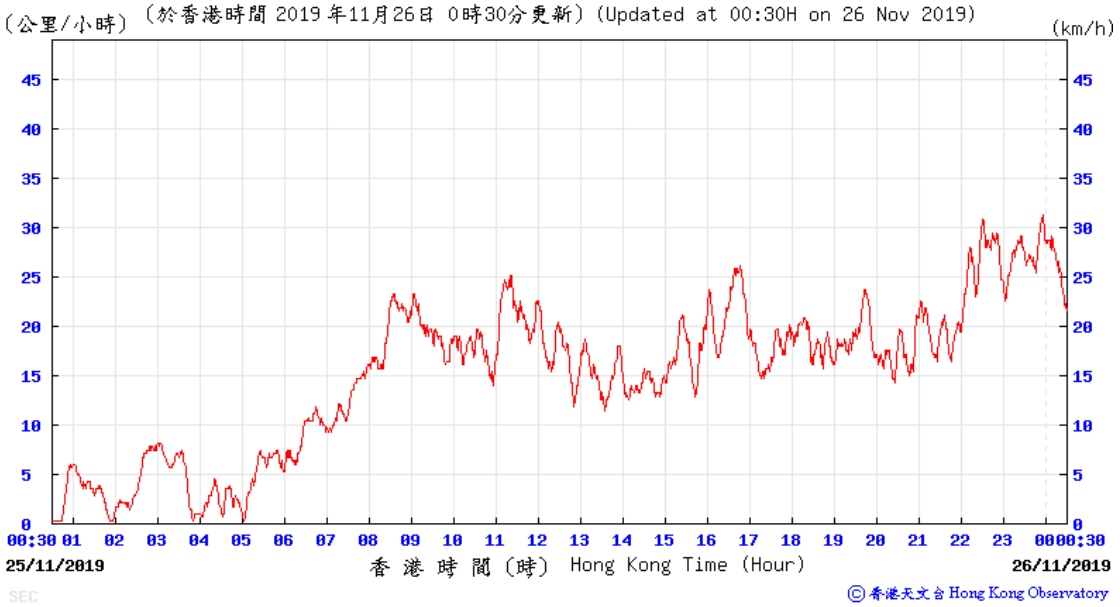



Wind Speed:

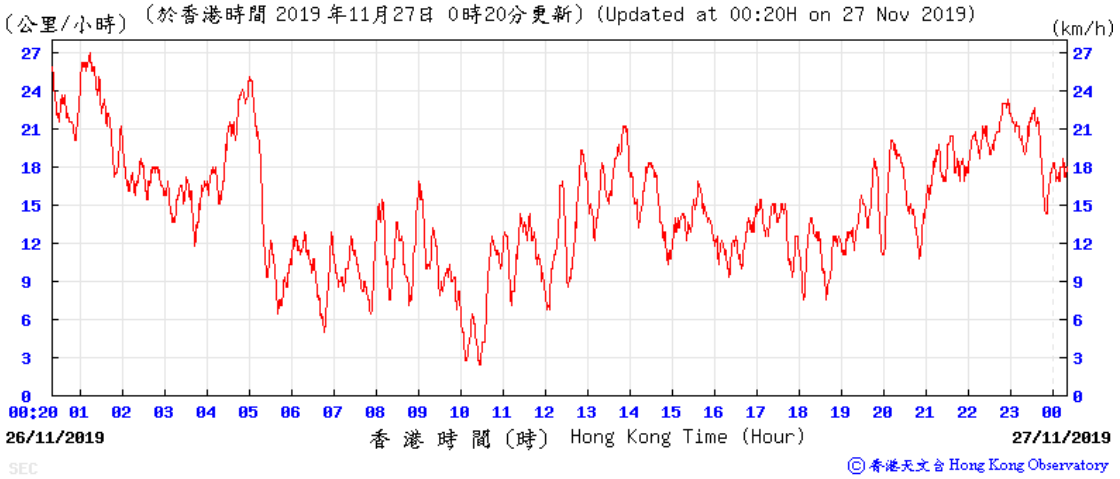



## 25-26 November 2019

Wind Speed:

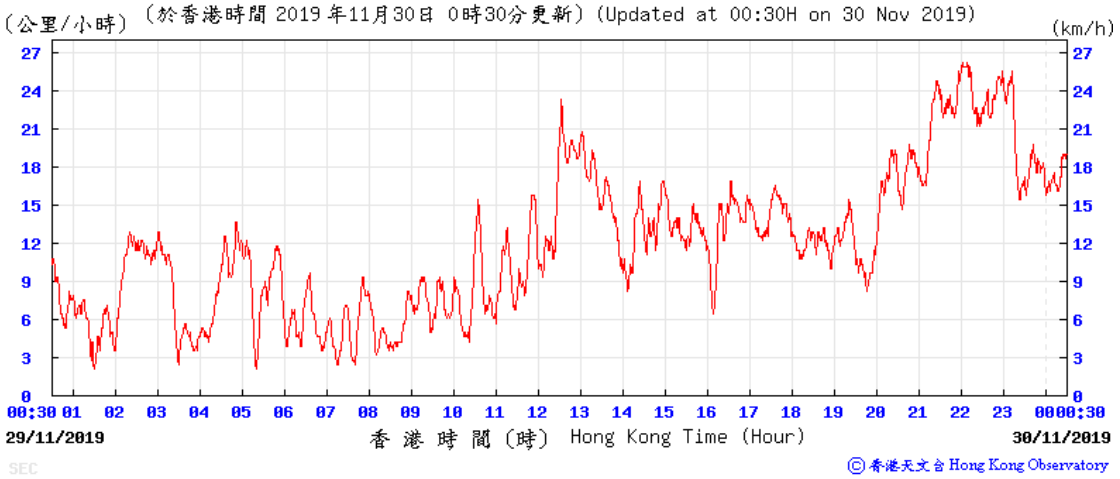


Wind Speed:

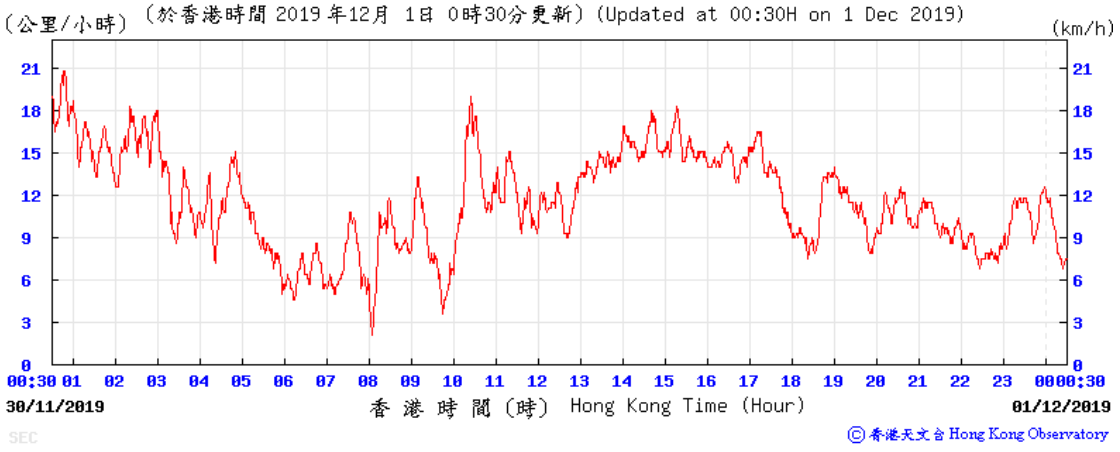



## 29-30 November 2019

Wind Speed:



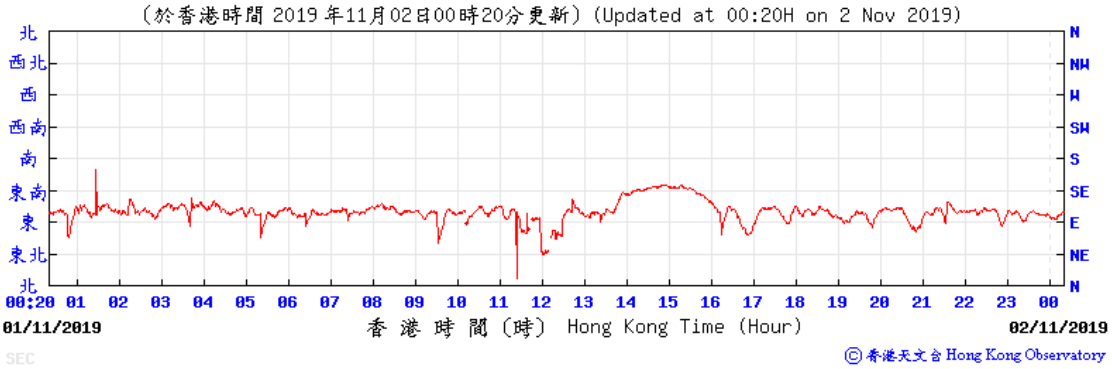

Wind Speed:



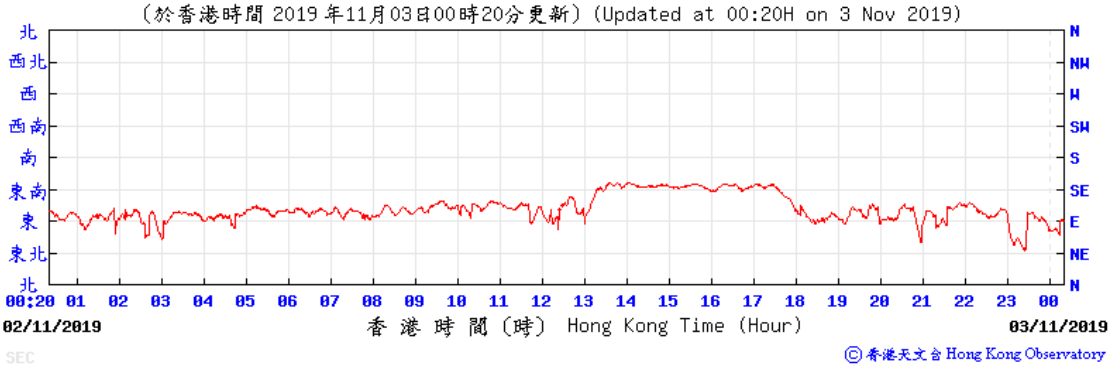
## Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

### 1-2 November 2019

Wind Direction:

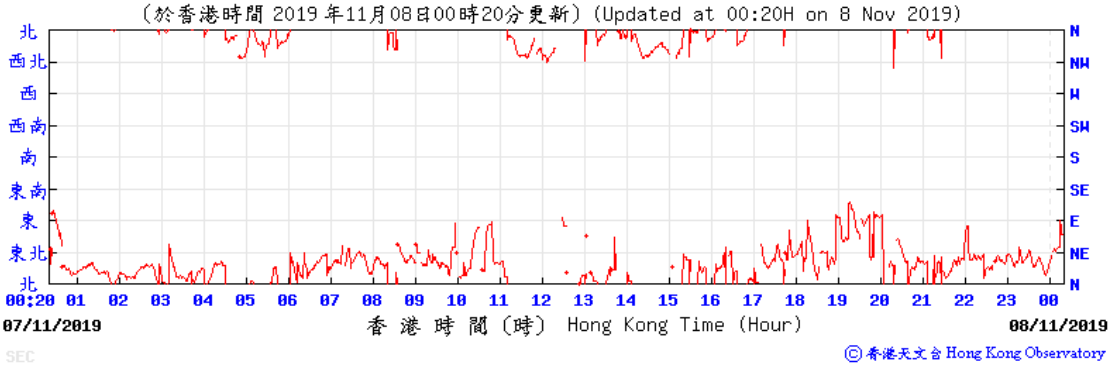



Wind Direction:

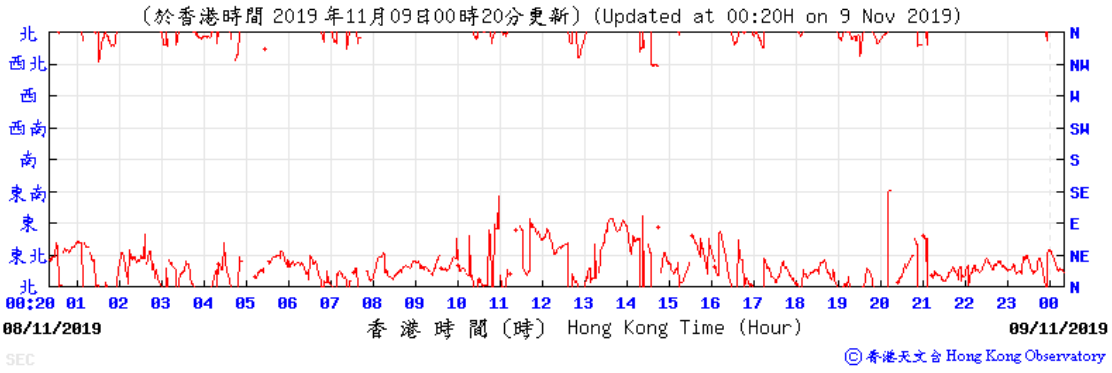



### 7-8 November 2019

Wind Direction:

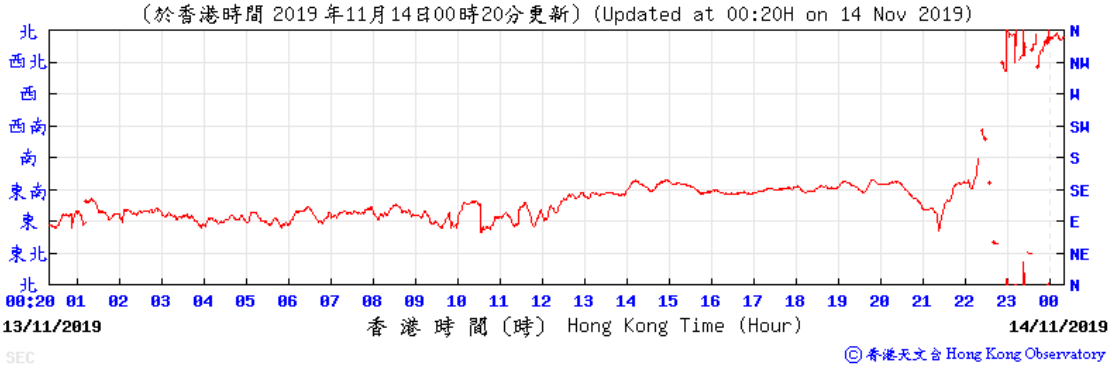


Wind Direction:

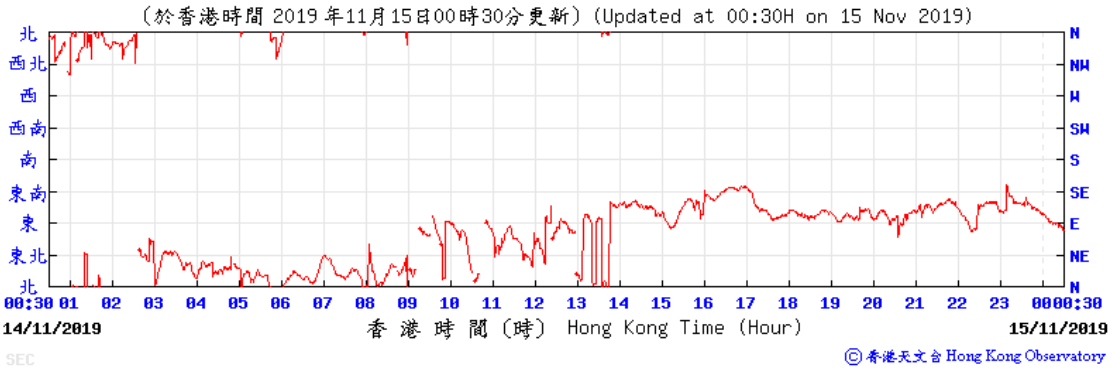



## 13-14 November 2019

Wind Direction:

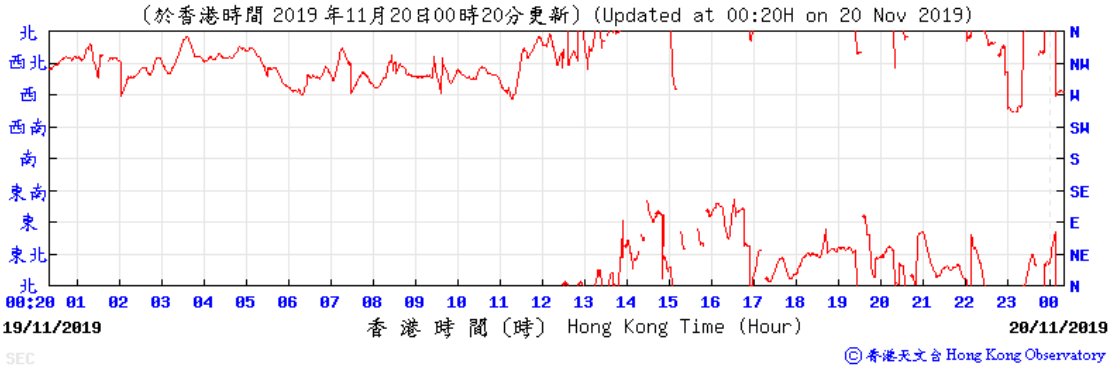



Wind Direction:

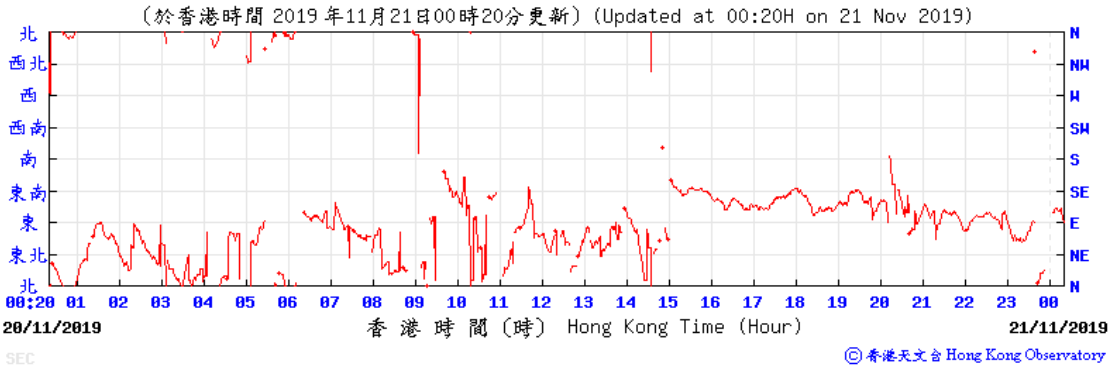



## 19-20 November 2019

Wind Direction:

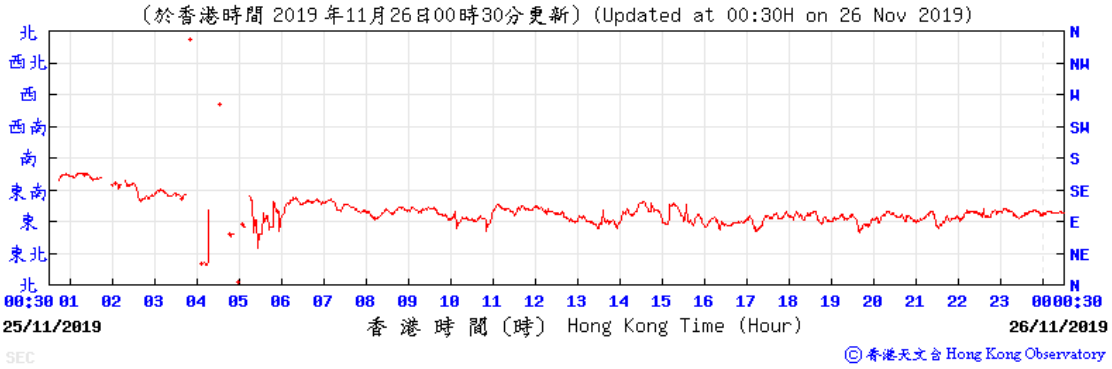


Wind Direction:

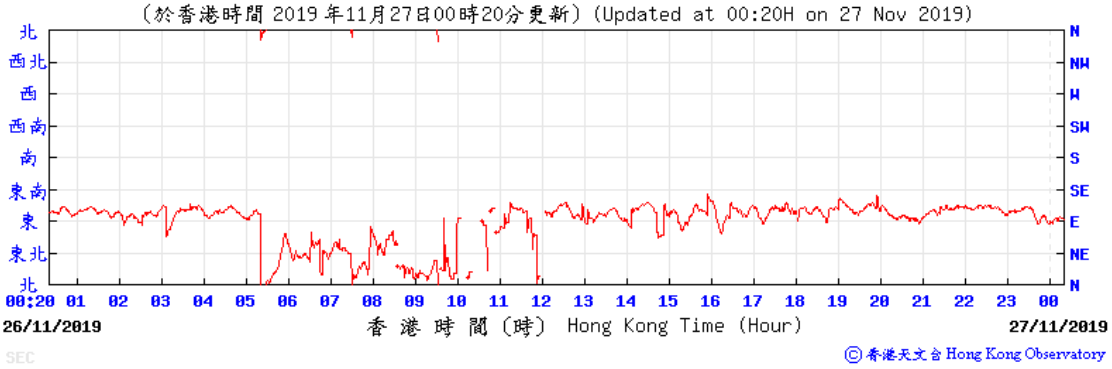



## 25-26 November 2019

Wind Direction:

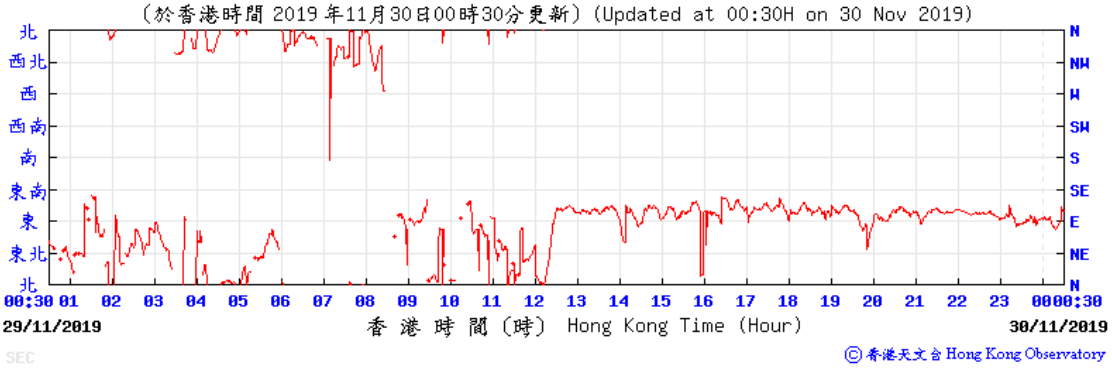



Wind Direction:

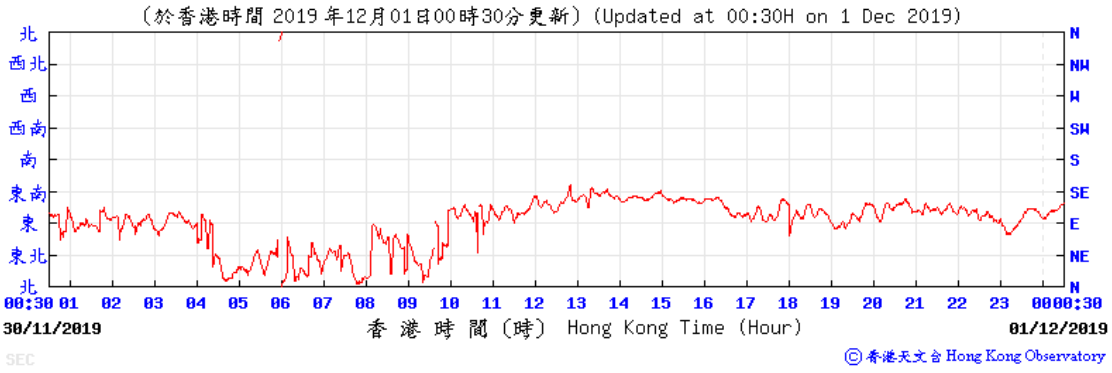



## 29-30 November 2019

Wind Direction:



