

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 No. 77

[Period from 1 to 31 January 2019]

(February 2019)

Verified by: Fredrick Leong 

Position: Independent Environmental Checker

Date: 13 February 2019

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 No. 77

[Period from 1 to 31 January 2019]

(February 2019)

Certified by: Lisa Poon 

Position: Environmental Team Leader

Date: 13 February 2019



**MTR Corporation Limited**

Consultancy Agreements  
No. C11033 & C11033B

**Shatin to Central Link - Tai Wai to Hung  
Hom Section and Mong Kok East  
to Hung Hom Section**

**Monthly EM&A Report No. 77**

[Period from 1 to 31 January 2019]

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

Version: A Date: 13 February 2019

This Monthly EM&A Report is prepared for MTR Corporation Limited and is given for its sole benefit in relation to and pursuant to Consultancy Agreement No. C11033 & C11033B and may not be disclosed to, quoted to or relied upon by any person other than MTR Corporation Limited without our prior written consent. No person (other than MTR Corporation Limited) into whose possession a copy of this report comes may rely on this plan without our express written consent and MTR Corporation Limited may not rely on it for any purpose other than as described above.

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](http://www.aecom.com)

## Table of Contents

	Page
1 INTRODUCTION.....	1
1.1 Background.....	1
1.2 Project Programme.....	1
1.3 Purpose of the Report .....	2
2 ENVIRONMENTAL MONITORING AND AUDIT.....	2
3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS..	9

## List of Tables

Table 1.1	Summary of Awarded Works Contracts
Table 2.1	Summary of Major Construction Activities in the Reporting Period
Table 2.2	Summary of 24-Hour TSP Monitoring Results in the Reporting Period
Table 2.3	Summary of Construction Noise Monitoring Results in the Reporting Period
Table 2.4	Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month
Table 3.1	Summary of Status of Required Submissions for and EP-438/2012/K
Table 3.2	Summary of Status of Required Submissions for EP-437/2012/A

## List of Appendices

Appendix A	77 <sup>th</sup> Monthly EM&A Report for Works Contract 1109 – Stations and Tunnels of Kowloon City Section
Appendix B	73 <sup>rd</sup> Monthly EM&A Report for Works Contract 1111 – Hung Hom North Approach Tunnels
Appendix C	72 <sup>nd</sup> Monthly EM&A Report for Works Contract 1103 – Hin Keng to Diamond Hill Tunnels
Appendix D	71 <sup>st</sup> Monthly EM&A Report for Works Contract 1106 – Diamond Hill Station
Appendix E	68 <sup>th</sup> Monthly EM&A Report for Works Contract 1112 – Hung Hom Station and Stabling Sidings
Appendix F	Final EM&A Review Report for Works Contract 1102 – Hin Keng Station and Approach Structures

## 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)] and Shatin to Central Link – Mong Kok East to Hung Hom Section [SCL (MKK-HUH) (hereafter referred to as “the Project”) are parts 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), SCL (MKK-HUH) (Register No.: AEIAR-165/2012) 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, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS) (EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) were subsequently applied for EP-438/2012 and EP-437/2012. The latest Environmental Permits (EP Nos.: EP-438/2012/K and EP-437/2012/A) were issued by Director of Environmental Protection (DEP) on 4 October 2016 and 28 November 2017, respectively.

### 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 <sup>(1)</sup>	Ma On Shan Line Modification Works	December 2012	Sun Fook Kong Joint Venture (SFKJV)	ANewR Consulting Ltd. (ANewR)
1102 <sup>(6)</sup>	Hin Keng Station and Approach Structures	October 2013	Penta-Ocean Construction Co. Ltd.	Wellab Limited (Wellab)
1103	Hin Keng to Diamond Hill Tunnels	February 2013	Vinci Construction Grands Projets	Ove Arup & Partners Hong Kong Ltd. (Arup)
1106	Diamond Hill Station	March 2013	Leader Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1107 <sup>(4)</sup>	Diamond Hill to Kai Tak Tunnels	May 2013	Chun Wo - SELI Joint Venture	Cinotech