Wind Direction:



Annex K

# Waste Flow Table

## Annex K – Waste Flow Table

### Monthly Summary Waste Flow Table for the year 2012-2018

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | | | Actual Quantities of Non-inert C&D Wastes Generated Monthly | | | | | Imported Fill |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Hard Rocks and Large Broken Concrete (See Note 3) | Reused in the Contract | Reused in other Projects | Disposed as Public Fill (See Note 5) | Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6) | Inert C&D Materials Delivered to 1123 Kai Tai Barging Facilities (See Note 12) | Inert C&D Materials Delivered to Receptor Site of Green Valley Landfill Ltd. (See Note 13) | Metals | Paper/ cardboard packaging | Plastics (See Note 2) | Chemical Waste (See Note 10) | Others, e.g. general refuse ( See Note 5) | |
| | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000kg) | (in '000kg) | (in '000kg) | (in'000kg) | (in '000$m^3$) | (in '000m³) |
| Sep 2012 | 0.004 | 0.000 | 0.000 | 0.000 | 0.004 | - | - | - | 0.000 | 0.000 | 5.300 | 0.000 | 0.144 | 0.000 |
| Oct 2012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | 12.800 | 0.242 | 0.013 | 0.000 | 0.514 | 0.000 |
| Nov 2012 | 0.624 | 0.000 | 0.605 | 0.000 | 0.019 | - | - | - | 0.000 | 0.154 | 0.002 | 0.000 | 0.172 | 6.804 |
| Dec 2012 | 16.844 | 0.000 | 0.000 | 0.000 | 0.005 | 16.839 | - | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.057 | 0.000 |
| Sub-total | 17.472 | 0.000 | 0.605 | 0.000 | 0.028 | 16.839 | 0.000 | 0.000 | 12.800 | 0.396 | 5.315 | 0.000 | 0.887 | 6.804 |
| Jan 2013 | 19.828 | 0.000 | 0.000 | 0.000 | 0.006 | 19.822 | - | - | 0.000 | 0.036 (See Note 7) | 0.416 | 0.000 | 0.081 (See Note 8) | 0.000 |
| Feb 2013 | 8.372 | 0.000 | 0.000 | 0.000 | 0.005 | 8.366 | - | - | 0.000 | 0.036 | 0.443 | 0.000 | 0.021 | 0.000 |
| Mar 2013 | 14.673 | 0.000 | 0.000 | 0.000 | 0.000 | 14.673 | - | - | 0.000 | 0.036 | 0.463 | 0.000 | 0.064 (See Note 9) | 0.000 |
| Apr 2013 | 13.557 | 0.000 | 0.000 | 0.000 | 0.025 | 13.533 | - | - | 0.000 | 0.036 | 0.148 | 0.000 | 0.086 | 0.000 |
| May 2013 | 9.969 | 0.000 | 0.000 | 0.000 | 0.000 | 9.969 | - | - | 0.000 | 0.000 | 0.481 | 0.000 | 0.065 | 0.000 |
| Jun 2013 | 5.538 | 0.000 | 0.000 | 0.000 | 0.000 | 5.538 | - | - | 0.000 | 0.045 | 0.784 | 0.32 (See Note 11) | 0.065 | 0.000 |
| Jul 2013 | 6.116 | 0.000 | 0.000 | 0.000 | 0.000 | 6.116 | - | - | 0.000 | 0.063 | 0.868 | 0.400 | 0.058 | 0.000 |
| Aug 2013 | 11.537 | 0.000 | 0.000 | 0.000 | 0.000 | 11.537 | - | - | 0.000 | 0.068 | 0.464 | 0.000 | 0.071 | 0.000 |
| Sep 2013 | 4.641 | 0.000 | 0.000 | 0.000 | 0.000 | 4.641 | - | - | 0.000 | 0.027 | 0.522 | 0.000 | 0.110 | 0.000 |
| Oct 2013 | 9.708 | 0.000 | 0.000 | 0.000 | 0.000 | 9.708 | - | - | 0.000 | 0.036 | 0.348 | 0.000 | 0.086 | 0.000 |
| Nov 2013 | 7.199 | 0.000 | 0.000 | 0.000 | 0.000 | 7.199 | - | - | 0.000 | 0.068 | 0.506 | 0.000 | 0.678 | 0.000 |
| Dec 2013 | 6.973 | 0.000 | 0.000 | 0.000 | 0.000 | 6.973 | - | - | 0.000 | 0.090 | 0.383 | 0.000 | 1.344 | 0.000 |
| Sub-total | 118.111 | 0.000 | 0.000 | 0.000 | 0.036 | 118.075 | 0.000 | 0.000 | 0.000 | 0.541 | 5.826 | 0.720 | 2.729 | 0.000 |
| Jan 2014 | 11.870 | 0.000 | 0.000 | 0.000 | 0.000 | 11.870 | - | - | 0.000 | 0.121 | 0.270 | 0.400 | 0.100 | 0.000 |
| Feb 2014 | 15.316 | 0.000 | 0.000 | 0.000 | 0.000 | 15.316 | - | - | 0.000 | 0.067 | 0.396 | 0.000 | 0.095 | 0.000 |
| Mar 2014 | 18.734 | 0.000 | 0.000 | 0.000 | 0.000 | 18.734 | - | - | 0.000 | 0.067 | 0.320 | 0.200 | 0.107 | 0.000 |
| Apr 2014 | 23.539 | 0.000 | 0.000 | 0.000 | 0.000 | 23.539 | - | - | 0.000 | 0.000 | 0.344 | 0.415 | 0.064 | 0.000 |
| May 2014 | 11.327 | 0.000 | 0.000 | 0.000 | 0.000 | 11.327 | - | - | 0.000 | 0.000 | 0.371 | 0.000 | 0.130 | 0.000 |
| Jun 2014 | 10.440 | 0.000 | 0.000 | 0.000 | 0.000 | 10.440 | - | - | 0.000 | 0.090 | 0.332 | 0.000 | 0.164 | 0.000 |
| Jul 2014 | 2.103 | 0.000 | 0.000 | 0.000 | 0.000 | 2.103 | - | - | 0.000 | 0.099 | 0.544 | 0.200 | 0.131 | 0.000 |
| Aug 2014 | 1.446 | 0.000 | 0.000 | 0.000 | 0.000 | 1.446 | - | - | 0.000 | 0.189 | 0.584 | 0.000 | 0.129 | 0.000 |
| Sep 2014 | 1.980 | 0.000 | 0.000 | 0.000 | 0.000 | 1.980 | - | - | 0.000 | 0.225 | 0.284 | 0.000 | 0.099 | 0.000 |
| Oct 2014 | 16.902 | 0.000 | 0.000 | 0.000 | 0.000 | 16.902 | - | - | 0.000 | 0.050 | 0.492 | 1.120 | 0.109 | 0.000 |
| Nov 2014 | 27.687 | 0.000 | 0.000 | 0.000 | 0.000 | 27.687 | - | - | 0.000 | 0.140 | 0.352 | 0.000 | 0.083 | 0.000 |
| Dec 2014 | 44.771 | 0.000 | 0.000 | 0.000 | 0.000 | 44.771 | - | - | 0.000 | 0.090 | 0.284 | 0.400 | 0.103 | 0.000 |
| Sub-total | 186.115 | 0.000 | 0.000 | 0.000 | 0.000 | 186.115 | 0.000 | 0.000 | 0.000 | 1.048 | 4.573 | 2.335 | 1.314 | 0.000 |

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | | | Actual Quantities of Non-inert C&D Wastes Generated Monthly | | | | | Imported Fill |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Hard Rocks and Large Broken Concrete (See Note 3) | Reused in the Contract | Reused in other Projects | Disposed as Public Fill (See Note 5) | Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6) | Inert C&D Materials Delivered to 1123 Kai Tai Barging Facilities (See Note 12) | Inert C&D Materials Delivered to Receptor Site of Green Valley Landfill Ltd. (See Note 13) | Metals | Paper/ cardboard packaging | Plastics (See Note 2) | Chemical Waste (See Note 10) | Others, e.g. general refuse ( See Note 5) | |
| | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000kg) | (in '000kg) | (in '000kg) | (in'000kg) | (in '000$m^3$) | (in '000m³) |
| Jan 2015 | 64.165 | 0.000 | 0.000 | 0.266 | 0.000 | 63.899 | - | - | 0.000 | 0.077 | 0.328 | 0.180 | 0.150 | 0.000 |
| Feb 2015 | 46.884 | 0.000 | 0.000 | 2.599 | 0.000 | 44.285 | - | - | 0.000 | 0.090 | 3.102 | 0.000 | 0.106 | 0.000 |
| Mar 2015 | 41.498 | 0.000 | 0.000 | 0.000 | 0.000 | 41.498 | - | - | 0.000 | 0.072 | 2.321 | 0.600 | 0.126 | 0.000 |
| Apr 2015 | 13.049 | 0.000 | 0.000 | 0.000 | 0.000 | 13.049 | - | - | 0.000 | 0.081 | 1.598 | 0.000 | 0.119 | 0.000 |
| May 2015 | 54.559 | 0.000 | 0.000 | 0.000 | 0.000 | 54.559 | - | - | 0.000 | 0.063 | 0.548 | 0.000 | 0.099 | 0.000 |
| Jun 2015 | 48.857 | 0.000 | 0.000 | 0.000 | 0.000 | 48.857 | - | - | 0.000 | 0.041 | 0.880 | 0.000 | 0.144 | 0.000 |
| Jul 2015 | 34.471 | 0.000 | 0.000 | 0.000 | 0.000 | 34.471 | - | - | 0.000 | 0.090 | 4.972 | 0.720 | 0.218 | 0.000 |
| Aug 2015 | 28.330 | 0.000 | 0.000 | 0.000 | 0.000 | 28.330 | - | - | 0.000 | 0.077 | 1.027 | 1.240 | 0.244 | 0.000 |
| Sep 2015 | 25.376 | 0.000 | 0.000 | 0.000 | 0.000 | 25.376 | - | - | 0.000 | 0.068 | 0.845 | 2.080 | 0.224 | 0.000 |
| Oct 2015 | 45.061 | 0.000 | 0.000 | 0.000 | 0.000 | 45.061 | - | - | 0.000 | 0.072 | 0.743 | 0.000 | 0.336 | 0.000 |
| Nov 2015 | 45.607 | 0.000 | 0.000 | 0.000 | 0.000 | 45.607 | - | - | 0.000 | 0.085 | 4.719 | 1.760 | 0.344 | 0.000 |
| Dec 2015 | 43.527 | 0.000 | 0.000 | 0.000 | 0.000 | 43.527 | - | - | 0.000 | 0.090 | 0.669 | 0.048 | 0.286 | 0.000 |
| Sub-total | 491.384 | 0.000 | 0.000 | 2.865 | 0.000 | 488.519 | 0.000 | 0.000 | 0.000 | 0.906 | 21.752 | 6.628 | 2.396 | 0.000 |
| Jan 2016 | 28.064 | 0.000 | 0.000 | 0.000 | 0.000 | 28.064 | - | - | 0.000 | 0.855 | 0.494 | 0.000 | 0.276 | 0.000 |
| Feb 2016 | 4.768 | 0.000 | 0.000 | 0.000 | 0.000 | 4.768 | - | - | 0.000 | 0.230 | 0.327 | 0.000 | 0.280 | 0.000 |
| Mar 2016 | 13.662 | 0.000 | 0.000 | 0.000 | 0.000 | 13.662 | - | - | 0.000 | 0.000 | 0.316 | 0.000 | 0.232 | 0.000 |
| Apr 2016 | 21.282 | 0.000 | 0.000 | 0.000 | 0.000 | 21.282 | - | - | 0.000 | 0.167 | 0.674 | 4.000 | 0.378 | 0.000 |
| May 2016 | 28.466 | 0.000 | 0.000 | 0.000 | 0.000 | 28.466 | - | - | 0.000 | 0.072 | 0.580 | 0.000 | 0.315 | 0.000 |
| Jun 2016 | 29.018 | 0.000 | 0.000 | 0.000 | 0.000 | 29.018 | - | - | 0.000 | 0.045 | 1.480 | 3.360 | 0.292 | 0.000 |
| Jul 2016 | 3.727 | 0.000 | 0.000 | 0.000 | 0.000 | 3.727 | - | - | 0.000 | 0.045 | 0.860 | 0.000 | 0.347 | 0.000 |
| Aug 2016 | 0.197 | 0.000 | 0.000 | 0.000 | 0.000 | 0.197 | - | - | 0.000 | 0.140 | 1.648 | 0.000 | 0.382 | 0.000 |
| Sep 2016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | 0.000 | 0.122 | 0.680 | 0.000 | 0.443 | 0.000 |
| Oct 2016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | 0.000 | 0.144 | 0.575 | 0.000 | 0.435 | 0.000 |
| Nov 2016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | 0.000 | 0.133 | 0.900 | 9.600 | 0.589 | 0.000 |
| Dec 2016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | 0.000 | 0.063 | 0.562 | 0.000 | 0.696 | 0.000 |
| Sub-total | 129.184 | 0.000 | 0.000 | 0.000 | 0.000 | 129.184 | 0.000 | 0.000 | 0.000 | 2.016 | 9.096 | 16.960 | 4.665 | 0.000 |

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | | | Actual Quantities of Non-inert C&D Wastes Generated Monthly | | | | | Imported Fill |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Hard Rocks and Large Broken Concrete (See Note 3) | Reused in the Contract | Reused in other Projects | Disposed as Public Fill (See Note 5) | Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6) | Inert C&D Materials Delivered to 1123 Kai Tai Barging Facilities (See Note 12) | Inert C&D Materials Delivered to Receptor Site of Green Valley Landfill Ltd. (See Note 13) | Metals | Paper/ cardboard packaging | Plastics (See Note 2) | Chemical Waste (See Note 10) | Others, e.g. general refuse ( See Note 5) | |
| | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000m³) | (in '000kg) | (in '000kg) | (in '000kg) | (in'000kg) | (in '000$m^3$) | (in '000m³) |
| Jan 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.126 | 0.276 | 0.000 | 0.769 | 0.000 |
| Feb 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.059 | 0.417 | 0.000 | 0.745 | 0.000 |
| Mar 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.077 | 0.448 | 0.000 | 0.618 | 0.000 |
| Apr 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.108 | 0.504 | 0.000 | 0.618 | 0.000 |
| May 2017 | 10.676 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.676 | - | 0.000 | 0.158 | 0.296 | 0.000 | 0.619 | 0.000 |
| Jun 2017 | 13.390 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.390 | - | 0.000 | 0.090 | 0.308 | 0.000 | 1.072 | 0.000 |
| Jul 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.135 | 0.740 | 0.000 | 1.147 | 0.000 |
| Aug 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.045 | 0.780 | 0.000 | 0.959 | 0.000 |
| Sep 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.234 | 0.460 | 0.000 | 0.621 | 0.000 |
| Oct 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.095 | 0.427 | 0.000 | 0.599 | 0.000 |
| Nov 2017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.121 | 0.607 | 0.000 | 0.866 | 0.000 |
| Dec 2017 | 3.964 | 0.000 | 0.000 | 0.000 | 3.964 | 0.000 | 0.000 | - | 0.000 | 0.099 | 0.450 | 0.000 | 0.692 | 0.000 |
| Sub-total | 28.030 | 0.000 | 0.000 | 0.000 | 3.964 | 0.000 | 24.066 | 0.000 | 0.000 | 1.347 | 5.713 | 0.000 | 9.325 | 0.000 |
| Jan 2018 | 2.938 | 0.000 | 0.000 | 0.000 | 2.938 | 0.000 | 0.000 | - | 0.000 | 0.095 | 0.617 | 4.480 | 0.846 | 0.000 |
| Feb 2018 | 5.529 | 0.000 | 0.000 | 0.000 | 5.529 | 0.000 | 0.000 | - | 0.000 | 0.117 | 0.227 | 0.000 | 0.374 | 0.000 |
| Mar 2018 | 3.746 | 0.000 | 0.000 | 0.000 | 3.746 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.450 | 0.000 | 0.468 | 0.000 |
| Apr 2018 | 11.039 | 0.000 | 0.000 | 0.628 | 8.235 | 0.000 | 0.000 | 2.176 | 0.000 | 0.104 | 1.430 | 0.000 | 0.473 | 0.000 |
| May 2018 | 6.787 | 0.000 | 0.000 | 0.150 | 6.145 | 0.000 | 0.000 | 0.492 | 0.000 | 0.068 | 0.735 | 0.000 | 0.595 | 0.000 |
| Jun 2018 | 6.956 | 0.000 | 0.000 | 1.777 | 5.179 | 0.000 | 0.000 | 0.000 | 0.000 | 0.314 | 1.696 | 0.000 | 0.461 | 0.000 |
| Jul 2018 | 4.751 | 0.000 | 0.000 | 0.494 | 4.257 | 0.000 | 0.000 | 0.000 | 0.000 | 0.131 | 0.568 | 0.000 | 0.490 | 0.000 |
| Aug 2018 | 2.416 | 0.000 | 0.000 | 0.401 | 2.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.198 | 0.827 | 0.000 | 0.560 | 0.000 |
| Sep 2018 | 1.533 | 0.000 | 0.000 | 0.409 | 1.124 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.316 | 0.000 | 0.403 | 0.000 |
| Oct 2018 | 1.537 | 0.000 | 0.000 | 0.298 | 1.239 | 0.000 | 0.000 | 0.000 | 0.000 | 0.050 | 0.216 | 0.000 | 0.450 | 0.000 |
| Nov 2018 | 1.569 | 0.000 | 0.000 | 0.743 | 0.826 | 0.000 | 0.000 | 0.000 | 0.000 | 0.108 | 0.589 | 0.000 | 0.395 | 0.000 |
| Dec 2018 | 0.713 | 0.000 | 0.000 | 0.326 | 0.387 | 0.000 | 0.000 | 0.000 | 0.000 | 0.099 | 0.146 | 0.000 | 0.389 | 0.000 |
| Sub-total | 49.514 | 0.000 | 0.000 | 5.226 | 41.620 | 0.000 | 0.000 | 2.668 | 0.000 | 1.338 | 7.817 | 4.480 | 5.904 | 0.000 |
| Jan 2019 | 1.075 | 0.000 | 0.000 | 0.738 | 0.337 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.131 | 0.000 | 0.196 | 0.000 |
| Feb 2019 | 0.392 | 0.000 | 0.000 | 0.047 | 0.345 | 0.000 | 0.000 | 0.000 | 0.000 | 0.077 | 0.084 | 0.000 | 0.264 | 0.000 |
| Mar 2019 | 0.620 | 0.000 | 0.000 | 0.075 | 0.545 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.136 | 0.000 | 0.200 | 0.000 |
| Apr 2019 | 1.744 | 0.000 | 0.000 | 0.186 | 1.558 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.092 | 0.000 | 0.202 | 0.000 |
| May 2019 | 0.823 | 0.000 | 0.000 | 0.000 | 0.823 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.401 | 0.000 | 0.244 | 0.000 |
| Jun 2019 | 0.919 | 0.000 | 0.000 | 0.022 | 0.897 | 0.000 | 0.000 | 0.000 | 12.410 | 0.000 | 0.168 | 0.000 | 0.262 | 0.000 |
| Jul 2019 | 5.703 | 0.000 | 0.000 | 3.761 | 1.942 | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.386 | 0.000 | 0.422 | 0.000 |
| Aug 2019 | 3.210 | 0.000 | 0.000 | 0.595 | 2.615 | 0.000 | 0.000 | 0.000 | 117.170 | 0.000 | 0.264 | 3.840 | 0.331 | 0.000 |
| Sep 2019 | 2.221 | 0.000 | 0.000 | 0.074 | 2.147 | 0.000 | 0.000 | 0.000 | 16.620 | 0.000 | 0.248 | 0.000 | 0.356 | 0.000 |
| Oct 2019 | 2.600 | 0.000 | 0.000 | 0.067 | 2.533 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.168 | 0.000 | 0.201 | 0.000 |
| Nov 2019 | 1.371 | 0.000 | 0.000 | 0.224 | 1.147 | 0.000 | 0.000 | 0.000 | 9.680 | 0.338 | 0.123 | 0.000 | 0.123 | 0.000 |
| Sub-total | 20.678 | 0.000 | 0.000 | 5.789 | 14.889 | 0.000 | 0.000 | 0.000 | 155.945 | 0.442 | 2.201 | 3.840 | 2.801 | 0.000 |
| Total | 1040.489 | 0.000 | 0.605 | 13.880 | 60.537 | 938.732 | 24.066 | 2.668 | 168.745 | 8.034 | 62.293 | 34.963 | 30.021 | 6.804 |

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.

-5 Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse

-6 Inert C&D Material was delivered to contract 1108A from 10-Dec-2012.

-7 The quantity of paper/ cardboard packaging generated in January 2013 was updated by the Contractor in March 2013.

-8 The quantity of general refuse generated in January 2013 was updated by the Contractor in March 2013.

-9 The quantity of general refuse generated in March 2013 was updated by the Contractor in April 2013.

-10 Chemical waste includes waste oil. It is assumed density of waste oil to be 0.8 kg/L.

-11 The quantity of chemical waste generated in June 2013 was updated by the Contractor in August 2013.

-12 Inert C&D Material was delivered to contract SCL1123 from 20-May-2017.

-13 Inert C&D Material was delivered to Receptor Site of Green Valley Landfill Ltd. from April 2018.

Annex L

# (Not Used)

Annex M

# Environmental Complaint, Environmental Summon and Prosecution Log

*Annex M Environmental Complaint, Environmental Summon and Prosecution Log*

| Reporting Month | Number of Complaints in Reporting Month | Number of Summons/Prosecutions in Reporting Month |
|---|---|---|
| September 2012 | 0 | 0 |
| October 2012 | 0 | 0 |
| November 2012 | 0 | 0 |
| December 2012 | 0 | 0 |
| January 2013 | 0 | 0 |
| February 2013 | 0 | 0 |
| March 2013 | 0 | 0 |
| April 2013 | 0 | 0 |
| May 2013 | 0 | 0 |
| June 2013 | 0 | 0 |
| July 2013 | 0 | 0 |
| August 2013 | 0 | 0 |
| September 2013 | 0 | 0 |
| October 2013 | 0 | 0 |
| November 2013 | 0 | 0 |
| December 2013 | 0 | 0 |
| January 2014 | 0 | 0 |
| February 2014 | 0 | 0 |
| March 2014 | 0 | 0 |
| April 2014 | 0 | 0 |
| May 2014 | 0 | 0 |
| June 2014 | 0 | 0 |

| Reporting Month | Number of Complaints in Reporting Month | Number of Summons/Prosecutions in Reporting Month |
|---|---|---|
| July 2014 | 0 | 0 |
| August 2014 | 0 | 0 |
| September 2014 | 1 | 0 |
| October 2014 | 0 | 0 |
| November 2014 | 0 | 0 |
| December 2014 | 0 | 0 |
| January 2015 | 3 | 0 |
| February 2015 | 0 | 0 |
| March 2015 | 0 | 0 |
| April 2015 | 3 | 0 |
| May 2015 | 2 | 0 |
| June 2015 | 7 | 0 |
| July 2015 | 0 | 0 |
| August 2015 | 1 | 0 |
| September 2015 | 2 | 0 |
| October 2015 | 2 | 0 |
| November 2015 | 0 | 0 |
| December 2015 | 0 | 0 |
| January 2016 | 2 | 0 |
| February 2016 | 0 | 0 |
| March 2016 | 1 | 0 |
| April 2016 | 2 | 0 |
| May 2016 | 1 | 0 |
| June 2016 | 2 | 0 |

| Reporting Month | Number of Complaints in Reporting Month | Number of Summons/Prosecutions in Reporting Month |
|---|---|---|
| July 2016 | 0 | 0 |
| August 2016 | 0 | 0 |
| September 2016 | 0 | 0 |
| October 2016 | 1 | 0 |
| November 2016 | 0 | 0 |
| December 2016 | 2 | 0 |
| January 2017 | 0 | 0 |
| February 2017 | 0 | 0 |
| March 2017 | 1 | 0 |
| April 2017 | 0 | 0 |
| May 2017 | 0 | 0 |
| June 2017 | 0 | 0 |
| July 2017 | 1 | 0 |
| August 2017 | 1 | 0 |
| September 2017 | 2 | 0 |
| October 2017 | 3 | 0 |
| November 2017 | 1 | 0 |
| December 2017 | 0 | 0 |
| January 2018 | 0 | 0 |
| February 2018 | 0 | 0 |
| March 2018 | 0 | 0 |
| April 2018 | 2 | 0 |
| May 2018 | 0 | 0 |
| June 2018 | 0 | 0 |

| Reporting Month | Number of Complaints in Reporting Month | Number of Summons/Prosecutions in Reporting Month |
|---|---|---|
| July 2018 | 0 | 0 |
| August 2018 | 0 | 0 |
| September 2018 | 1 | 0 |
| October 2018 | 0 | 0 |
| November 2018 | 0 | 0 |
| December 2018 | 0 | 0 |
| January 2019 | 0 | 0 |
| February 2019 | 0 | 0 |
| March 2019 | 0 | 0 |
| April 2019 | 1 | 0 |
| May 2019 | 0 | 0 |
| June 2019 | 0 | 0 |
| July 2019 | 3 | 0 |
| August 2019 | 0 | 0 |
| September 2019 | 0 | 0 |
| October 2019 | 0 | 0 |
| November 2019 | 0 | 0 |
| Overall Total | 48 | 0 |

Appendix B

78th Monthly EM&A Report for Works Contract 1112 –
Hung Hom Station and Stabling Sidings

MTR Corporation Limited

# Shatin to Central Link –
# Tai Wai to Hung Hom Section and
# Mong Kok East to Hung Hom Section

## Monthly EM&A Report

[Period from 1 to 30 November 2019]

(December 2019)

Certified by: Vivian Chan

Position: Environmental Team Leader

Date: 12 December 2019

SMEC
Member of the Surbana Jurong Group

local people
global experience

D252 78th Monthly EM&A Report for November 2019

# Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings

Prepared for Leighton Contractors (Asia) Limited
12 December 2019

SMEC INTERNAL REF. 7076187

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| 1.0 (Draft) | 4 December 2019 | Joanne PONG | Vivian CHAN | Antony WONG |
| 2.0 (Final) | 12 December 2019 | Joanne PONG | Vivian CHAN | Antony WONG |
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## SMEC Company Details



| | | | |
|---|---|---|---|
| Approved by: | Antony WONG | | |
| Address: | 27/F Ford Glory Plaza, 37-39 Wing Hong St, Cheung Sha Wan, Kowloon, Hong Kong | | |
| Signature: | | | |
| Tel: | +852 3995 8100 | Fax: | +852 3995 8101 |
| Email: | antony.wong@smec.com | Website: | www.smec.com |

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## Appendices



## List of Tables

# EXECUTIVE SUMMARY

## Introduction

The construction works of MTRC Shatin to Central Link Works Contract 1112- Hung Hom Station and Stabling Sidings (the Project) comprise permanent works and the necessary temporary works for Hung Hom Station (HUH), Hung Hom Stabling Sidings (HHS), the South Approach Tunnels (SAT) and the North Approach Tunnels (NAT) to the new station, HHS and any reprovisioning remedial and improvement works (RRIW).

Construction works of the Project commenced on 3 June 2013. This is the 78$^{th}$ Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 30 November 2019 in accordance with the EM&A manual.

During the reporting month, the following activity took place for the Project:

- Minor services connection at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification works at Concourse level, mid-level walkway
- Landscape preparation works
- Remedial works at HUH/HHS

## Landscape and Visual Monitoring

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 15 and 28 November 2019. All necessary mitigation measures have been implemented by the Contractor.

## Air Quality Monitoring

Air quality (24-hour TSP) monitoring was carried out on 2, 8, 14, 20 and 26 November 2019. No exceedance of Action and Limit Level of 24-hour TSP monitoring was recorded at the monitoring location in the reporting month.

## Noise Monitoring

Construction airborne noise monitoring can be referred to the Monthly EM&A Report for Contract 1111.

## Waste Management

Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 63,160 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 277 $m^3$ inert construction and demolition (C&D) materials were generated from the Project, 5$m^2$ was disposed as public fills at TKO137 and 277 $m^3$ was disposed as public fills at TM38. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. No metals, paper/cardboard packaging, plastics or asphalt were recycled from the Project.

## Environmental Auditing

A total of 4 weekly environmental site audits were conducted on 6, 15, 21 and 28 November 2019. The IEC joint site audit was undertaken on 28 November 2019.

## Complaint, Notification of Summons and Successful Prosecution

No environmental complaint was received during the reporting month.

No summons or prosecution related to the environmental issues were received in the reporting period.

## Future Key Issues

Major site activities for the coming reporting month will include:

- Minor services connection at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification works at Concourse level, mid-level walkway
- Landscape preparation works
- Remedial works at HUH/HHS

Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise and waste management.

# 1 INTRODUCTION

## 1.1 Project Background

1.1.1 The Shatin to Central Link (SCL) is a designated project (DP) under the Environmental Impact Assessment Ordinance (EIAO). For the purposes of the Environmental Impact Assessment (EIA), five EIA studies have been conducted to cover different sections of the SCL. These are Tai Wai to Hung Hom Section (SCL (TAW-HUH)), Mong Kok East to Hung Hom Section (SCL (MKK-HUH)), Hung Hom to Admiralty Section (SCL (HUH-ADM)), Protection Works at Causeway Bay Typhoon Shelter and Stabling Sidings at Hung Hom Freight Yard (SCL (HHS)).

1.1.2 Three EIA reports are of relevance to Works Contract 1112 (the Project), namely EIA for SCL (TAW-HUH) (Register No. AEIAR-167/2012), EIA for SCL (MKK-HUH) (Register No. AEIAR-165/2012) and EIA for SCL (HHS) (Register No. AEIAR-164/2012). These were submitted and subsequently approved with conditions by the Environmental Protection Department (EPD) on 17 March 2012. Two Environmental Permits (EPs), Environmental Permit No. EP-437/2012 for SCL (MKK-HUH) and Environmental Permit No. EP-438/2012 for SCL (TAW-HUH) were subsequently obtained on 22 March 2012. An application for variation of the EP for SCL (TAW-HUH) was approved and a varied EP (EP No. EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016. An application for variation of the EP for SCL (MKK-HUH) was approved and a varied EP (EP No. EP-437/2012/A) was issued on 28 November 2017.

1.1.3 Construction of the SCL has been divided into a number of works contracts. This Works Contract 1112 was awarded to Leighton Contractors (Asia) Limited (the Contractor) in March 2013. Leighton has engaged SMEC Asia Limited as the Environmental Team under the EIAO for Works Contract 1112.

## 1.2 Purpose of the Report

1.2.1 This is the 78$^{th}$ EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 30 November 2019.

## 1.3 Report Structure

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Environmental Monitoring Parameters
- Section 4: Implementation Status of Environmental Mitigation Measures
- Section 5: Monitoring Results
- Section 6: Environmental Site Inspection and Audit
- Section 7: Environmental Non-conformance
- Section 8: Future Key Issues
- Section 9: Conclusions and Recommendations

# 2 PROJECT INFORMATION

## 2.1 General Site Description

2.1.1 The works under Works Contract 1112 comprise permanent works and the necessary temporary works for Hung Hom Station (HUH), Hung Hom Stabling Sidings (HHS), the South Approach Tunnels (SAT) and the North Approach Tunnels (NAT) to the new station, HHS and any reprovisioning remedial and improvement works (RRIW). The major permanent works under Works Contract 1112 generally comprise the following:

- New HUH integrated with the existing HUH station, with associated entrances, ventilation facilities, plant rooms, other ancillary facilities, and ABWF works.
- Modification of the existing HUH station to allow interchange between Existing East Rail Line and SCL(TAW-HUH), and between SCL(MKK-HUH) and SCL(TAW-HUH) comprising alteration and addition works at podium level, mid-level, and platform level.
- Running tunnels of the SCL(TAW-HUH) at the south and north ends of the new HUH to the existing stub tunnel of Existing West Rail and interface with Works Contract 1111.
- Running tunnels of the SCL(MKK-HUH) at the south and north ends of the new HUH to the proposed North Ventilation Building and interface with Works Contract 1111.
- Extensive underpinning and modification of the existing podium structure of HUH and the Hong Kong Coliseum, and associated protection works.
- Diversion, modification and dismantling of existing building services associated with underpinning and modification of existing structures.
- Demolition and clearance of the majority of the existing Hung Hom Freight Terminal infrastructure.
- Protection, diversion, and modification of utilities and services.
- Launching and retrieval track connecting the SCL(TAW-HUH) to HHS from the turnout close to WRL at the south and interface with Works Contract 1111 at the north.
- CLP Transformer Building.
- Demolition of the existing International Mail Centre adjacent to Salisbury Road, the MTR Freight Operations Building within the southern end of the Hung Hom Freight Terminal, and other ancillary buildings.
- Reconstruction of Cheong Wan Road Viaduct.
- Civil, BS and ABWF provisions for designated and interfacing contracts.
- Landscape works.
- Modification to various parts of existing disused Freight Yard structure for provision of HHS, comprising alteration and addition works at underground level, ground level, mezzanine level and podium level including new accommodation and plant areas and stablings and associated track provisions connecting to the interface with Works Contract 1111.
- Extensive underpinning of the podium structures above the existing disused Freight Yard for provision of HHS and its associated works.
- Construct part of the shunting track.
- Construct the emergency track and its associated works which connect the stabling siding to the mainline which run parallel with the northern approach of HUH.
- Construct the semi-enclosed noise enclosure and its associated works over the entire HHS north fan area.
- Preparation works, operation, and reinstatement of an additional storage area near Muk Chui Street, Kai Tak.

2.1.2 The works area for the Works Contract 1112 is shown in ***Appendix A***.

## 2.2 Construction Programme and Activities

2.2.1 The summary of construction programme is presented in ***Appendix B***.

2.2.2 The major construction activities carried out by the Contractor in the reporting period are summarized as below:

- Minor services connection at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification works at Concourse level, mid-level walkway
- Landscape preparation works
- Remedial works at HUH/HHS

## 2.3 Project Organisation

2.3.1 The project organization structure is presented in ***Appendix C***. The contact names and numbers for key personnel of the Project are summarized in ***Table 2-1***.

*Table 2-1 Contact Information of Key Personnel*

| COMPANY | POSITION | NAME | TELEPHONE | FAX |
|---|---|---|---|---|
| MTR | Construction Manager | Mr Michael FU | 3127 6201 | 3127 6422 |
| | SCL Project Environmental Team Leader | Ms Lisa POON | 3127 6295 | 2993 7577 |
| Meinhardt | Independent Environmental Checker | Mr Fredrick LEONG | 2859 1739 | 2540 1580 |
| Leighton | Environmental Manager | Mr Kevin HARMAN | 3973 0270 | 2356 9355 |
| SMEC | ET Leader | Ms Vivian CHAN | 3995 8140 | 3995 8101 |

## 2.4 Status of Environmental Licences, Notification and Permits

2.4.1 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in ***Table 2-2***.

*Table 2-2 Status of Environmental Licenses, Notification and Permits*

| PERMIT / LICENCE NO. / NOTIFICATION / REFERENCE NO. | VALID PERIOD | | STATUS | REMARK |
|---|---|---|---|---|
| | From | To | | |
| **Environmental Permit** | | | | |
| EP-437/2012/A | 28 Nov 2017 | - | Valid | EP for SCL (MKK-HUH) |
| EP-438/2012/K | 4 Oct 2016 | - | Valid | EP for SCL (TAW-HUH) |
| **Construction Noise Permit** | | | | |
| GW-RE0727-19 | 17 Sep 2019 | 12 Jan 2020 | Valid until cancellation on 7 November 2019 | Works for SAT, NAT and Under Podium |
| GW-RE0766-19 | 30 Sep 2019 | 28 Dec 2019 | Valid | External work for Concourse involving TTM + Mid-level Walkway+ Installation of Instrument near NAT Track + Painting |

| PERMIT / LICENCE NO. / NOTIFICATION | VALID PERIOD | | STATUS | REMARK |
|---|---|---|---|---|
| | | | | outside Concourse for North East Corner+ Protective Barrier Removal adjoining NAT |
| GW-RE0808-19 | 4 Oct 2019 | 10 Apr 2020 | Valid | Works in concourse |
| GW-RE0870-19 | 8 Nov 2019 | 7 Feb 2020 | Valid | Works for SAT, NAT and Under Podium |
| **Wastewater Discharge License** | | | | |
| WT00033946-2019 | 17 Jun 2019 | 30 Jun 2023 | Valid | - |
| **Chemical Waste Producer Registration** | | | | |
| 5213-213-L2603-03 | 28 Jun 2013 | - | Valid | - |
| **Billing Account for Construction Waste Disposal** | | | | |
| 7017179 | 27 Mar 2013 | - | Active Account | - |
| **Notification Under Air Pollution Control (Construction Dust) Regulation** | | | | |
| 357078 | 18 Mar 2013 | - | Notified | - |
| Notification of Asbestos Abatement Works | | | | |
| AX141187 | 11 Oct 2014 (earliest commencement date) | - | Notified | Demolition of International Mail Centre, 80 Salisbury Road, Hung Hom |
| AX141235 | 27 Oct 2014 (earliest commencement date) | - | Notified | Demolition of Freight Operation Building, MTR Hung Hom Depot |

# 3 ENVIRONMENTAL MONITORING PARAMETERS

## 3.1 Landscape and Visual Impact Monitoring

3.1.1 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period.

## 3.2 Air Quality Monitoring

***Parameter, Frequency and Duration***

3.2.1 In accordance with the EM&A Manual, 24-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required throughout the construction period. The monitoring parameters and frequency are provided in ***Table 3-1***.

*Table 3-1 Air Quality Monitoring Parameters and Frequency*

| PARAMETER | FREQUENCY |
|---|---|
| 1-hour TSP | 3 times in every 6 days when one documented valid complaint is received |
| 24-hour TSP [1] | Once per 6 days |

Note:

1. 24-hour TSP will be conducted when project-related construction activities are being undertaken within a radius of 500m from monitoring stations.

***Monitoring Location***

3.2.2 One air quality monitoring station was set up at the location in accordance with the approved EM&A Manuals. The location of the construction dust monitoring station is summarised in ***Table 3-2*** and shown in ***Appendix D***.

3.2.3 The monitoring location of AM2 has been located on the roof of the Site Office Building next to Harbourfront Horizon since 19 March 2014.

*Table 3-2 Air Quality Monitoring Location*

| ID | LOCATION |
|---|---|
| AM2 [1] | Harbourfront Horizon [2] |

Note:

1. Different IDs were used in various EM&A Manuals for dust monitoring location at Harbourfront Horizon, DMS-12 was used in EM&A Manual for SCL(TAW-HUH), AM2 were used in EM&A Manual and EIA report for SCL(MKK-HUH), and DMS-1 Works Contract 1112 were used in EM&A Manual and EIA report for HHS. For ease of future reference, AM2 will be adopted for EM&A reporting for Works Contract 1112 when referring to this monitoring location.
2. Air quality monitoring location at Harbourfront Horizon is the same as monitoring station CD6a as proposed in the EM&A Manual for "Kwun Tong Line Extension (KTE)". Access to Harbourfront Horizon was rejected by the owner during preparation for baseline monitoring for the KTE in early 2011. A representative monitoring location at the adjacent Finger Pier, at about 25m from Harbourfront Horizon, was adopted as an alternative monitoring location for KTE. This monitoring location is considered the most appropriate alternative monitoring location for AM2 and have been adopted for dust monitoring for Contract 1112.

***Monitoring Equipment***

3.2.4 The air quality monitoring was performed using High Volume Sampler (HVS). The HVS meets all the requirements of the EM&A Manual. Detail of the HVS used in air quality monitoring is provided in ***Table 3-3***.

*Table 3-3 Air Quality Monitoring Equipment*

| EQUIPMENT | BRAND AND MODEL | SERIAL NUMBER |
|---|---|---|
| High Volume Sampler | GS-2310 Accu-vol | 694-0665 |
| Calibration Kit | Tisch (TE-5025A) | 1941 |

3.2.5 The HVS were calibrated in every six months interval using calibration kit which is re-calibrated by the manufacturer after one year of use. The calibration certificate of the calibration kit and the calibration spreadsheet of the HVS is provided in ***Appendix E***.

***Monitoring Procedures***

3.2.6 Specifications of HVS are as follow:

i. 0.6 - 1.7m3 per minute adjustable flow range
ii. Equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation
iii. Installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation
iv. Capable of providing a minimum exposed area of 406cm2
v. Flow control accuracy: +/- 2.5% deviation over 24-hour sampling period
vi. Equipped with a shelter to protect the filter and sampler
vii. Incorporated with an electronic mass flow rate controller or other equivalent devices
viii. Equipped with a flow recorder for continuous monitoring
ix. Provided with a peaked roof inlet
x. Incorporated with a manometer
xi. Able to hold and seal the filter paper to the sampler housing at horizontal position
xii. Easily changeable filter and
xiii. Capable of operating continuously for a 24-hour period.

3.2.7 Preparation of Filter Papers

i. Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
ii. All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25°C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.
iii. All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

3.2.8 Field Monitoring

i. The power supply was checked to ensure the HVS works properly.
ii. The filter holder and the area surrounding the filter were cleaned.
iii. The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
iv. The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
v. The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
vi. Then the shelter lid was closed and was secured with the aluminium strip.
vii. The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.

viii. A new flow rate record sheet was set into the flow recorder.

ix. On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m3/min).

x. The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.

xi. The initial elapsed time was recorded.

xii. At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.

xiii. The final elapsed time was recorded.

xiv. The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.

xv. It was then placed in a clean plastic envelope and sealed.

xvi. All monitoring information was recorded on a standard data sheet.

xvii. Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.

***Wind Data Monitoring***

3.2.9 Average wind data (wind speed and direction) at the King's Park meteorological station during the monitoring period were obtained from the Hong Kong Observatory (HKO) and presented in ***Appendix F***.

***Monitoring Schedule***

3.2.10 The schedule for environmental monitoring in November 2019 is provided in ***Appendix G***.

## 3.3 Construction Noise Monitoring

3.3.1 In accordance with the approved EM&A Manuals for SCL (TAW-HUH), SCL (MKK-HUH) and SCL (HHS), construction noise monitoring is required at No. 234-238 Chatham Road North (originally proposed as Wing Fung Building in the approved EM&A Manuals).

3.3.2 Construction airborne noise monitoring requirement details at No. 234 -238 Chatham Road North (NM2) can be referred to the Monthly EM&A Report for Contract 1111.

# 4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 All environmental mitigation measures and requirements as stated in EIA Reports, Environmental Permits and EM&A Manuals are implemented. The implementation status of the environmental mitigation measures for this Works Contract during the reporting period is summarized in ***Appendix H***.

4.1.2 Submissions to EPD during construction stage had been made in accordance with the EP requirements. A summary of EP submission requirements and their status is presented in ***Table 4-1***.

*Table 4-1 Summary of Status of Required Submission under EP*

| REQUIRED SUBMISSION | ENVIRONMENTAL PERMIT | DATE OF SUBMISSION | STATUS |
|---|---|---|---|
| EP Condition 3.4 - Monthly Environmental Monitoring & Audit (EM&A) Report | EP-437/2012/A | 14 November 2019 | Submitted |
| | EP-438/2012/K | 14 November 2019 | Submitted |

# 5 MONITORING RESULTS

## 5.1 Landscape and Visual

5.1.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 15 and 28 November 2019. All necessary mitigation measures have been implemented by the Contractor.

5.1.2 The Event and Action Plan for Landscape and Visual Impact Monitoring is provided in ***Appendix I***.

## 5.2 Air Quality Monitoring

5.2.1 The monitoring results for 24-hour TSP are summarized in ***Table 5-1***. Detailed air quality monitoring results are presented in ***Appendix J***.

*Table 5-1 Summary of 24-hour TSP Monitoring Results*

| ID | AVERAGE (μG/M$^3$) | RANGE (μG/M$^3$) | ACTION LEVEL (μG/M$^3$) | LIMIT LEVEL (μG/M$^3$) |
|---|---|---|---|---|
| AM2 | 49.4 | 42.2 – 57.4 | 182 | 260 |

5.2.2 No Action and Limit Level exceedance was recorded in the reporting month.

5.2.3 The Event and Action Plan is provided in ***Appendix I***.

## 5.3 Regular Construction Noise Monitoring

5.3.1 Construction airborne noise monitoring results can be referred to the Monthly EM&A Report for Contract 1111. The cessation of monitoring works at NM 2 was approved by EPD on 31 July 2019. The last monitoring date was 23 July 2019.

5.3.2 The Action and Limit levels for construction noise are summarised in ***Table 5-1***.

*Table 5-2 Action and Limit Levels*

| TIME PERIOD | ACTION LEVEL | LIMIT LEVEL |
|---|---|---|
| 07:00-19:00 hours on normal weekdays | When one documented valid complaint is received | 75dB(A)* |

**Note**:

If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

5.3.3 The Event and Action Plan for construction noise is provided in ***Appendix I***.

## 5.4 Waste Management

5.4.1 Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 63,160 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 277 m$^3$ inert construction and demolition (C&D) materials were generated from the Project, 5m$^2$ was disposed as public fills at TKO137 and 277 m$^3$ was disposed as public fills at TM38. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. No metals, paper/cardboard packaging, plastics or asphalt were recycled from the Project. The waste flow table and marine sediment flow table were presented in ***Appendix K***.

5.4.2 A billing account for construction waste disposal has been approved and a trip ticket system was implemented to record the waste generated from the Project in the reporting month.

# 6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1.1 Weekly site audits were conducted by the ET and attended by the ER and the Contractor to monitor the timely implementation of proper environmental management practices and mitigation measures at the site. 4 site audits were carried out on 6, 15, 21 and 28 November 2019 during the reporting month. Representative of the IEC joined the site inspection on 28 November 2019. A summary of the implementation schedule of environmental mitigation measures is provided in ***Appendix H***.

6.1.2 EPD conduction inspection on 4 November 2019 with no major findings.

6.1.3 During the weekly site inspections, no non-conformance was identified. Details of observations recorded during site inspection are summarized in ***Table 6-1***.

*Table 6-1 Observations and Recommendations of Site Audits*

| PARAMETERS | DESCRIPTION | WORKS AREA | OBSERVATION DATE | STATUS |
|---|---|---|---|---|
| Air Quality | More than 20 bags of cement were observed uncovered. The Contractor should cover the cement bags with impervious sheeting to prevent dust emission. | Gate 2 | 28 November | The item will be followed up in the next reporting month. |
| Waste Management | General refuse was observed on the ground. The Contractor should remove the waste and prove waste bins for collection to prevent waste accumulation. | Gate 2 | 28 November | The item will be followed up in the next reporting month. |

Note:
1. HUH: Hung Hom Station
2. HHS: Hung Hom Stabling Sidings
3. NAT: North Approach Tunnels
4. SAT: South Approach Tunnels
5. HKC: Hong Kong Coliseum
6. NSL: North South Line
7. BoH: Back of House
8. EWL: East West Line
9. NFA: North Fan Area

6.1.4 Follow-up actions requested by Contractor's ET and IEC during site inspections were undertaken by the Contractor and the work were confirmed in the following weekly site inspection. Follow-up actions that are still outstanding in the reporting month will be inspected in site inspections in following month, until the corresponding action has been satisfactorily completed by the Contractor.

# 7 ENVIRONMENTAL NON-CONFORMANCE

## 7.1 Summary of Monitoring Exceedances

7.1.1 All 24-hour TSP results were below the Action and Limit level at all monitoring locations in the reporting month.

## 7.2 Summary of Environmental Non-Compliance

7.2.1 No environmental non-compliance event was recorded during the reporting month.

## 7.3 Summary of Environmental Complaint

7.3.1 Details and cumulative statistics on environmental complaints can be referred to ***Appendix L***.

## 7.4 Summary of Environmental Summons and Successful Prosecution

7.4.1 No summon was received during the reporting month.

7.4.2 The cumulative statistics on notification of summons and successful prosecutions is provided in ***Appendix L***.

# 8 FUTURE KEY ISSUES

## 8.1 Construction Programme for Next Month

8.1.1 The construction programme for the next reporting month is provided in ***Appendix B*** and the key issues to be considered in the upcoming months include:

- Minor services connection at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification works at Concourse level, mid-level walkway
- Landscape preparation works
- Remedial works at HUH

## 8.2 Key Issues for the Coming Months

8.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise and waste management.

## 8.3 Monitoring Schedule for Next Month

8.3.1 The tentative schedule for environmental monitoring in December 2019 is provided in ***Appendix G***.

# 9 CONCLUSIONS AND RECOMMENDATIONS

## 9.1 Conclusions

9.1.1 The construction phase of the Project was commenced on 3 June 2013. The EM&A programme have been implemented to include air quality monitoring and environmental site audits. This is the 78th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 30 November 2019.

9.1.2 5 nos. of 24-hour TSP monitoring were carried out in the reporting month.

9.1.3 No exceedance of the Action and Limit Levels of air quality monitoring was recorded at the designated monitoring stations during reporting period.

9.1.4 Two landscape and visual monitoring and four environmental site audits were conducted in the reporting month. Recommendations on remedial actions were provided to the Contractor for deficiencies identified during the site audits.

9.1.5 The ET will keep track on the EM&A programme to ensure the compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

## 9.2 Recommendations

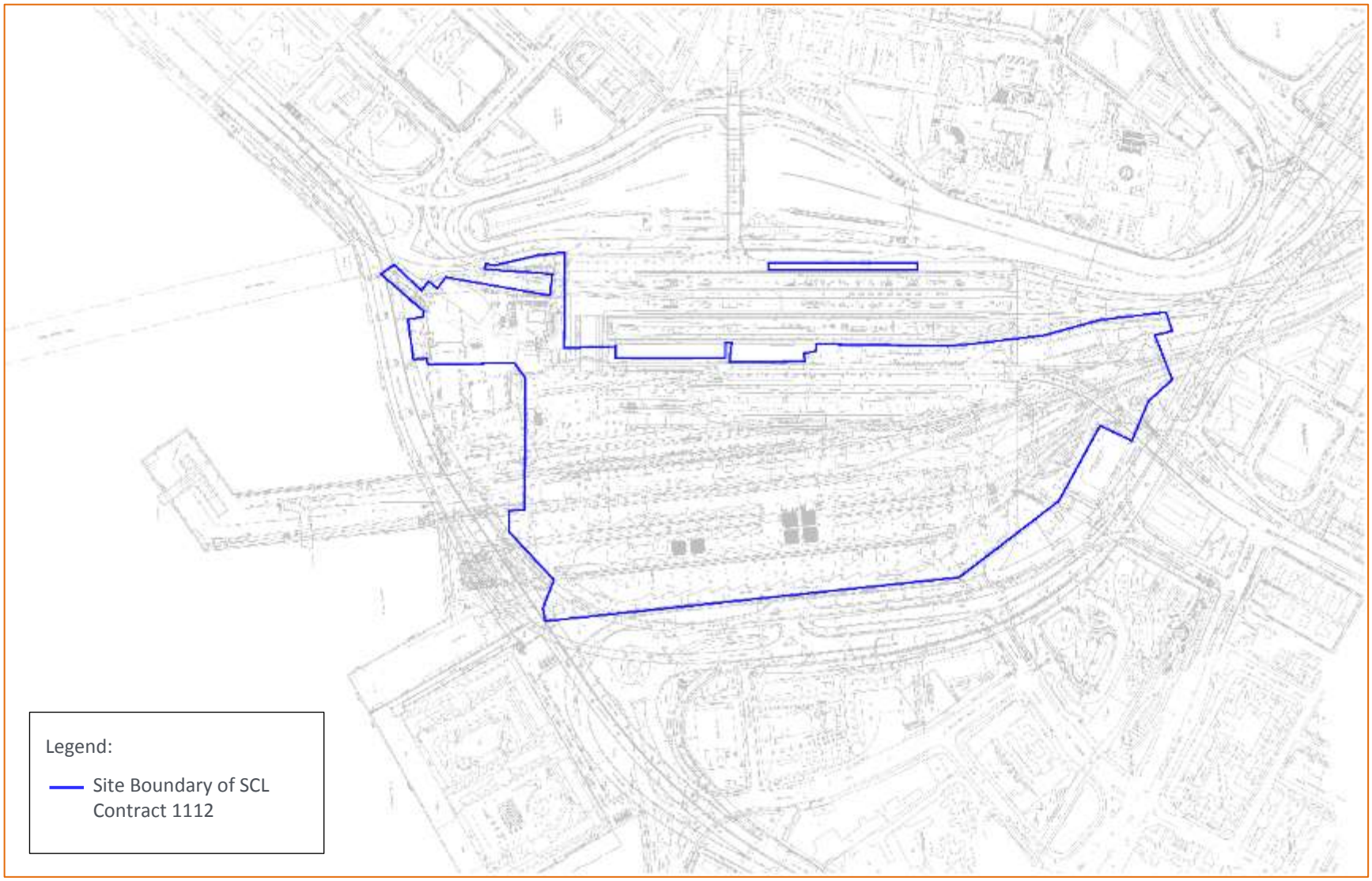
Air Quality

- Cover the cement bags with impervious sheeting to prevent dust emission.

Waste Management

- Remove the waste and prove waste bins for collection to prevent waste accumulation.

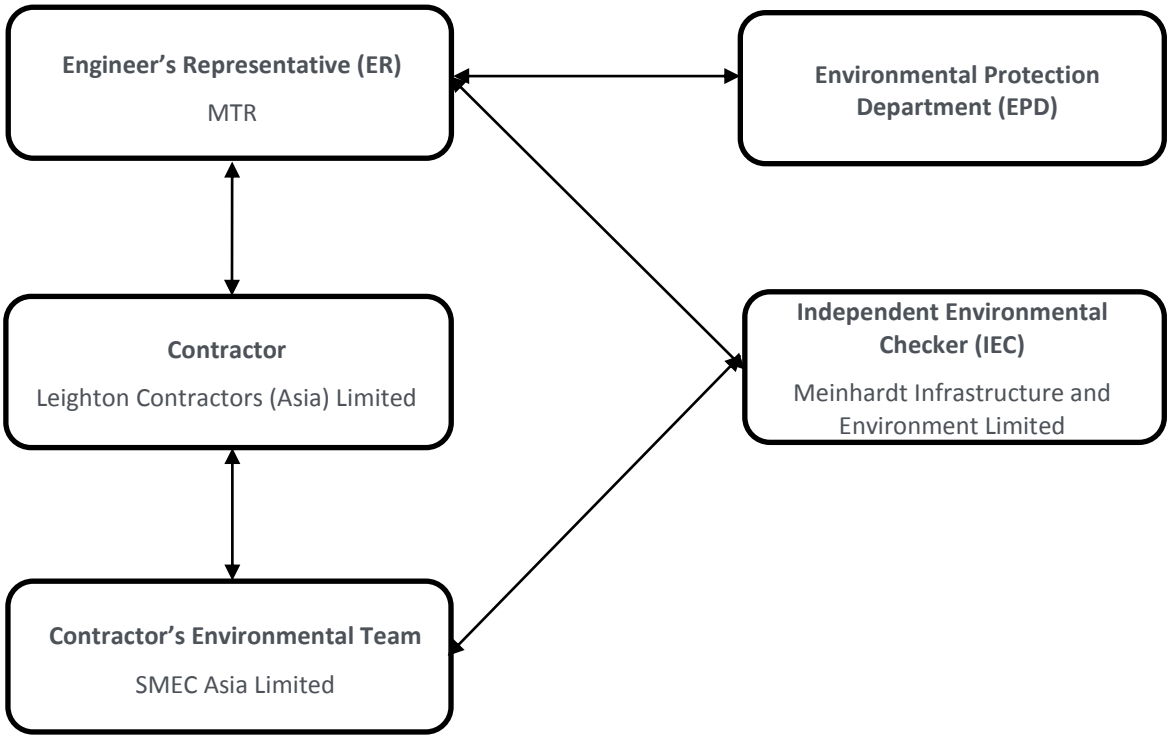
# Appendix A PROJECT WORKS BOUNDARY


Legend:
Site Boundary of SCL Contract 1112

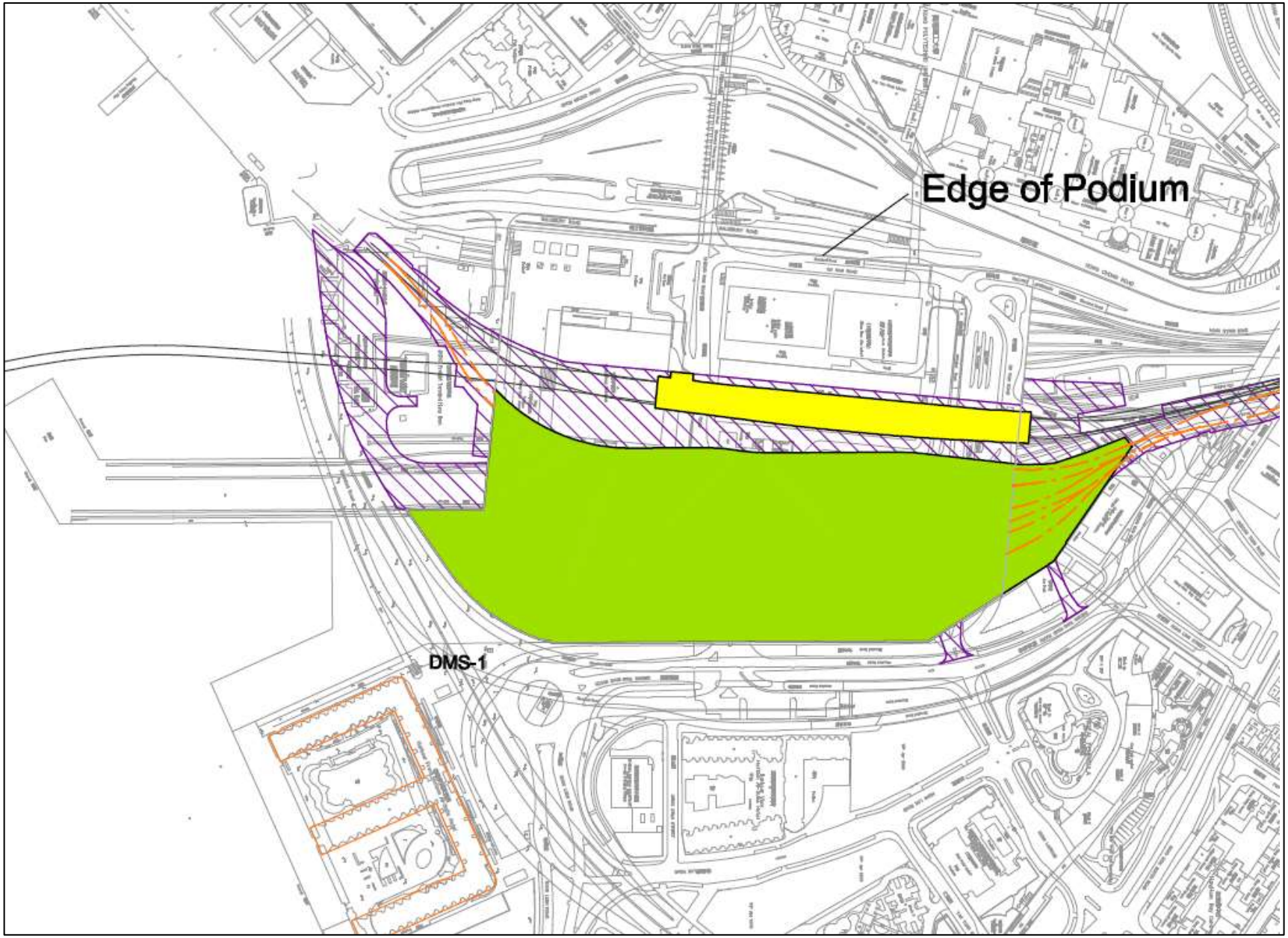
# Appendix B CONSTRUCTION PROGRAM

| **MTR Shatin to Central Link - Contract 1112** | | | |
|---|---|---|---|
| Hung Hom Station and Stabling Sidings | | | |
| Simplified Works Programme | ation of Work | | |
| | Dec-19 | Jan-20 | Feb-2 |
| HUH - Platform ABWF and E&M Remaining Work | | | |
| HUH - Drainage Works / Building Service Works at G.L. J | | | |
| HHS - HHS Remaining Work including Drainage Work | | | |
| Concourse Modification | | | |
| Landscape Work | | | |
| Suitable Measures (HHS) | | | |
| Suitable Measures (HUH) | | | |

# Appendix C PROJECT ORGANISATION FOR ENVIRONMENTAL WORKS


Engineer's Representative (ER)
MTR
Environmental Protection Department (EPD)
Contractor
Leighton Contractors (Asia) Limited
Independent Environmental Checker (IEC)
Meinhardt Infrastructure and Environment Limited
Contractor's Environmental Team
SMEC Asia Limited

# Appendix D LOCATION OF AIR QUALITY MONITORING STATION


Edge of Podium
DMS-1

# Appendix E CALIBRATION CERTIFICATES FOR MONITORING EQUIPMENT

## TSP Sampler Calibration

### SITE

| | | | |
|---|---|---|---|
| Location: | Hung Hom | Calibration Date: | September 16, 2019 |
| Sampler: | Hunghom MIR TSP | Next Calibration Date: | November 16, 2019 |
| Serial No | 694-0665 | Tech: | Sam Wong |

### CONDITIONS

| | | | |
|---|---|---|---|
| Barometric Pressure (in Hg): | 39.68 | Corrected Pressure (mm Hg): | 1008 |
| Temperature (deg F): | 88 | Temperature (deg K): | 304 |
| Average Press. (in Hg): | 39.68 | Corrected Average (mm Hg): | 1008 |
| Average Temp. (deg F): | 88 | Average Temp. (deg K): | 304 |

-2017-2017-2017-2017-2017

### CALIBRATION ORIFICE

| | | | |
|---|---|---|---|
| Make: | Tisch | Qstd Slope: | 2.09680 |
| Model: | TE-5025A | Qstd Intercept: | -0.00065 |
| Serial#: | 1941 | Date Certified: | February 5, 2019 |

### CALIBRATIONS

| Plate or Test # | H2O (in) | Qstd (m3/min) | I (chart) | IC (corrected) | LINEAR REGRESSION | |
|---|---|---|---|---|---|---|
| 1 | 12.00 | 1.884 | 58.0 | 66.12 | Slope = | 34.5287 |
| 2 | 10.00 | 1.720 | 54.0 | 61.56 | Intercept = | 1.7097 |
| 3 | 7.80 | 1.519 | 48.0 | 54.72 | Corr. coeff.= | 0.9992 |
| 4 | 5.00 | 1.216 | 38.0 | 43.32 | | |
| 5 | 3.00 | 0.942 | 30.0 | 34.20 | # of Observations: | 5 |

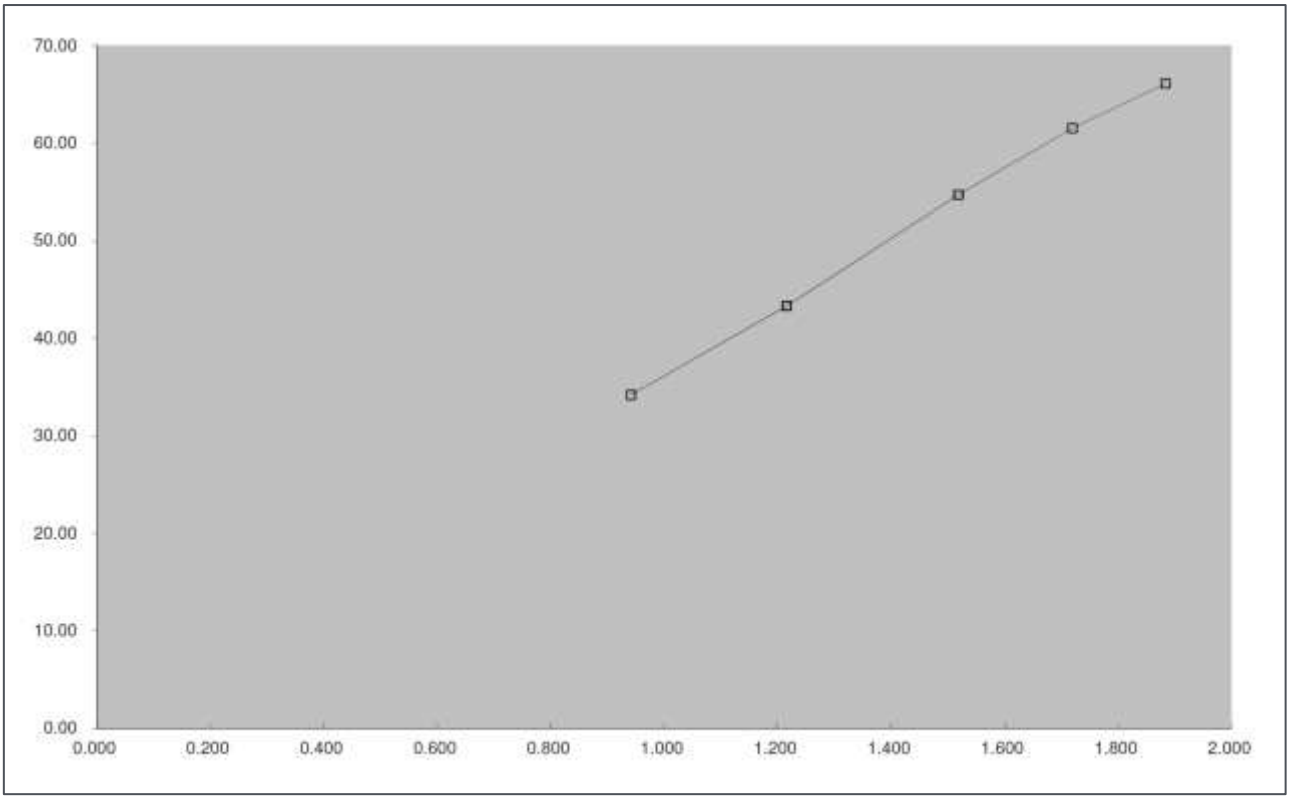
Calculations

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

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

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

Reviewer: Sam Wong Signature: _____ Date: September 16, 2019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0.800
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1.200
1.400
1.600
1.800
2.000

## TSP Sampler Calibration

**SITE**

Location: Hung Hom
Sampler: Hunghom MTR TSP
Serial No 694-0665

Calibration Date: November 15, 2019
Next Calibration Date: January 15, 2020
Tech: Sam Wong

**CONDITIONS**

| | | | |
|---|---|---|---|
| Barometric Pressure (in Hg): | 40.05 | Corrected Pressure (mm Hg): | 1017 |
| Temperature (deg F): | 84 | Temperature (deg K): | 302 |
| Average Press. (in Hg): | 40.05 | Corrected Average (mm Hg): | 1017 |
| Average Temp. (deg F): | 84 | Average Temp. (deg K): | 302 |

-2017-2017-2017-2017-2017

**CALIBRATION ORIFICE**

| | | | |
|---|---|---|---|
| Make: | Tisch | Qstd Slope: | 2.09680 |
| Model: | TE-5025A | Qstd Intercept: | -0.00065 |
| Serial#: | 1941 | Date Certified: | February 5, 2019 |

**CALIBRATIONS**

| Plate or Test # | H2O (in) | Qstd (m3/min) | I (chart) | IC (corrected) | LINEAR REGRESSION | |
|---|---|---|---|---|---|---|
| 1 | 12.00 | 1.899 | 58.0 | 66.67 | Slope = | 34.5287 |
| 2 | 10.00 | 1.734 | 54.0 | 62.07 | Intercept = | 1.7241 |
| 3 | 7.80 | 1.531 | 48.0 | 55.17 | Corr. coeff.= | 0.9992 |
| 4 | 5.00 | 1.226 | 38.0 | 43.68 | | |
| 5 | 3.00 | 0.950 | 30.0 | 34.48 | # of Observations: | 5 |

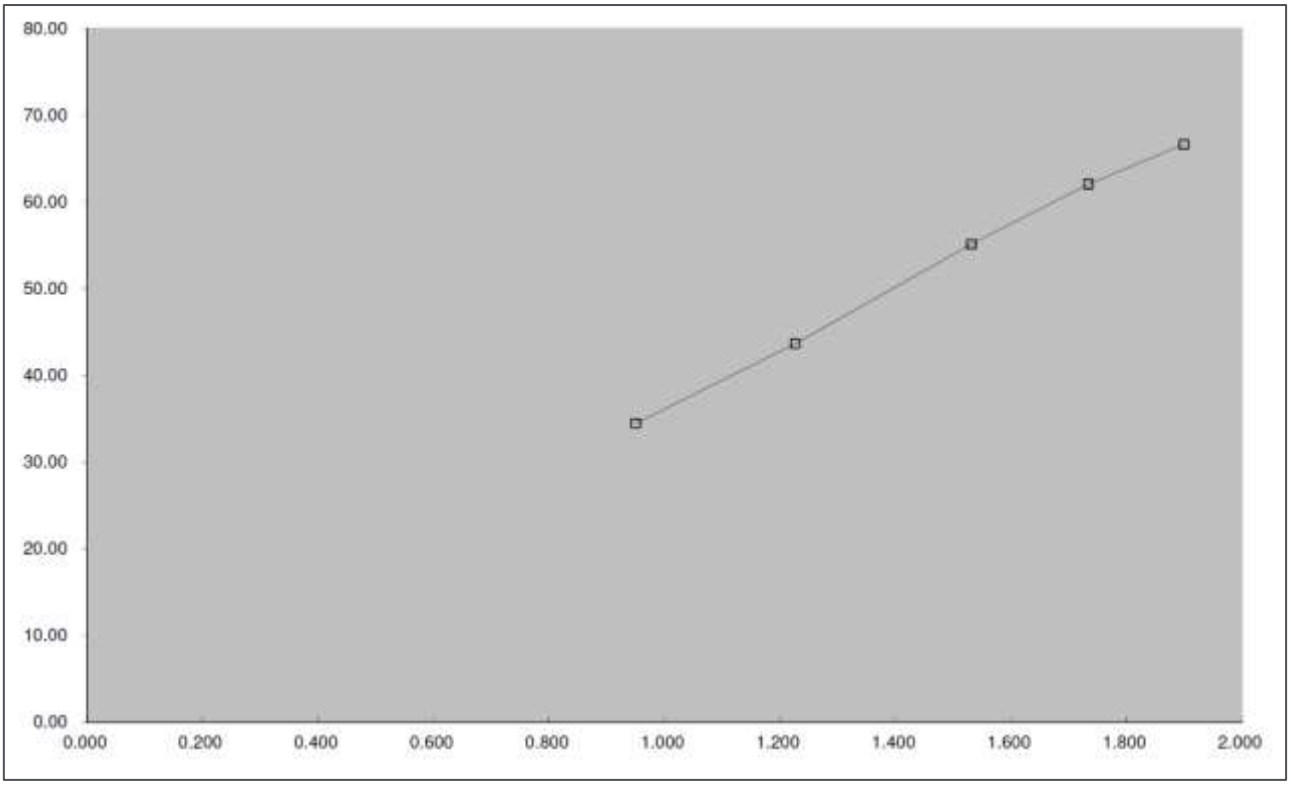
Calculations

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

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

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

Reviewer: Sam Wong Signature: _____ Date: November 15, 2019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70.00
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50.00
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10.00
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0.200
0.400
0.600
0.800
1.000
1.200
1.400
1.600
1.800
2.000

TISCH Environmental

| RECALIBRATION DUE DATE: |
|---|
| February 5, 2020 |

# Certificate of Calibration

| Calibration Certification Information | | | | |
|---|---|---|---|---|
| **Cal. Date:** | February 5, 2019 | **Rootsmeter S/N:** 438320 | **Ta:** 293 | °K |
| **Operator:** | Jim Tisch | | **Pa:** 753.1 | mm Hg |
| **Calibration Model #:** | TE-5025A | **Calibrator S/N:** **1941** | | |

| Run | Vol. Init (m3) | Vol. Final (m3) | ΔVol. (m3) | ΔTime (min) | ΔP (mm Hg) | ΔH (in H2O) |
|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 1 | 1.4830 | 3.2 | 2.00 |
| 2 | 3 | 4 | 1 | 1.0430 | 6.4 | 4.00 |
| 3 | 5 | 6 | 1 | 0.9300 | 7.9 | 5.00 |
| 4 | 7 | 8 | 1 | 0.8870 | 8.7 | 5.50 |
| 5 | 9 | 10 | 1 | 0.7320 | 12.7 | 8.00 |

**Data Tabulation**

| Vstd (m3) | Qstd (x-axis) | $\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis) | Va | Qa (x-axis) | $\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis) |
|---|---|---|---|---|---|
| 1.0036 | 0.6767 | 1.4197 | 0.9958 | 0.6714 | 0.8821 |
| 0.9993 | 0.9581 | 2.0078 | 0.9915 | 0.9506 | 1.2475 |
| 0.9973 | 1.0723 | 2.2448 | 0.9895 | 1.0640 | 1.3947 |
| 0.9962 | 1.1231 | 2.3544 | 0.9884 | 1.1144 | 1.4628 |
| 0.9908 | 1.3536 | 2.8395 | 0.9831 | 1.3431 | 1.7642 |
| **QSTD** | **m=** | **2.09680** | **QA** | **m=** | **1.31298** |
| | **b=** | **-0.00065** | | **b=** | **-0.00040** |
| | **r=** | **0.99999** | | **r=** | **0.99999** |

**Calculations**

| | | | |
|---|---|---|---|
| **Vstd=** | ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta) | **Va=** | ΔVol((Pa-ΔP)/Pa) |
| **Qstd=** | Vstd/ΔTime | **Qa=** | Va/ΔTime |

**For subsequent flow rate calculations:**

**Qstd=** $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

**Qa=** $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

| Standard Conditions | |
|---|---|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |

| Key |
|---|
| ΔH: calibrator manometer reading (in H2O) |
| ΔP: rootsmeter manometer reading (mm Hg) |
| Ta: actual absolute temperature (°K) |
| Pa: actual barometric pressure (mm Hg) |
| b: intercept |
| m: slope |

**RECALIBRATION**

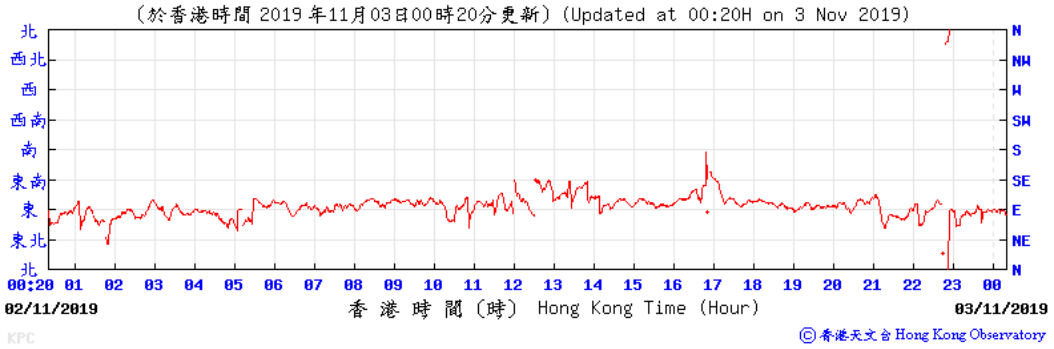
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

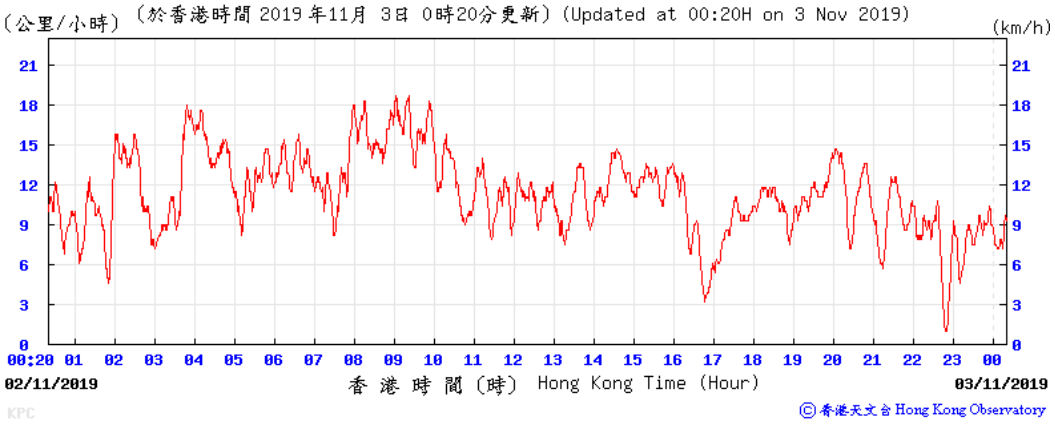
Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

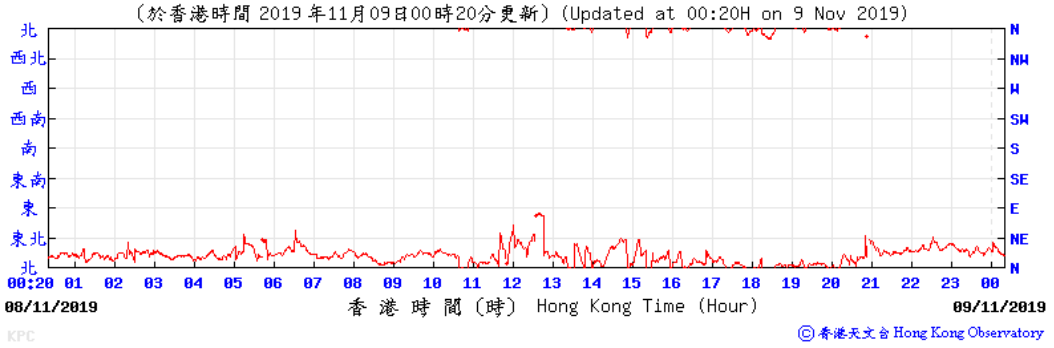
# Appendix F WIND DATA

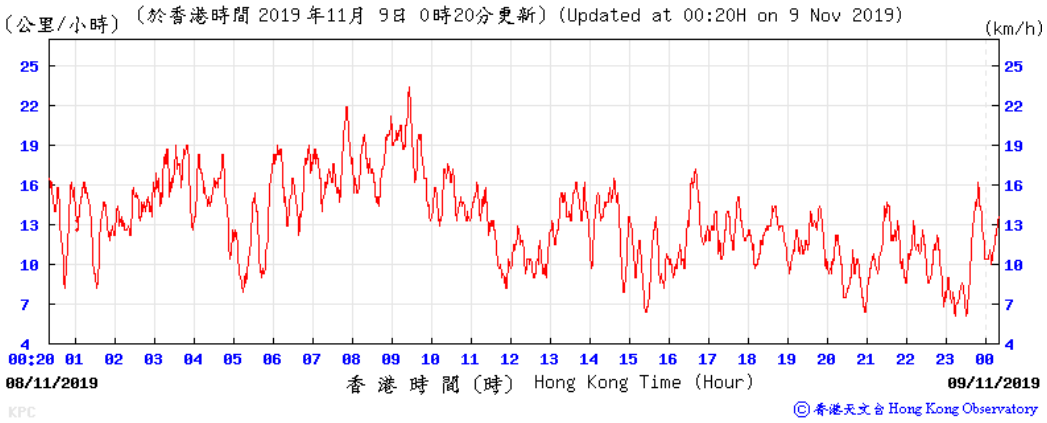
## 2 November 2019




## 8 November 2019



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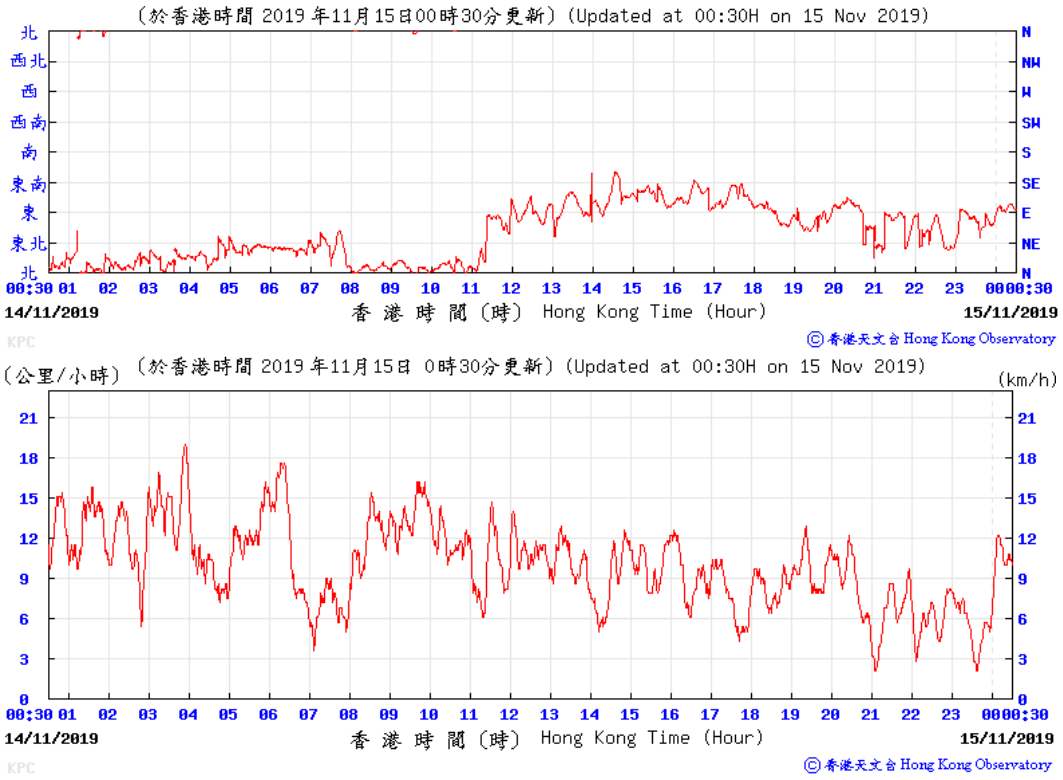


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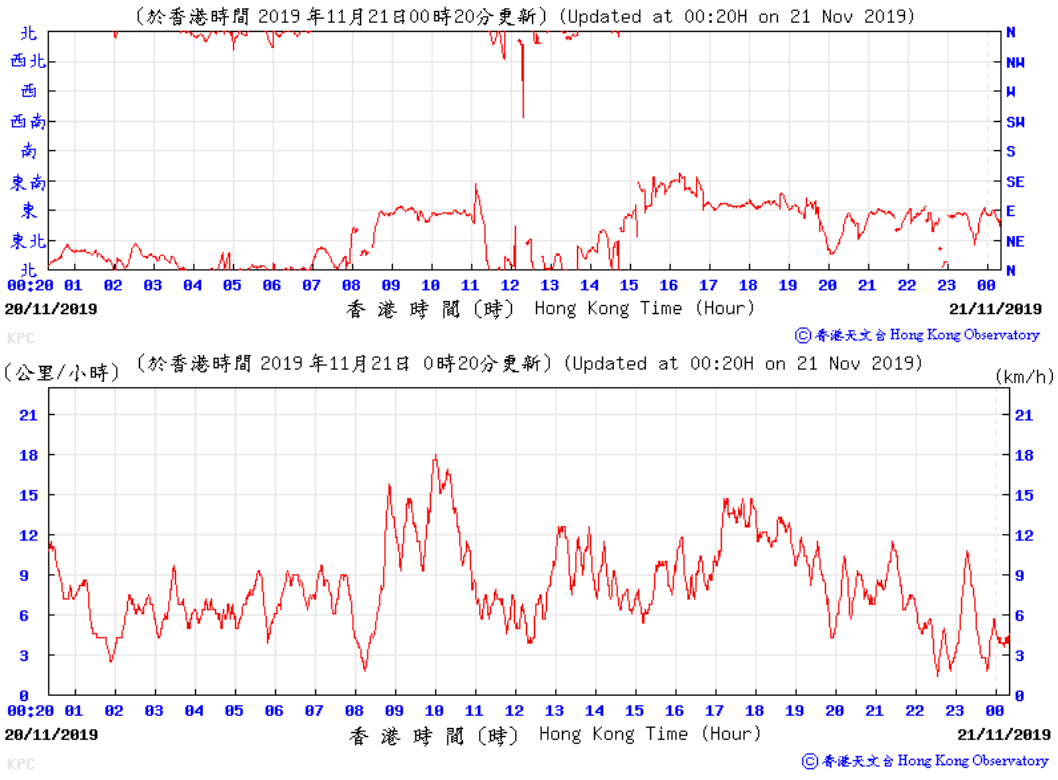
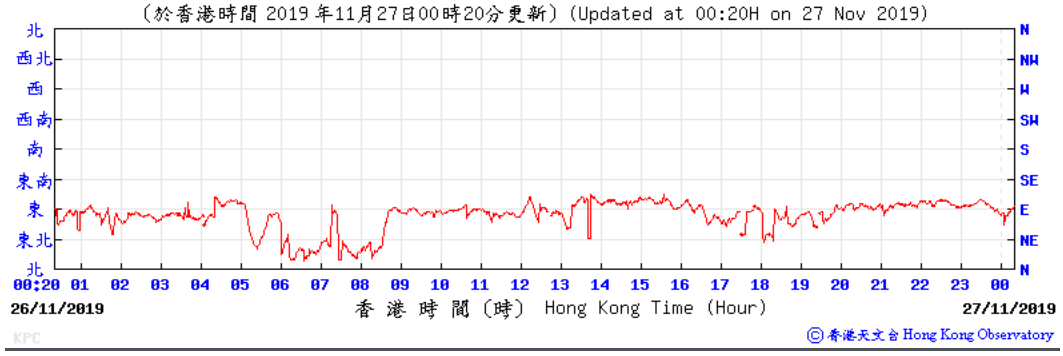
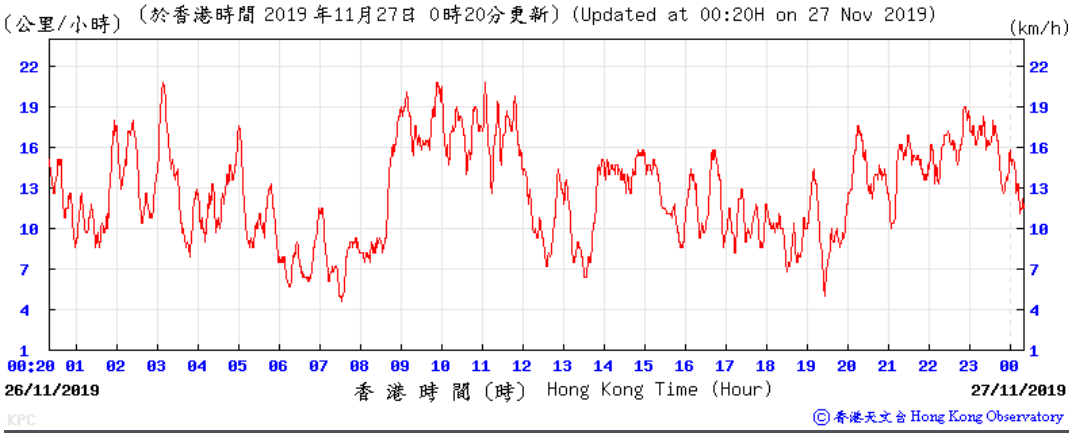


## 26 November 2019



# Appendix G ENVIRONMENTAL MONITORING PROGRAMME

## Environmental Monitoring Schedule for SCL1112 in November 2019

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

## Environmental Monitoring Schedule for SCL1112 in December 2019

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

# Appendix H IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES

| EIA REF. | RECOMMENDED MITIGATION MEASURES FOR WORKS CONTRACT 1112 | OBJECTIVES OF THE RECOMMENDED MEASURES & MAIN CONCERNS TO ADDRESS | WHO TO IMPLEMENT THE MEASURES? | LOCATION OF THE MEASURES | WHEN TO IMPLEMENT THE MEASURES? | WHAT REQUIREMENTS OR STANDARDS FOR MEASURES TO ACHIEVE? | STATUS |
|---|---|---|---|---|---|---|---|
| **Landscape & Visual (Construction Phase)** | | | | | | | |
| S6.9.3 and S6.12 of Ref.1; Table 4.9 of Ref. 2; S6.12 of Ref. 3 | The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:<br><u>Re-use of existing soil</u><br>• For soil conservation, existing topsoil will be re-used where possible for new planting areas within the project. The construction programme will consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up onsite as necessary.<br><u>No-intrusion zone</u><br>• To maximise protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor will closely monitor and restrict the site working staff from entering the "no-intrusion zone", even for indirect construction activities and storage of equipment.<br><u>Protection of retained trees</u><br>• All retained trees will be recorded photographically at the commencement of the contract, and carefully protected during the construction period.<br>o The contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites. | Minimise visual and landscape impact | Contractor | Within project site | Construction Stage | EIAO-TM | ^<br>^<br>^<br>^ |
| S6.12 of Ref.1; Table 4.9 of Ref. 2; Table 6.9 of Ref. 3 | <u>Decorative hoarding</u><br>• Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding will be designed to be compatible with the existing urban context.<br><u>Management of facilities on work sites</u><br>• To provide proper management of the facilities on the site, give control on the height and disposition/ arrangement of all facilities on the works site to minimise visual impact to adjacent VSRs.<br><u>Tree transplanting</u><br>• Trees of medium to high survival rate that would be affected by | Minimise the visual and landscape impact of the Project during construction phase | Contractor | Within project site | Detailed design and construction stage | EIAO-TM<br>ETWB TCW 2/2004<br>ETWB TCW 3/2006 | ^<br>^ |

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|---|---|---|---|---|---|---|---|
| | the works will be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006. | | | | | | ^ |
| **Air Quality (Construction Phase)** | | | | | | | |
| N.A. | Emission from Vehicles and Plants:<br>• All vehicles shall be shut down in intermittent use.<br>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.<br>• All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD). | Reduce air pollution emission from construction vehicles and plants | Contractor | All constructions sites | Construction stage | Air Pollution Control Ordinance (APCO) | ^<br>^<br>^ |
| **Construction Dust Impact** | | | | | | | |
| S7.6.5 of Ref. 1; S7.6.6 of Ref. 3 | The contractor will follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation. | Minimise dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction stage | APCO<br>To control the dust impact to meet HKAQO and EIAO-TM criteria | ^ |
| S5.20, S5.21, S5.50 and Table 5.4 of Ref. 2 | Barging Facility:<br>• Unloading of spoils to barge – the unloading process should be undertaken within a 3-sided screen with top tipping hall. Water spraying and flexible dust curtains should be provided at the discharge point for dust suppression.<br>• Transportation of the spoil from the construction sites to the Barging Point – watering once along all paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/$m^2$ once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7L/$m^2$ to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual. | To minimize the construction dust impacts to the nearby sensitive receivers | Contractor | Barging point at Hung Hom Freight Pier | Construction stage | APCO | N/A<br>N/A |

| EIA REF. | RECOMMENDED MITIGATION MEASURES FOR WORKS CONTRACT 1112 | OBJECTIVES OF THE RECOMMENDED MEASURES & MAIN CONCERNS TO ADDRESS | WHO TO IMPLEMENT THE MEASURES? | LOCATION OF THE MEASURES | WHEN TO IMPLEMENT THE MEASURES? | WHAT REQUIREMENTS OR STANDARDS FOR MEASURES TO ACHIEVE? | STATUS |
|---|---|---|---|---|---|---|---|
| | • Vehicles leaving the barging facilities – vehicles would be required to pass through the wheel washing facilities to be provided at site exit. | | | | | | N/A |
| S7.6.5 of Ref. 1; S5.50 of Ref. 2; S7.6.6 of Ref. 3 | Mitigation measures in form of regular watering under a good site practice will be adopted. Watering once per hour on exposed worksites and haul road will be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but will be sufficient to maintain an equivalent intensity of no less than 1.8 L/m$^2$ to achieve the dust removal efficiency. | Minimise dust impact at the nearby sensitive receivers | Contractor | Active works areas, exposed areas and paved haul roads | Construction stage | APCO<br>To control the dust impact to meet HKAQO and EIAO-TM criteria | ^ |
| S7.6.5 of Ref. 1; S5.51 of Ref. 2; S7.6.6 of Ref. 3 | • Any excavated or stockpile of dusty material will be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading.<br>• Any dusty materials remaining after stockpiles are removed will be wetted and cleared from the surface of roads.<br>• A stockpile of dusty material will not be extended beyond the pedestrian barriers, fencing or traffic cones.<br>• The load of dusty materials on a vehicle leaving a construction site will be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle.<br>• Where practicable, vehicle washing facilities with high pressure water jet will be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point will be paved with concrete, bituminous materials or hardcore.<br>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high will be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice will also be adopted by the contractor to ensure the conditions of the hoardings are properly maintained in construction period.<br>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit will be kept clear of dusty materials.<br>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place will be sprayed with water or a dust suppression chemical continuously.<br>• Any area that involves demolition activities will be sprayed with | Minimise dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction stage | APCO<br>Air Pollution Control (Construction Dust) Regulation<br>To control the dust impact to meet HKAQO and EIAO-TM criteria | ^<br>^<br>^<br>^<br>^<br>^<br>^<br>^ |

| EIA REF. | RECOMMENDED MITIGATION MEASURES FOR WORKS CONTRACT 1112 | OBJECTIVES OF THE RECOMMENDED MEASURES & MAIN CONCERNS TO ADDRESS | WHO TO IMPLEMENT THE MEASURES? | LOCATION OF THE MEASURES | WHEN TO IMPLEMENT THE MEASURES? | WHAT REQUIREMENTS OR STANDARDS FOR MEASURES TO ACHIEVE? | STATUS |
|---|---|---|---|---|---|---|---|
| | water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet.<br>• Where scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground floor level of the building, or a canopy will be provided from the first floor level up to the highest level of the scaffolding.<br>• Any skip hoist for material transport will be totally enclosed by impervious sheeting.<br>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) will be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.<br>• Cement or dry PFA delivered in bulk will be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.<br>• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA will be carried out in a totally enclosed system or facility, and any vent or exhaust will be fitted with an effective fabric filter or equivalent air pollution control system.<br>• Exposed earth will be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. | | | | | | ^<br>N/A<br>^<br>#<br>^<br>^<br>^ |
| S7.6.5 of Ref. 1; S5.57 of Ref. 2; S7.6.6 of Ref. 3 | Implement regular dust monitoring under EM&A programme during the construction stage. | Monitoring of dust impact | Contractor | Harbourfront Horizon | Construction stage | EIAO-TM<br>APCO | ^ |

| EIA REF. | RECOMMENDED MITIGATION MEASURES FOR WORKS CONTRACT 1112 | OBJECTIVES OF THE RECOMMENDED MEASURES & MAIN CONCERNS TO ADDRESS | WHO TO IMPLEMENT THE MEASURES? | LOCATION OF THE MEASURES | WHEN TO IMPLEMENT THE MEASURES? | WHAT REQUIREMENTS OR STANDARDS FOR MEASURES TO ACHIEVE? | STATUS |
|---|---|---|---|---|---|---|---|
| **Construction Airborne Noise** | | | | | | | |
| S8.3.6 of Ref. 1; S6.61 of Ref. 2; S8.5.6 of Ref. 3 | Implement the following good site practices:<br>• Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction programme.<br>• Machines and plant (such as trucks, cranes) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum.<br>• Plant known to emit noise strongly in one direction, where possible; be orientated so that the noise is directed away from nearby NSRs.<br>• Silencers or mufflers on construction equipment will be properly fitted and maintained during the construction works.<br>• Mobile plant will be sited as far away from NSRs as possible and practicable.<br>• Material stockpiles, mobile container site office and other structures will be effectively utilised, where practicable, to screen noise from onsite construction activities. | Control construction airborne noise | Contractor | All construction sites where practicable | Construction stage | Annex 5, EIAO-TM | ^<br>^<br>^<br>^<br>^<br>^ |
| S8.3.6 of Ref. 1; S6.68 of Ref. 2; S8.5.6 of Ref. 3 | Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings will be properly maintained throughout the construction period. | Reduce the construction noise levels at low-level zone of NSRs through partial screening. | Contractor | All construction sites where practicable | Construction stage | Annex 5, EIAO-TM | ^ |
| S8.3.6 of Ref. 1; S6.64 – 6.67 and Table 6.20 of Ref. 2; S8.5.6 of Ref. 3 | Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw. | Screen the noisy plant items to be used at all construction sites | Contractor | All construction sites where practicable | Construction stage | Annex 5, EIAO-TM | ^ |
| S8.3.6 of Ref. 1; S6.62 – 6.63 and Table 6.19 of Ref. 2; S8.5.6 of Ref. 3 | The following quiet PME should be used:<br>• Asphalt Paver (SWL=101dB(A))<br>• Backhoe (SWL=106dB(A))<br>• Backhoe with Hydraulic Breaker (SWL=110dB(A))<br>• Concrete lorry mixer (SWL=96dB(A))<br>• Concrete mixer truck (SWL=96dB(A))<br>• Concrete Pump (SWL=106dB(A))<br>• Concrete Pump Truck (SWL=106dB(A))<br>• Crane, mobile (SWL=94dB(A))<br>• Crawler Crane (SWL=102dB(A))<br>• Drill, hand-held (SWL=98dB(A)) | Reduce the noise levels of plant items | Contractor | All construction sites where practicable | Construction stage | Annex 5, EIAO-TM | ^ |

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|---|---|---|---|---|---|---|---|
| | • Dump truck (SWL=104dB(A))<br>• Excavator (SWL=106dB(A))<br>• Flat Bed Lorry (SWL=102dB(A))<br>• Generator (SWL=95dB(A))<br>• Giken Piler and Power-pack (SWL=94dB(A))<br>• Hydraulic breaker (SWL=110dB(A))<br>• Hydraulic excavator (SWL=106dB(A))<br>• Lorry (SWL=102dB(A))<br>• Lorry with crane/ grab (SWL=94dB(A))<br>• Mini Piling Rig (SWL=112dB(A))<br>• Piling Rig (SWL=112dB(A))<br>• Poker, vibrator, hand-held (SWL=98dB(A))<br>• Road Roller (SWL=101dB(A))<br>• Rock Drill (SWL = 108dB(A)<br>• Roller (SWL = 101dB(A)<br>• Truck (SWL=103dB(A))<br>• Vibratory Hammer (SWL=118dB(A)) | | | | | | |
| S8.3.6 of Ref. 1; S8.5.6 of Ref. 3 | Sequencing operation of construction plants where practicable. | Operate sequentially within the same work site to reduce the construction airborne noise | Contractor | All construction sites where practicable | Construction stage | Annex 5, EIAO-TM | ^ |
| S8.3.6 of Ref. 1; S8.5.6 of Ref. 3 | Implement noise monitoring under EM&A programme. | Monitoring of construction noise impact | Contractor | Wing Fung Building | Construction stage as required by IEC | TM-EIA | ^ |

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|---|---|---|---|---|---|---|---|
| **Water Quality (Construction Phase)** | | | | | | | |
| S10.7.1 of Ref. 1;S8.41 – 8.39 and S8.50 of Ref. 2; S10.7.1 of Ref. 3 | In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, EPD, 1994 (ProPECC PN1/94), construction phase mitigation measures will include the following:<br><u>Construction runoff and site drainage</u><br>• At the start of site establishment, perimeter cut-off drains to direct off-site water around the site will be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers will be provided onsite to direct stormwater to silt removal facilities. The design of the temporary onsite drainage system will be undertaken by the contractor prior to commencement of construction.<br>• The dikes or embankments for flood protection will be implemented around the boundaries of earthwork areas. Temporary ditches will be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps will be incorporated in the permanent drainage channels to enhance deposition rates.<br>• The design of silt removal facilities will be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps will be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1$m^3$/s a sedimentation basin of 30$m^3$ would be required and for a flow rate of 0.5$m^3$/s the basin would be 150$m^3$. Detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of works.<br>• All exposed earth areas will be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces will be covered by tarpaulin or other means.<br>• All drainage facilities and erosion and sediment control structures will be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit will be removed regularly and disposed of by spreading evenly over stable, vegetated areas.<br>• Measures will be taken to minimise the ingress of site drainage | To minimize water quality impact from construction site runoff and general construction activities | Contractor | All construction sites where practicable | Construction stage | Water Pollution Control Ordinance (WPCO)<br>ProPECC PN1/94<br>EIAO-TM<br>TM-Water Technical Memorandum on Effluent Discharge Standard (TM-DSS) | ^<br>^<br>^<br>^<br>^ |

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|---|---|---|---|---|---|---|---|
| | into excavations. If the excavation of trenches in wet periods is necessary, they will be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations will be discharged into storm drains via silt removal facilities.<br>• Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m$^3$ will be covered with tarpaulin or similar fabric during rainstorms.<br>• Measures will be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.<br>• Manholes (including newly constructed ones) will always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.<br>• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention will be paid to the control of silty surface runoff during storms, especially areas near steep slopes.<br>• All vehicles and plant will be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities will be provided at every construction site exit where practicable. Wash-water will have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road will be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.<br>• Oil interceptors will be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors will be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass will be provided for the oil interceptors to prevent flushing during heavy rain.<br>• Construction solid waste, debris and rubbish on site will be collected, handled and disposed of properly to avoid water quality impacts.<br>• All fuel tanks and storage areas will be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% | | | | | | ^<br>^<br>^<br>^<br>^<br>^<br>^<br>^ |

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|---|---|---|---|---|---|---|---|
| | of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.<br>• All the earth works involving will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.<br>• Adopt Best Management Practices. | | | | | | ^<br>^ |
| S10.7.1 of Ref. 1; S10.7.1 of Ref. 3 | <u>Tunnelling works</u><br>• Cut-and-cover/ open-cut tunnelling work will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.<br>• Uncontaminated discharge will pass through sedimentation tanks prior to off-site discharge.<br>• The wastewater with a high concentration of SS will be treated (eg, by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater.<br>• Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It will be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) will be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 will be adhered to in the handling and disposal of bentonite slurries. | To minimize construction water quality impact from tunnelling works | Contractor | All tunnelling portion | Construction stage | WPCO<br>ProPECC PN1/94<br>EIAO-TM<br>TM-Water | ^<br>^<br>^<br>^ |

| EIA REF. | RECOMMENDED MITIGATION MEASURES FOR WORKS CONTRACT 1112 | OBJECTIVES OF THE RECOMMENDED MEASURES & MAIN CONCERNS TO ADDRESS | WHO TO IMPLEMENT THE MEASURES? | LOCATION OF THE MEASURES | WHEN TO IMPLEMENT THE MEASURES? | WHAT REQUIREMENTS OR STANDARDS FOR MEASURES TO ACHIEVE? | STATUS |
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| S8.68 of Ref. 2; S10.7.1 of Ref. 1 | <u>Operation of Barging Facilities</u><br>The following good practice shall apply for the barging facilities operations:<br>• All barges should be fitted with tight bottom seals to prevent leakage of materials during transport;<br>• Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation;<br>• All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and<br>• Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water.<br>• Mitigation measures as outlined for control of *construction runoff and site drainage* provide above should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate. | To minimize water quality impact from operation of barging facility | Contractor | All barging facilities | Construction stage | WPCO<br>TM-EIA | N/A<br>N/A<br>N/A<br>N/A<br>N/A |
| S8.51 – 8.52 of Ref. 2 | <u>Bentonite Slurries:</u><br>• Bentonite slurries used in diaphragm wall construction should be reconditioned and used again wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry should either be dewatered or mixed with inert fill material for disposal to a public filling area.<br>• If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the TM-DSS. | To minimize water quality impact from bentonite slurries | Contractor | All works area | Construction stage | WPCO<br>TM-EIA | ^<br>^ |
| S8.53 – 8.54 of Ref. 2 | <u>Wastewater from Building Construction:</u><br>• Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains<br>• Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If | To minimize water quality impact from building construction | Contractor | All construction sites where practicable | Construction stage | WPCO<br>EIAO-TM | ^<br>N/A |

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| | monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence which is under the ambit of regional office of EPD. | | | | | | |
| S8.62 of Ref. 2 | <u>Excavation Activities:</u><br>• The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise the potential for dust emission, increased siltation and contamination of runoff. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from water environment so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work. | To minimize water quality impact from excavation activities | Contractor | All excavation works areas | Construction stage | WPCO<br>EIAO-TM | ^ |
| S8.63 of Ref. 2 | <u>Diaphragm Wall</u><br>• The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be implemented to control site run-off and drainage as well as any site effluents generated from the works areas, and to prevent run-off and construction wastes from entering nearby water environment. Proper handling of bentonite slurries used in diaphragm wall construction should be adopted. | To minimize water quality impact from diaphragm walling | Contractor | All diaphragm walling works areas | Construction stage | WPCO<br>EIAO-TM | ^ |
| S8.60 – 8.61 of Ref. 2; S10.7.1 of Ref. 3 | <u>Sewage effluent</u><br>Portable chemical toilets are recommended for handling the construction sewage generated by the workforce. A licensed contractor will be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. | To minimize water quality from sewage effluent | Contractor | All construction sites where practicable | Construction stage | WPCO<br>TM-Water | ^ |
| S8.64 of Ref. 2; S10.7.1 of Ref. 3 | <u>Groundwater seepage</u><br>As some proposed works areas at Hung Hom are near Victoria Harbour, high ground water level regime due to both tidal effects and rainwater infiltration is anticipated. Appropriate measures will be deployed to minimise the intrusion of groundwater into excavation works areas. In case seepage of groundwater occurs, groundwater will be pumped out from the works areas and discharged into the storm system via silt removal facilities. Groundwater from dewatering process will also be discharged into the storm system via silt traps. | To minimize groundwater quality impact from contaminated area | Contractor | Excavation areas where contamination is found. | Construction stage | WPCO<br>TM-Water<br>EIAO-TM | ^ |

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| S10.7.1 of Ref. 1; S8.57 – 8.59 of Ref. 2; S10.7.1 of Ref. 3 | <u>Accidental spillage</u><br>To prevent accidental spillage of chemicals, the following is recommended:<br>• Proper storage and handling facilities will be provided.<br>• All the tanks, containers, storage area will be bunded and the locations will be locked as far as possible from the sensitive watercourse and stormwater drains.<br>• The contractor will register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities will be stored with suitable labels and warnings.<br>• Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation. | To minimize water quality impact from accidental spillage | Contractor | All construction sites where practicable | Construction stage | WPCO<br>ProPECC PN1/94<br>EIAO-TM<br>TM-Water | ^<br>^<br>^ |
| S8.72 of Ref.2 | Regular site inspections should be undertaken to inspect the construction activities and works areas | To ensure the recommended water quality mitigation measures are properly implemented | Contractor | All construction sites | Construction stage | EIAO-TM<br>WPCO<br>ProPECC PN 1/94<br>TM-DSS<br>WDO | ^ |

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| **Waste Management (Construction Phase)** | | | | | | | |
| S11.4.1.1 of Ref. 1; S9.80 – 9.83 of Ref. 2; S11.4.1.1 of Ref.3 | <u>Onsite sorting of C&D material</u><br>Geological assessment will be carried out by competent persons onsite during excavation to identify materials which are not suitable to use as aggregate in structural concrete (eg, volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock will be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator will also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities will be submitted by the Contractors for the Engineer to review and agree. In addition, site records will also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) ref: 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc will also be explored. | Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use | Contractor | All construction sites | Construction stage | DEVB TC(W) ref. 6/2010 | ^ |
| S11.5.1 of Ref.1; S9.72 – 9.74 of Ref. 2; S11.5.1 of Ref.3 | <u>Construction and demolition material</u><br>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.<br>• Carry out onsite sorting.<br>• Make provisions in the Contract documents to allow and promote<br>• The use of recycled aggregates where appropriate.<br>• Adopt 'selective demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible.<br>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified.<br>• Implement an enhanced Waste Management Plan similar to ETWBTC (Works) ref 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.<br>• In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. will be avoided. The contractor will propose the final disposal sites to the Project Proponent and EPD and get their approval before | Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal | Contractor | All construction sites | Construction stage | Land (Miscellaneous Provisions) Ordinance<br>Waste Disposal Ordinance<br>ETWB TCW Ref 19/2005 | ^<br>^<br>^<br>^<br>^<br>^<br>^<br>^ |

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| | implementation. | | | | | | |
| S11.5.1 of Ref.1; S9.73 of Ref. 2; S11.5.1 of Ref.3 | C&D waste<br>• Standard formwork or pre-fabrication will be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works will be considered. Use of wooden hoardings will not be used, as in other projects. Metal hoarding will be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.<br>• The contractor will recycle as much of the C&D materials as possible onsite. Public fill and C&D waste will be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites will be considered for such segregation and storage. | Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal | Contractor | All construction sites | Construction stage | Land (Miscellaneous Provisions) Ordinance<br>Waste Disposal Ordinance<br>ETWB TCW Ref 19/2005 | ^<br>^ |
| S11.5.1 of Ref.1; S9.100-9.102 of Ref.2; S11.5.1 of Ref. 3 | General refuse<br>• General refuse generated onsite will be stored in enclosed bins or compaction units separately from construction and chemical wastes.<br>• A reputable waste collector will be employed by the contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.<br>• Aluminium cans will be often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit will be provided if feasible.<br>• Office wastes will be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme will be considered by the contractor. | Minimize production of the general refuse and avoid odour, pest and litter impacts | Contractor | All construction sites | Construction stage | Waste Disposal Ordinance | #<br>^<br>^<br>^ |

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| S11.5.1 of Ref.1; S9.84 – 9.93 of Ref. 2 | <u>Land-based sediment</u><br>• The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed.<br>• The Project Proponent should agree in advance with MFC of CEDD on the site allocation. Subject to the final decision by MFC, Type 1 sediments are typically disposed to South Cheung Chau and/or East of Ninepin as open sea disposal while Type 2 sediments are disposed to East Sha Chau as confined marine disposal.<br>• Sampling and Testing Plan(s) should be prepared in accordance with ETWB TC(W) No. 34/2002. Site investigation, based on the Sediment Sampling and Testing Plan(s), should be carried out in order to confirm the disposal arrangements for the proposed excavated sediments. A Sediment Quality Report (SQR) should then be submitted to EPD for agreement prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.<br>• The excavated sediments is expected to be loaded onto the dumping trucks and transferred to the barging point where the sediments would be transported via barge to the existing designated disposal sites allocated by the MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002.<br>• Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of sediments.<br>• Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).<br>• In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated | To ensure the sediment is handled and disposed of in a least impacted way and in accordance to the statutory | Contractor | All construction sites | Construction stage | ETWB TC(W) NO. 34/2002<br>Dumping at Sea Ordinance (DASO)<br>APCO<br>WPCO | N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A |

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| | sediments should be wetted during excavation / material handling and should be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.<br>• The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation.<br>• In order to minimize the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. | | | | | | N/A<br><br>N/A |
| S11.5.1 of Ref.1; S8.94 – 9.97 of Ref. 2; S11.5.1 of Ref. 3 | <u>Chemical waste</u><br>• Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, will be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.<br>• Containers used for the storage of chemical wastes will be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450L unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.<br>• The storage area for chemical wastes will be clearly labelled and used solely for the storage of chemical waste; be enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; be covered to prevent rainfall entering; and be arranged so that incompatible materials are adequately separated.<br>• Disposal of chemical waste will be via a licensed waste collector; and be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD. | Control the chemical waste and ensure proper storage, handling and disposal. | Contractor | All construction sites | Construction stage | Waste Disposal (Chemical Waste) General) Regulation<br>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste | ^<br><br>^<br><br>^<br><br>^ |
| S9.98 – 9.99 of | <u>Asbestos wastes</u> | To ensure the asbestos | Contractor | All construction | Construction | Code of practice | |

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| Ref 2 | • All storage of asbestos waste should be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. The storage area should bear warning panels to alert people of the presence of asbestos waste. Collection, transportation and disposal of asbestos waste will follow the trip-ticket system.<br>• Licensed asbestos waste collectors will be appointed to collect the asbestos waste and deliver to the designated landfill for disposal. The Project Proponent should notify to EPD in advance for disposal of asbestos waste. After processing the notification, EPD will issue specific instructions and directions for disposal. The waste producer must strictly follow these directions | wastes are handled and disposed of in accordance with the statutory requirements | | sites | stage | on the Handling, Transportation and Disposal of Asbestos Waste | ^<br><br><br><br>N/A |

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| **Land Contamination** | | | | | | | |
| S10.24 – 10.34 of Ref 2 | <u>Precautionary measures</u><br>• Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process should involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination.<br>• If soil discolouration or the presence of oil/unnatural odour is noted during visual inspection, sampling and testing should also be undertaken to verify the presence of contamination. | To act as a general precautionary measure to screen soils for the presence contamination during construction | Contractor | All construction sites | Construction stage | "Guidance Note for Contaminated Land Assessment and Remediation"<br>"Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management | ^<br>^ |
| S10.35 of Ref 2 | • Potential remediation of contaminated soil<br>• If land contamination is identified, CAR and RAP detailing the proposed remediation works should be prepared. RR should then be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and has been carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/disposal records (including trip tickets), confirmatory sampling results and photographs should be included in the RR. No construction work should be carried out prior to endorsement of the RR by EPD.<br>• In order to minimise environmental impacts arising from the handling of potentially contaminated materials, the following environmental precautionary measures are recommended to be utilised during the course of any required site remediation:<br>• Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;<br>• Excavation should be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils;<br>• Supply of suitable clean backfill material is needed after excavation;<br>• If proposed remediation methods employ chemical oxidation methods as the contaminant mass reduction technology, chemicals will be securely and separately stored away from sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and Personal Protective Equipment | To remediate contaminated soil | Contractor | All construction sites | Construction stage | "Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair /Dismantling Workshop" | N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A |

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| | • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any discharge during transport or during wet conditions;<br>• Speed control for the trucks carrying coVehicle wheel and body washing facilities at the site's exit points should be established and used; and contaminated materials should be enforced;<br>• Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control should be implemented and complied with relevant regulations and guidelines. | | | | | | N/A<br><br>N/A<br><br>N/A |
| S10.36 of Ref 2 | The Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations should be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures should be implemented as far as possible:<br>Set up a list of safety measures for site workers.<br>Provide written information and training on safety for site workers.<br>Keep a log-book and plan showing the contaminated zones and clean zones.<br>Maintain a hygienic working environment.<br>Avoid dust generation.<br>Provide face and respiratory protection gear to site workers.<br>Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers.<br>Provide first aid training and materials to site workers. | To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation. | Contractor | All construction sites | Site remediation and prior to construction phase | "Guidance Note for Contaminated Land Assessment and Remediation"<br>"Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management<br>"Occupation Safety and Health Ordinance (Chapter 509)" | N/A |
| **EM&A Project** | | | | | | | |
| S14.2 – 14.4 of Ref. 1; S13.2 – 13.4 of Ref. 3 1. | • An Environmental Team needs to be employed as per this EM&A Manual.<br>• Prepare a systematic EMP to ensure effective implementation of the mitigation measures.<br>• An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in this EM&A Manual are fully complied with. | Perform environmental monitoring & auditing | Contractor | All construction sites | Construction stage | EIAO Guidance Note Ref4/2010<br>EIAO-TM | ^ |

**Remark for Status:**

^ Compliance of mitigation measure
+ Non-compliance but rectified by the contractor
N/A Not Applicable
X Non-compliance of mitigation measure
* Recommendation was made during site audit but improved/rectified by the contractor
# Recommendation was made during site audit and improvement/rectification not yet completed by the contractor

**Notes:**
Ref. 1 – EIA Report for SCL (TAW-HUH)
Ref. 2 – EIA Report for SCL (MKK-HUH)
Ref. 3 – EIA Report for SCL (HHS)

This EMIS contains only those requirements that are relevant to Works Contract 1112 in terms of:

- EM&A required under Works Contract 1112
- Who to implement the measures – the Contractor (Leighton)
- The location of the measures – within and in the vicinity of the Works Contract 1112 Site Boundary
- When to implement the measures – during the design and construction

# Appendix I EVENT AND ACTION PLAN

**Event and Action Plan for Landscape and Visual Impact Monitoring**

| EVENT | ET | IEC | ER | CONTRACTOR |
|---|---|---|---|---|
| **Action level** | | | | |
| Non-conformity on one occasion | 1. Inform the contractor, the IEC and the ER<br>2. Discuss remedial actions with the IEC, the ER and the Contractor<br>3. Monitor remedial actions until rectification has been completed | 1. Check inspection report<br>2. Check the contractor's working method<br>3. Discuss with the ET, ER and the contractor on possible remedial measures<br>4. Advise the ER on effectiveness of proposed remedial measures. | 1. Confirm receipt of notification of non-conformity in writing<br>2. Review and agree on the remedial measures proposed by the contractor<br>3. Supervise implementation of remedial measures | 1. Identify source and investigate the non-conformity<br>2. Implement remedial measures<br>3. Amend working methods agreed with the ER as appropriate<br>4. Rectify damage and undertake any necessary replacement |
| Repeated Non-conformity | 1. Identify source<br>2. Inform the contractor, the IEC and the ER<br>3. Increase inspection frequency<br>4. Discuss remedial actions with the IEC, the ER and the contractor<br>5. Monitor remedial actions until rectification has been completed<br>6. If non-conformity stops, cease additional monitoring | 1. Check inspection report<br>2. Check the contractor's working method<br>3. Discuss with the ET and the Contractor on possible remedial measures<br>4. Advise the ER on effectiveness of proposed remedial measures | 1. Notify the contractor<br>2. In consultation with the ET and IEC, agree with the contractor on the remedial measures to be implemented<br>3. Supervise implementation of remedial measures. | 1. Identify source and investigate the non-conformity<br>2. Implement remedial measures<br>3. Amend working methods agreed with the ER as appropriate<br>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated. |

**Event and Action Plan for Air Quality**

| EVENT | ET | IEC | ER | CONTRACTOR |
|---|---|---|---|---|
| **Action level** | | | | |
| 1. Exceedance for one sample | 1. Inform the IEC, Contractor and ER<br>2. Discuss with the Contractor, IEC and ER on the remedial measures required<br>3. Repeat measurement to confirm findings<br>4. Increase monitoring frequency | 1. Check monitoring data submitted by the ET<br>2. Check Contractor's working method<br>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures | 1. Confirm receipt of notification of exceedance in writing | 1. Identify source(s), investigate the causes of exceedance and propose remedial measures;<br>2. Implement remedial measures;<br>3. Amend working methods agreed with the ER as appropriate |
| 2.Exceedance for two or more consecutive samples | 1. Inform the IEC, Contractor and ER<br>2. Discuss with the ER, IEC and Contractor on the remedial measures required<br>3. Repeat measurements to confirm findings<br>4. Increase monitoring frequency to daily<br>5. If exceedance continues, arrange meeting with the IEC, ER and Contractor<br>6. If exceedance stops, cease additional monitoring | 1. Check monitoring data submitted by the ET<br>2. Check Contractor's working method<br>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures | 1. Confirm receipt of notification of exceedance in writing<br>2. Review and agree on the remedial measures proposed by the Contractor<br>3. Supervise Implementation of remedial measures | 1. Identify source and investigate the causes of exceedance<br>2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification<br>3. Implement the agreed proposals<br>4. Amend proposal as appropriate |

| EVENT | ET | IEC | ER | CONTRACTOR |
|---|---|---|---|---|
| **Limit Level** | | | | |
| 1.Exceedance for one sample | 1. Inform the IEC, EPD, Contractor and ER<br>2. Repeat measurement to confirm findings<br>3. Increase monitoring frequency to daily<br>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. | 1. Check monitoring data submitted by the ET<br>2. Check the Contractor's working method<br>3. Discuss with the ET, ER and Contractor on possible remedial measures<br>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of exceedance in writing<br>2. Notify the Contractor, IEC and ET<br>3. Review and agree on the remedial measures proposed by the Contractor<br>4. Supervise implementation of remedial measures. | 1. Identify source(s) and investigate the causes of exceedance<br>2. Take immediate action to avoid further exceedance<br>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification<br>4. Implement agreed proposals<br>5. Amend proposal if appropriate. |
| 2.Exceedance for two or more consecutive samples | 1. Notify IEC, Contractor & EPD<br>2. Repeat measurement to confirm findings<br>3. Increase monitoring frequency to daily<br>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented<br>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken<br>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results<br>7. If exceedance stops, cease additional monitoring. | 1. Check monitoring data submitted by the ET<br>2. Check the Contractor's working method<br>3. Discuss with ET, ER, and Contractor on the potential remedial measures<br>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of exceedance in writing<br>2. Notify the Contractor, IEC and ET<br>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented<br>4. Supervise the implementation of remedial measures<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify source(s) and investigate the causes of exceedance<br>2. Take immediate action to avoid further exceedance<br>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification<br>4. Implement the agreed proposals<br>5. Revise and resubmit proposals if problem still not under control<br>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

## Event and Action Plan for Construction Noise

| EVENT | ET | IEC | ER | CONTRACTOR |
|---|---|---|---|---|
| Action Level | 1. Notify the IEC, Contractor and ER<br>2. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.<br>3. Increase monitoring frequency to check mitigation effectiveness. | 1. Review the investigation results submitted by Contractor.<br>2. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of complaint in writing<br>2. Notify the Contractor, IEC and ET<br>3. Review and agree on the remedial measures proposed by the Contractor<br>4. Supervise implementation of remedial measures. | 1. Investigate the complaint and propose remedial measure.<br>2. Report the results of investigation to the IEC, ET and ER.<br>3. Submit noise mitigation proposals to ER with a copy to ET and IEC within three working days of notification<br>4. Implement noise mitigation proposal. |
| Limit Level | 1. Notify IEC, Contractor & EPD<br>2. Repeat measurement to confirm findings<br>3. Increase monitoring frequency to daily<br>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented<br>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken<br>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances.<br>7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results. | 1. Check monitoring data submitted by the ET<br>2. Check the Contractor's working method<br>3. Discuss with ET, ER, and Contractor on the potential remedial measures<br>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. | 1. Confirm receipt of notification of exceedance in writing<br>2. Notify the Contractor, IEC and ET<br>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented<br>4. Supervise the implementation of remedial measures<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Identify source(s) and investigate the causes of exceedance<br>2. Take immediate action to avoid further exceedance<br>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification<br>4. Implement the agreed proposals<br>5. Revise and resubmit proposals if problem still not under control<br>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated. |

**Note:**
ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative

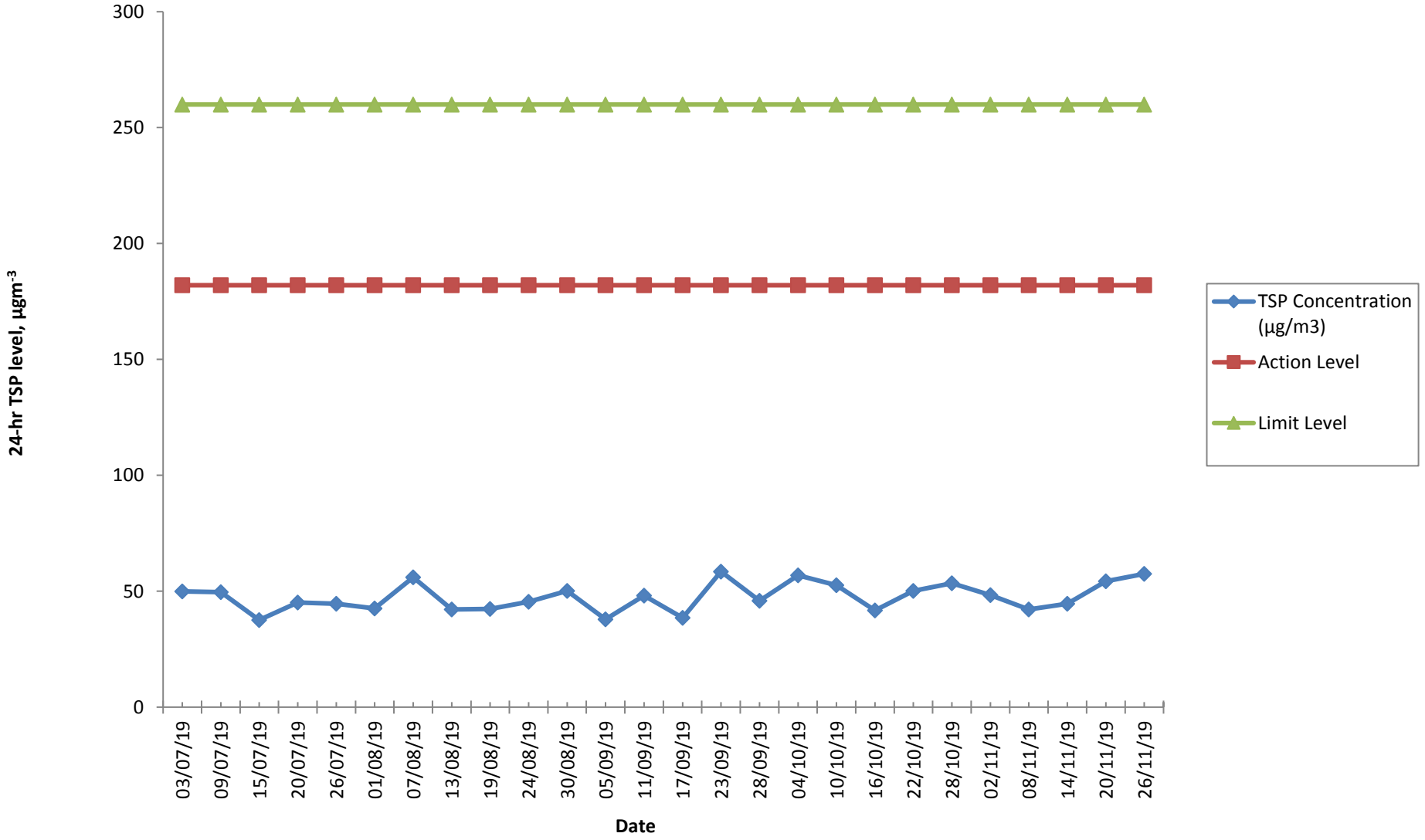
Appendix J

# MONITORING RESULTS AND THEIR GRAPHICAL PRESENTATION

## Air Quality Monitoring Results for AM2

| SAMPLING DATE | WT. OF PAPER (G) | | | | ELAPSE TIME | | | FLOW RATE (CFM) | | | TOTAL VOLUME ($M^3$) | TSP CONCENTRATION (MG/M3) | WEATHER | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Paper No. | Initial Wt. | Final Wt. | Wt. of dust | Initial | Final | Sampling Hour | Initial | Final | Avg Flow Rate | | | | |
| 02/11/19 | C606 | 2.8003 | 2.8792 | 0.0789 | 19473.30 | 19497.30 | 24.00 | 40 | 40 | 40.0 | 1631.05 | 48.3737 | Sunny | - |
| 08/11/19 | C607 | 2.8145 | 2.8833 | 0.0688 | 19497.30 | 19521.30 | 24.00 | 40 | 40 | 40.0 | 1631.05 | 42.1814 | Sunny | - |
| 14/11/19 | C608 | 2.7972 | 2.8700 | 0.0728 | 19521.30 | 19545.30 | 24.00 | 40 | 40 | 40.0 | 1631.05 | 44.6338 | Sunny | - |
| 20/11/19 | C609 | 2.8061 | 2.8947 | 0.0886 | 19545.30 | 19569.30 | 24.00 | 40 | 40 | 40.0 | 1631.05 | 54.3208 | Sunny | - |
| 26/11/19 | C610 | 2.8025 | 2.8962 | 0.0937 | 19569.30 | 19593.30 | 24.00 | 40 | 40 | 40.0 | 1631.05 | 57.4476 | Sunny | - |

## Construction Dust Monitoring Results for AM2 (Harbourfront Horizon)



# Appendix K WASTE FLOW TABLE

| | WASTE FLOW TABLE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | | | | Actual Quantities of non-inert C&D Wastes Generated Monthly | | | | | | |
| | Generated | | | | Disposed | | | | | Recycled | | | | Disposed | | |
| | Imported from SCL1111 | Imported from SCL1121 | Total Quantity Generated | Hard Rock and Broken Concrete | Reused in the Contract | Reused in Other Projects | Disposed as Public Fills at HH Barging Point | Disposed as Public Fills at TKO137 | Disposed as Public Fills at TM38 | Metals | Paper/ Cardboard Packaging | Asphalt | Plastics | Chemical Waste | | General Refuse |
| Unit | (in '000m$^3$) | | | | | | | | | (in '000Kg) | | | | (in '000Kg) | (in '000L) | (in '000Kg) |
| Jun-13 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137.3 | 0 | 0 | 0 | 0 | - | 6.55 |
| Jul-13 | 0 | - | 0.36 | 0 | 0 | 0 | 0 | 0 | 0.36 | 365.34 | 0 | 0 | 0 | 0 | - | 16.87 |
| Aug-13 | 0 | - | 1.68 | 0 | 0 | 0 | 0.05 | 0 | 1.63 | 69.98 | 0.25 | 0 | 0 | 0 | - | 12.67 |
| Sep-13 | 0 | - | 3.39 | 0 | 0 | 0 | 0.20 | 0 | 3.19 | 131.18 | 0.22 | 0 | 0.46 | 0 | - | 16.25 |
| Oct-13 | 0 | - | 4.04 | 0 | 0 | 0 | 0.78 | 0 | 3.26 | 179.97 | 0.63 | 8.28 | 2.04 | 0 | - | 39.87 |
| Nov-13 | 0 | - | 6.09 | 0 | 0 | 0 | 2.09 | 0.18 | 3.82 | 125.70 | 0.45 | 160.35 | 0 | 0 | - | 28.69 |
| Dec-13 | 0 | - | 5.69 | 0 | 0 | 0 | 1.74 | 0.01 | 3.94 | 72.15 | 0.39 | 4.13 | 0 | 0 | - | 18.04 |
| Jan-14 | 0 | - | 4.58 | 0 | 0 | 0 | 0 | 0.27 | 4.31 | 117.57 | 0.26 | 147.67 | 0.26 | 0 | - | 30.09 |
| Feb-14 | 0 | - | 3.80 | 0 | 0 | 0.14 [Note1] | 0 | 0.19 | 3.46 | 28.32 | 0.29 | 414.67 | 0 | 0 | - | 15.73 |
| Mar-14 | 0 | - | 10.10 | 0 | 0 | 6.18[Note2] | 0 | 0.29 | 3.63 | 96.26 | 0.25 | 0 | 0 | 0 | - | 47.76 |
| Apr-14 | 0 | - | 6.67 | 0 | 0 | 4.82[Note3] | 0 | 0.0053 | 1.85 | 75.43 | 0.23 | 1,322.39 | 0 | 0.2 | - | 78.63 |
| May-14 | 0.52 | - | 5.77 | 0 | 0.43 | 2.00[Note4] | 0 | 0.12 | 3.65 | 48.86 | 0.28 | 501.45 | 0 | 0 | - | 66.03 |
| Jun-14 | 0.47 | - | 4.56 | 0 | 0 | 1.73[Note5] | 0 | 0.29 | 2.54 | 42.95 | 0.25 | 0 | 0 | 0.4 | - | 45.97 |
| Jul-14 | 0.34 | - | 8.61 | 0 | 0 | 2.89[Note6] | 0 | 0.87 | 4.84 | 70.99 | 0 | 0 | 0 | 0 | - | 40.50 |
| Aug-14 | 0.20 | - | 8.57 | 0 | 0 | 3.56[Note7] | 0 | 0.44 | 4.57 | 227.86 | 0 | 0 | 0 | 0 | - | 76.93 |
| Sep-14 | 0.23 | - | 11.11 | 0 | 0 | 5.82[Note8] | 0 | 0.23 | 5.06 | 220.85 | 0.29 | 0 | 0 | 0 | - | 43.01 |
| Oct-14 | 0.54 | - | 12.79 | 0 | 0 | 6.04[Note9] | 0 | 0.06 | 6.69 | 174.82 | 0.71 | 329.16 | 0 | 0 | - | 97.92 |
| Nov-14 | 0.93 | - | 10.63 | 0 | 0 | 3.78[Note10] | 0 | 0.15 | 6.70 | 163.72 | 0.56 | 376.40 | 0 | 0 | - | 81.91 |
| Dec-14 | 3.72 | - | 8.59 | 0 | 0 | 2.97[Note11] | 0 | 0 | 5.62 | 385.80 | 0.53 | 166.98 | 0 | 5.4 | - | 130.83 |
| Jan-15 | 3.72 | - | 19.29 | 0 | 0 | 10.03 [Note12] | 0 | 0 | 9.26 | 543.40 | 0.80 | 179.01 | 0 | 0 | 1.60 | 318.66 |
| Feb-15 | 3.03 | - | 13.96 | 0 | 0 | 8.41 [Note13] | 0 | 0 | 5.54 | 263.10 | 0.46 | 168.82 | 0 | 0 | 0 | 180.27 |
| Mar-15 | 5.68 | - | 22.28 | 0 | 0 | 12.45[Note14] | 0 | 0 | 9.82 | 346.70 | 0.61 | 11.45 | 0 | 0 | 0 | 429.13 |
| Apr-15 | 4.71 | - | 18.51 | 0 | 0 | 11.25[Note15] | 0 | 0.23 | 7.26 | 275.99 | 0.32 | 0 | 0 | 0 | 0 | 376.98 |

| | WASTE FLOW TABLE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May-15 | 4.62 | - | 20.64 | 0 | 0 | 11.53[Note16] | 0 | 0 | 9.10 | 353.88 | 0.67 | 0 | 0 | 0 | 0 | 266.43 |
| Jun-15 | 5.04 | - | 13.49 | 0 | 0 | 6.29 [Note17] | 0 | 0 | 7.20 | 317.14 | 0.43 | 0 | 0 | 0.20 | 1.00 | 258.01 |
| Jul-15 | 6.21 | 0.09 | 21.64 | 0 | 0 | 16.15[Note18] | 0 | 0 | 5.50 | 706.38 | 0.69 | 0 | 0 | 0 | 0 | 270.73 |
| Aug-15 | 0.40 | 0 | 26.43 | 0 | 0 | 19.29[Note19] | 0 | 0 | 7.14 | 45.53 | 0.57 | 0 | 0 | 0 | 0 | 261.04 |
| Sep-15 | - | - | 20.91 | 0 | 0 | 13.16[Note20] | 0 | 0 | 7.75 | 317.36 | 0.58 | 0 | 0 | 0.45 | 0 | 240.74 |
| Oct-15 | - | - | 26.22 | 0 | 0 | 14.19[Note21] | 0 | 0 | 12.03 | 251.95 | 0.48 | 0 | 0 | 0 | 0 | 422.80 |
| Nov-15 | - | - | 18.66 | 0 | 0 | 7.03[Note22] | 0 | 0 | 11.64 | 446.80 | 0.53 | 0 | 0 | 0 | 0 | 283.46 |
| Dec-15 | - | - | 17.02 | 0 | 0 | 9.81[Note23] | 0 | 0 | 7.21 | 198.11 | 0.50 | 0 | 0 | 0 | 0 | 355.24 |
| Jan-16 | - | - | 24.58 | 0 | 0 | 13.22[Note24] | 0 | 0 | 11.37 | 273.64 | 0.62 | 0 | 0 | 0 | 0 | 347.67 |
| Feb-16 | - | - | 9.34 | 0 | 0 | 4.31[Note25] | 0 | 0 | 5.04 | 269.58 | 0.46 | 0 | 0 | 0 | 0 | 251.30 |
| Mar-16 | - | - | 9.75 | 0 | 0 | 3.48[Note26] | 0 | 0 | 6.27 | 750.85 | 0 | 0 | 0 | 0 | 0 | 288.35 |
| Apr-16 | - | - | 12.83 | 0 | 0 | 5.68[Note27] | 0 | 0 | 7.15 | 549.43 | 0.65 | 0 | 0 | 0.09 | 1.30 | 282.05 |
| May-16 | - | - | 7.22 | 0 | 0 | 2.08[Note28] | 0 | 0 | 5.14 | 356.66 | 0.55 | 0 | 0 | 0 | 0 | 318.75 |
| Jun-16 | - | - | 2.83 | 0 | 0 | 2.38[Note29] | 0 | 0 | 0.45 | 228.10 | 0.40 | 0 | 0 | 0 | 4.21 | 410.03 |
| Jul-16 | - | - | 8.67 | 0 | 0 | 8.50[Note30] | 0 | 0.01 | 0.16 | 172.90 | 0.16 | 0 | 0 | 0 | 0 | 418.44 |
| Aug-16 | - | - | 2.08 | 0 | 0 | 1.95[Note31] | 0 | 0 | 0.12 | 334.40 | 0.30 | 0 | 0 | 0 | 0 | 542.00 |
| Sep-16 | - | - | 1.44 | 0 | 0 | 1.44[Note32] | 0 | 0 | 0 | 47.10 | 0.37 | 0 | 0 | 0 | 0 | 542.44 |
| Oct-16 | - | - | 3.00 | 0 | 0 | 3.00[Note33] | 0 | 0 | 0 | 99.79 | 0.44 | 0 | 0 | 0 | 0 | 633.27 |
| Nov-16 | - | - | 1.29 | 0 | 0 | 1.29[Note34] | 0 | 0 | 0 | 29.71 | 0.45 | 0 | 0 | 0 | 0 | 866.16 |
| Dec-16 | - | - | 1.10 | 0 | 0 | 1.10[Note35] | 0 | 0 | 0 | 45.80 | 0.48 | 0 | 0 | 0 | 0 | 978.39 |
| Jan-17 | - | - | 2.19 | 0 | 0 | 2.19[Note36] | 0 | 0 | 0 | 26.10 | 0.25 | 0 | 0 | 0 | 0 | 730.48 |
| Feb-17 | - | - | 1.04 | 0 | 0 | 1.04[Note37] | 0 | 0 | 0 | 0 | 0.45 | 0 | 0 | 0 | 0 | 564.62 |
| Mar-17 | - | - | 0.89 | 0 | 0 | 0.89[Note38] | 0 | 0 | 0 | 0 | 0.49 | 0 | 0.31 | 0 | 0 | 688.72 |
| Apr-17 | - | - | 0.83 | 0 | 0 | 0.83[Note39] | 0 | 0 | 0 | 0 | 0.36 | 0 | 0 | 0 | 0 | 567.73 |
| May-17 | - | - | 1.23 | 0 | 0 | 1.23[Note40] | 0 | 0 | 0 | 0 | 0.16 | 0 | 0 | 0 | 0 | 597.93 |
| Jun-17 | - | - | 0.70 | 0 | 0 | 0.70[Note41] | 0 | 0 | 0 | 0 | 0.17 | 0 | 0 | 0 | 0 | 440.50 |
| Jul-17 | - | - | 0.98 | 0 | 0 | 0.98[Note42] | 0 | 0 | 0 | 0 | 0.31 | 0 | 0 | 0 | 0 | 371.00 |
| Aug-17 | - | - | 0.63 | 0 | 0 | 0.63[Note43] | 0 | 0 | 0 | 0 | 0.17 | 0 | 0 | 0 | 0 | 393.48 |
| Sep -17 | - | - | 0.21 | 0 | 0 | 0.21[Note44] | 0 | 0 | 0 | 0 | 0.23 | 0 | 0.11 | 0 | 0 | 362.47 |

| | WASTE FLOW TABLE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct-17 | - | - | 0.25 | 0 | 0 | 0.25[Note45] | 0 | 0 | 0 | 0 | 0.10 | 0 | 0 | 0 | 0 | 377.69 |
| Nov-17 | - | - | 0.66 | 0 | 0 | 0.66[Note46] | 0 | 0 | 0 | 11.77 | 0.35 | 0 | 0 | 0 | 0 | 788.65 |
| Dec-17 | - | - | 0.91 | 0 | 0 | 0.91[Note47] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 446.48 |
| Jan-18 | - | - | 0.83 | 0 | 0 | 0.83[Note48] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 571.95 |
| Feb-18 | - | - | 0.35 | 0 | 0 | 0.35[Note49] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 395.37 |
| Mar-18 | - | - | 0.66 | 0 | 0 | 0 | 0 | 0 | 0.66 | 0 | 0 | 0 | 0 | 0 | 0 | 760.13 |
| Apr-18 | - | - | 0.55 | 0 | 0 | 0 | 0 | 0 | 0.55 | 0 | 0.04 | 0 | 0 | 0 | 0 | 461.49 |
| May-18 | - | - | 0.40 | 0 | 0 | 0 | 0 | 0 | 0.40 | 14.37 | 0 | 0 | 0 | 0 | 0 | 245.30 |
| Jun-18 | - | - | 0.48 | 0 | 0 | 0.00 | 0 | 0.00 | 0.48 | 0 | 0 | 0 | 0 | 0 | 0 | 164.33 |
| Jul-18 | - | - | 0.33 | 0 | 0 | 0.00 | 0 | 0.07 | 0.27 | 45.84 | 0 | 0 | 0 | 0 | 0 | 148.53 |
| Aug-18 | - | - | 0.14 | 0 | 0 | 0.00 | 0 | 0.00 | 0.14 | 53.62 | 0 | 0 | 0 | 0 | 0 | 133.46 |
| Sep-18 | - | - | 0.16 | 0 | 0 | 0.00 | 0 | 0.00 | 0.16 | 0 | 0 | 0 | 0 | 0 | 0 | 112.56 |
| Oct-18 | - | - | 0.35 | 0 | 0 | 0.00 | 0 | 0.00 | 0.35 | 5.21 | 0 | 0 | 0 | 0 | 0 | 129.09 |
| Nov-18 | - | - | 0.23 | 0 | 0 | 0.00 | 0 | 0.00 | 0.23 | 0 | 0 | 0 | 0 | 0 | 0 | 96.35 |
| Dec-18 | - | - | 0.17 | 0 | 0 | 0 | 0 | 0 | 0.17 | 0 | 0 | 0 | 0 | 0 | 0 | 71.21 |
| Jan-19 | - | - | 0.24 | 0 | 0 | 0.00 | 0 | 0.00 | 0.24 | 0 | 0 | 0 | 0 | 0 | 0 | 67.72 |
| Feb-19 | - | - | 0.08 | 0 | 0 | 0.00 | 0 | 0.00 | 0.08 | 0 | 0 | 0 | 0 | 0 | 0 | 42.90 |
| Mar-19 | - | - | 0.042 | 0 | 0 | 0.00 | 0 | 0.00 | 0.042 | 0 | 0 | 0 | 0 | 0 | 0 | 51.08 |
| Apr-19 | - | - | 0.075 | 0 | 0 | 0.00 | 0 | 0.00 | 0.075 | 0 | 0 | 0 | 0 | 0 | 0 | 44.30 |
| May-19 | - | - | 0.00 | 0 | 0 | 0.00 | 0 | 0.00 | 0.00 | 0 | 0 | 0 | 0 | 0 | 0 | 60.98 |
| Jun-19 | - | - | 0.070 | 0 | 0 | 0.00 | 0 | 0.00 | 0.070 | 0 | 0 | 0 | 0 | 0 | 0 | 85.82 |
| Jul-19 | - | - | 0.032 | 0 | 0 | 0.00 | 0 | 0.00 | 0.032 | 0 | 0 | 0 | 0 | 0 | 0 | 82.09 |
| Aug-19 | - | - | 0.080 | 0 | 0 | 0.00 | 0 | 0.00 | 0.080 | 0 | 0 | 0 | 0 | 0 | 0 | 72.45 |
| Sep-19 | - | - | 0.023 | 0 | 0 | 0.00 | 0 | 0.00 | 0.023 | 0 | 0 | 0 | 0 | 0 | 0 | 39.94 |
| Oct-19 | - | - | 0.142 | 0 | 0 | 0.00 | 0 | 0.00 | 0.142 | 0 | 0 | 0 | 0 | 0 | 0 | 78.30 |
| Nov-19 | - | - | 0.277 | 0 | 0 | 0.00 | 0 | 0.005 | 0.277 | 0 | 0 | 0 | 0 | 0 | 0 | 63.16 |
| **TOTAL** | **40.35** | **0.09** | **457.44** | **0.00** | **0.42** | **239.63** | **4.86** | **3.43** | **209.76** | **9790.05** | **21.34** | **3790.76** | **3.18** | **6.74** | **8.11** | **20755.49** |

**Note:**

1. 137 $m^3$ of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
2. 267 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904; 3,998 $m^3$ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 1,912 $m^3$ of the Inert C&D materials were reused in Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) Project Contract HY/2012/08.
3. 1,728 $m^3$ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 3,088 $m^3$ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
4. 184 $m^3$ of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904; and 1814 $m^3$ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
5. 1,021 $m^3$ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 707 m3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
6. 2,894 $m^3$ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
7. 575.5$m^3$ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 2907.6 $m^3$ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08; and 76.0 $m^3$ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2009/08.
8. 4,905.4 $m^3$ of the Inert C&D materials were reused in TM-CLKL and 912.3 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904.
9. 5,522.9 $m^3$ of the Inert C&D materials were reused in TM-CLKL and 515.9 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904.
10. 3,774.6 $m^3$ of the Inert C&D materials were reused in TM-CLKL.
11. 2,968.9 $m^3$ of the Inert C&D materials were reused in TM-CLKL (HY/2012/08).
12. 9,988.1 $m^3$ of the Inert C&D materials were reused in WENT (SITA) and 46.34 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904.
13. 8,212.8 $m^3$ of the Inert C&D materials were reused in WENT (SITA) and 200.9 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904.
14. 11,757 $m^3$ of the Inert C&D materials were reused in WENT (SITA), 23.41 $m^3$ of the Inert C&D materials were reused in SIL Project Contract 904 and 672.78 $m^3$ of the Inert C&D materials were reused in XRL822.
15. 10,633 $m^3$ of the Inert C&D materials were reused in WENT (SITA) and 0.61176 $m^3$ of the Inert C&D materials were reused in XRL822.
16. 11,533 $m^3$ of the Inert C&D materials were reused in WENT (SITA).
17. 6,290 $m^3$ of the Inert C&D materials were reused in WENT (SITA).
18. 16,145 $m^3$ of the Inert C&D materials were reused in WENT (SITA).
19. 878 $m^3$ of the Inert C&D materials were reused in WENT (SITA) and 18,415 $m^3$ of the Inert C&D materials were reused in SCL1121.
20. 13,163 $m^3$ of the Inert C&D materials were reused in SCL1121.
21. 14,189 $m^3$ of the Inert C&D materials were reused in SCL1121.
22. 7,030 $m^3$ of the Inert C&D materials were reused in SCL1121.
23. 9,811 $m^3$ of the Inert C&D materials were reused in SCL1121.
24. 13,218 $m^3$ of the Inert C&D materials were reused in SCL1121.
25. 4,306 $m^3$ of the Inert C&D materials were reused in SCL1121.
26. 3,478 $m^3$ of the Inert C&D materials were reused in SCL1121.
27. 5,680 $m^3$ of the Inert C&D materials were reused in SCL1121.
28. 2,080 $m^3$ of the Inert C&D materials were reused in SCL1121.
29. 2,380 $m^3$ of the Inert C&D materials were reused in SCL1121.
30. 8,500 $m^3$ of the Inert C&D materials were reused in SCL1121.

31. 1,950 $m^3$ of the Inert C&D materials were reused in SCL1121.
32. 1,440 $m^3$ of the Inert C&D materials were reused in SCL1121.
33. 3,004 $m^3$ of the Inert C&D materials were reused in SCL1121.
34. 1,290 $m^3$ of the Inert C&D materials were reused in SCL1121.
35. 1,100 $m^3$ of the Inert C&D materials were reused in SCL1121.
36. 2,190 $m^3$ of the Inert C&D materials were reused in SCL1121.
37. 1,040 $m^3$ of the Inert C&D materials were reused in SCL1121.
38. 890 $m^3$ of the Inert C&D materials were reused in SCL1121.
39. 830 $m^3$ of the Inert C&D materials were reused in SCL1121.
40. 1,230 $m^3$ of the Inert C&D materials were reused in SCL1121.
41. 700 $m^3$ of the Inert C&D materials were reused in SCL1121.
42. 980 $m^3$ of the Inert C&D materials were reused in SCL1121.
43. 630 $m^3$ of the Inert C&D materials were reused in SCL1121.
44. 210 $m^3$ of the Inert C&D materials were reused in SCL1121.
45. 250 $m^3$ of the Inert C&D materials were reused in SCL1121.
46. 660 $m^3$ of the Inert C&D materials were reused in SCL1121.
47. 910 $m^3$ of the Inert C&D materials were reused in SCL1121.
48. 830 $m^3$ of the Inert C&D materials were reused in SCL1121.
49. 350 $m^3$ of the Inert C&D materials were reused in SCL1121.

| Month | MARINE SEDIMENT FLOW TABLE | | | | | |
|---|---|---|---|---|---|---|
| | Actual Quantities of Marine Dumping Monthly | | | | | |
| | Type 1 | | | Type 2 | | |
| | Generated from SCL1111 [Note1] | Generated from SCL1112 [Note3] | Disposed | Generated from SCL1111 [Note2] | Generated from SCL1112 [Note4] | Disposed |
| Unit | (in '000m$^3$) | | | (in '000m$^3$) | | |
| Jan-15 | 0 | 0 | 0 | 2.22 | 0.06 | 2.28 |
| Feb-15 | 1.29 | 0 | 0.82 | 0 | 0 | 0 |
| Mar-15 | 2.43 | 0 | 2.48 | 0 | 0 | 0 |
| Apr-15 | 3.97 | 0.14 | 5.27 | 0 | 0 | 0 |
| May-15 | 8.26 | 0.09 | 8.35 | 0 | 0 | 0 |
| Jun-15 | 9.71 | 0.12 | 9.83 | 0 | 0 | 0 |
| Jul-15 | 5.29 | 0 | 5.18 | 0 | 0 | 0 |
| Aug-15 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sep-15 | - | 0 | 0 | - | 1.94 | 1.94 |
| Oct-15 | - | 0.53 | 0.53 | - | 0 | 0 |
| Nov-15 | - | 5.67 | 5.67 | 0 | 2.32 | 2.32 |
| Dec-15 | - | 14.44 | - | - | 1.02 | - |
| Jan-16 | - | 16.59 | - | - | 0.02 | - |
| Feb-16 | - | 1.25 | - | - | 4.04 | - |
| Mar-16 | - | 3.85 | - | - | 2.30 | - |
| Apr-16 | - | 0 | - | - | 0.36 | - |
| May-16 | - | 0 | - | - | 4.06 | - |
| Jun-16 | - | 0 | - | - | 6.45 | - |
| Jul-16 | - | 0 | - | - | 0 | - |
| Aug-16 | - | 0 | - | - | 0 | - |
| Sep-16 | - | 0 | - | - | 0 | - |
| Oct-16 | - | 0 | - | - | 0 | - |
| Nov-16 | - | 0 | - | - | 0 | - |
| Dec-16 | - | 0 | - | - | 0 | - |
| Jan-17 | - | 0 | - | - | 0 | - |

| | MARINE SEDIMENT FLOW TABLE | | | | | |
|---|---|---|---|---|---|---|
| Feb-17 | - | 0 | - | - | 0 | - |
| Mar-17 | - | 0 | - | - | 0 | - |
| Apr-17 | - | 0 | - | - | 0 | - |
| May-17 | - | 0 | - | - | 0 | - |
| Jun-17 | - | 0 | - | - | 0 | - |
| Jul-17 | - | 0 | - | - | 0 | - |
| Aug-17 | - | 0 | - | - | 0 | - |
| Sep-17 | - | 0 | - | - | 0 | - |
| Oct-17 | - | 0 | - | - | 0 | - |
| Nov-17 | - | 0 | - | - | 0 | - |
| Dec-17 | - | 0 | - | - | 0 | - |
| Jan-18 | - | 0 | - | - | 0 | - |
| Feb-18 | - | 0 | - | - | 0 | - |
| Mar-18 | - | 0 | - | - | 0 | - |
| Apr-18 | - | 0 | - | - | 0 | - |
| May-18 | - | 0 | - | - | 0 | - |
| Jun-18 | - | 0 | - | - | 0 | - |
| Jul-18 | - | 0 | - | - | 0 | - |
| Aug-18 | - | 0 | - | - | 0 | - |
| Sep-18 | - | 0 | - | - | 0 | - |
| Oct-18 | - | 0 | - | - | 0 | - |
| Nov-18 | - | 0 | - | - | 0 | - |
| Dec-18 | - | 0 | - | - | 0 | - |
| Jan-19 | - | 0 | - | - | 0 | - |
| Feb-19 | - | 0 | - | - | 0 | - |
| Mar-19 | - | 0 | - | - | 0 | - |
| Apr-19 | - | 0 | - | - | 0 | - |
| May-19 | - | 0 | - | - | 0 | - |
| Jun-19 | - | 0 | - | - | 0 | - |

| | MARINE SEDIMENT FLOW TABLE | | | | | |
|---|---|---|---|---|---|---|
| Jul-19 | - | 0 | - | - | 0 | - |
| Aug-19 | - | 0 | - | - | 0 | - |
| Sep-19 | - | 0 | - | - | 0 | - |
| Oct-19 | - | 0 | - | - | 0 | - |
| Nov-19 | - | 0 | - | - | 0 | - |
| **TOTAL** | **31.69** | **42.67** | **38.11** | **2.22** | **22.57** | **6.54** |

**Note:**

1. Type 1 Marine Sediment generated from SCL1111 was delivered to the Barging Point at SCL1121 for disposal.
2. Type 2 Marine Sediment generated from SCL1111 was delivered to the Barging Point at SCL1121 for disposal.
3. Type 1 Marine Sediment generated from SCL1112 was delivered to the Barging Point at SCL1121 for disposal.
4. Type 2 Marine Sediment generated from SCL1112 was delivered to the Barging Point at SCL1121 for disposal.

Appendix L

# CUMULATIVE STATISTICS ON COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

## Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| Environmental Complaints | 7 January 2019 | Public comment received by EPD, EPD's Ref. No. K01/RE/00000599 -19 | General construction noise except renovation (within Restricted Hours) | Hung Hom MTR Station | • Environmental performance at the site and implementation status of proposed noise mitigation measures were immediately reviewed by the Contractor on 8 January 2019.<br>• No external works outside Hung Hom Concourse were carried out during the time of the complaint.<br>• On 8 January 2019, signage erection involving one scissor lift, hand-drill and hand-held breaker was carried out inside the Concourse. All works were carried out with the concourse entrance closed and was covered by a valid CNP.<br>• The noise from such equipment and machinery does not appear to match the noise in the sound recording provided by the complainant. No source of the noise in the sound recording could be identified from construction works carried out at Hung Hom Station.<br>• Investigation report submitted to EPD on 17 January 2019. |
| Environmental Complaints | 19 January 2018 | Public comment received by EPD, EPD's Ref. No. K01/RE/00002030 -18 & K01/RE/00002056 -18 | General construction noise except renovation (within Restricted Hours) | Hung Hom MTR Station | • Environmental performance at the site and implementation status of proposed noise mitigation measures were immediately reviewed by the Contractor on 19 January 2018.<br>• Ceiling panel works involving elevated working platforms (scissor lifts or cherry pickers) inside the concourse was carried out on 19 and 20 January 2018. All works were carried out behind the door leaves with the concourse entrance closed.<br>• On 19 January 2018, there was also works carried out outside the concourse which required the use of a scissor lift for hoarding removal at North Concourse and paint removal at East Concourse.<br>• The scissor lift platform mobilization sound, i.e. "beeping" sound, has already been muted to minimise sound since the working area was already fenced off with a lookout |

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| | | | | | man provided. However, the level sensor of the scissor lift would be activated as a safety warning signal whenever the platform is at a high position with balance at risk.<br>• All works carried out by SCL Contract 1112 on 19 and 20 January 2018 were covered by valid CNPs.<br>• Investigation report submitted to EPD on 26 January 2018. |
| Environmental Complaints | 7 December 2017 | Public comment received by EPD, EPD's Ref. No. K01/RE/ 00039690-17 | Dust Nuisance | Hong Kong Coliseum, 9 Cheong Wan Road, Hung Hom | • The Contractor immediately reviewed environmental performance at the site and implementation status of dust mitigation measures upon receipt of Notice of Complaint from EPD.<br>• The Contractor confirmed that remediation work of concrete wall on top of the vent shaft was on-going at SAT (near the podium of the Hong Kong Coliseum).<br>• Tarpaulin sheet as a construction dust barrier was implemented as dust mitigation measures during the course of the remediation work, and additional mitigation measure in the form of water spraying for dust suppression in the works area was immediately provided by the Contractor after site review.<br>• Given the fact that remediation works surrounding the podium are completed and mitigation measures in place are considered sufficient and effective, the construction works for Contract 1112 is unlikely to cause any dust nuisance.<br>• Investigation report submitted to EPD on 15 December 2017. |
| Environmental Complaints | 10 April 2017 | Public comment received by EPD, EPD's Ref. No. K01/RE/00010598 -17 | General construction noise except renovation (within Restricted Hours) | The Metropolis, No. 7-10 Metropolis Drive, Tsim Sha Tsui | • ET conducted inspection to examine the environmental performance of the site on 13 April 2017.<br>• The Contractor confirmed bulkhead wall demolition work using coring machine at SAT was carried out on 7 & 8 April 2017 during 1 am – 5 am behind the door leaves and no machinery that would generate beeping sound was involved.<br>• On the two nights from 6 to 8 April 2017, installation of |

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| | | | | | smoke barrier was conducted under podium which required the use of a cherry picker. During cherry picker platform mobilization, safety warning signal, i.e. "beeping" sound, would be emitted. Since the cherry picker was located under the podium with no direct line of sight from the Metropolis Residence, safety warning signal should not be audible from above the podium or at the Metropolis Residence.<br>• There was works involving the use of scissor lifts inside the concourse during April 2017 from 1 am – 5 am. However, such works were carried out with the main door closed.<br>• On 6 & 7 April 2017, there were loading and unloading works using a crane lorry at the north side outside the Concourse from 1 am – 5 am. Backwards movement of the crane lorry would also emit a "beeping" sound as the safety warning signal to alert nearby worker of the movement of the vehicle.<br>• All works carried out by SCL Contract 1112 in early April 2017 are covered by valid CNPs.<br>• Investigation report submitted to EPD on 2 May 2017. |
| Environmental Complaints | 13 March 2017 | Public comment received by EPD, EPD's Ref. No. EP3/K01/RE/0000 7049-17 | General construction noise except renovation (within Restricted Hours) | Hong Kong Coliseum at No. 9 Cheong Wan Road, Tsim Sha Tsui | • ET conducted inspection to examine the environmental performance of the site on 16 March 2017.<br>• The Contractor confirmed no construction works was carried out at the uncovered site area to the south of the Hong Kong Coliseum podium on 12 March 2017.<br>• It is confirmed that general housekeeping works were carried out under the Hong Kong Coliseum podium to prepare site hand over. No noisy operation with PME or hammering works was carried out that could lead to generation of noise nuisance.<br>• A valid Construction Noise Permit (CNP No. GW-RE0124-17) valid from 28 February 2017 to 27 August 2017 was granted for construction works, including the housekeeping works, carried out under the podium during all restricted hours. |

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| | | | | | • Given the fact that only housekeeping works were carried out under the podium of the Hong Kong Coliseum on 12 March 2017, noise nuisance reported by the complainant shall not be generated from the site managed under SCL Contract 1112.<br>• Investigation report submitted to EPD on 21 March 2017. |
| Environmental Complaints | 8 April 2016 | Public comment received by EPD, EPD's Ref. No. K01/RE/00008018 -16 | Air nuisance, other than dark smoke, from construction machine | Hung Hom Station, Tsim Sha Tsui | • ET conducted inspection to examine the environmental performance of the site on 14 April 2016.<br>• Both the site and machineries were in normal operation during the site inspection. No air nuisance or smell of diesel exhaust was noticed at the concourse by any of the attending personnel.<br>• No diesel powered equipment was found at the concourse, as all of the powered mechanical equipment was powered by electricity.<br>• It is confirmed that the fresh air intake location of the air conditioning system serving the concourse level is located above the podium at the southern façade of the concourse, away from the construction work under the podium.<br>• It is also confirmed that the sealed system is totally separated from the construction site under the podium. No air from the construction area under the podium will be drawn into the air conditioning system for distribution within the station.<br>• The source of strong diesel exhaust smell at the concourse, as mentioned by the complainant, could not be identified.<br>• Investigation report submitted to EPD on 26 April 2016. |
| Environmental Complaints | 11 April 2016 | Public comment received by EPD, EPD's Ref. No. K01/RE/00008149 -16 | Complaint of other air nuisance at Hung Hom Station, Tsim Sha Tsui | Hung Hom Station, Tsim Sha Tsui | • Complaint confirmed to be irrelevant to the construction works of the Project, no follow up required. |

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| Environmental Complaints | 24 March 2016 | Public comment received by EPD, EPD's Ref. No. K01/RE/00006851 -16 | "General construction noise except renovation (within Restricted Hours) from Hung Hom Station, Tsim Sha Tsui" | Hung Hom Station, Tsim Sha Tsui | • The Contractor confirmed that only mobilization, i.e. transportation of the equipment itself, of the scissor lift platforms were carried out during night time. During scissor lift platforms mobilization, safety warning signal (the "beeping" noise) would be emitted. The audible warning signal device cannot be switched off so as to alert nearby workers of the movement of the equipment. Silencing the device could induce safety concern and not advisable.<br>• At night time of 22 and 23 March 2015, a forklift was deployed for the transportation of concrete blocks to be used as the footings for hoarding construction outside the concourse area (Photo 2). Backward movement of the forklift would also generate safety warning signal.<br>• There is another valid CNP (CNP No. GW-RE0176-16) for construction works to be carried out inside the concourse during night time. However, this is not applicable to the works of concern, located outside the concourse area. Whereas CNP No. GW-RE0207-16, effective from 10 March 2016 to 28 April 2016, allows mobilization of scissor lift platforms and use of forklift for transportation of construction material outside the MTR Hung Hom Station.<br>• Investigation report submitted to EPD on 20 April 2016. |
| Environmental Complaints | 28 September 2015 | Public comment received by EPD, K01/RE/00024658 -15 | Complaint of general construction noise except renovation (within Restricted Hours) from construction site at Hung Hom | Harbour Plaza Metropolis, Tsim Sha Tsui | • A valid construction noise permit (CNP) (CNP no. GW-RN0969-15) was granted for such works from 25 September 2015 to 24 March 2016.<br>• Noise mitigation measures were implemented at the site.<br>• Due to the limited construction works being carried out during the evening period and most of the active construction works being carried out under the podium which had no direct line of sight from the nearest sensitive receiver, Harbour Plaza Metropolis, construction noise nuisance from Shatin to Central Link (SCL) Contract 1112 should not be anticipated.<br>• Investigation report submitted to EPD on 3 November 2015. |

| | DATE RECEIVED | REFERENCE NO. | SUBJECT | LOCATION OF CONCERN | STATUS |
|---|---|---|---|---|---|
| Environmental Complaints | 10 March 2015 | Public comment received by EPD, K01/RE/00005632 -15 | Complaint of malodour from Hung Hom Station<br>(near Exit B1) | Hung Hom Station, Tsim Sha Tsui | • ET conducted inspection to examine the environmental performance of the site on 12 Mar 2015<br>• No odour was noticed by all attending parties. It was observed that excavation, predrilling, welding, box culvert construction and installation of TAM grout pipeworks were carried out at the NAT works area, located to the west and east of the footbridge<br>• The source of malodour could not be identified<br>• A barrier was erected on the eastern side of footbridge, with the barrier already in place on the western side of the footbridge since November 2014, so now both sides of the footbridge contain barriers to shield off any dust or odour from the site<br>• No noticeable malodour was observed and the air quality control was found to be satisfactory according to conversation between EPD and the Contractor<br>• Investigation Report submitted to EPD on 26 Mar 2015 |

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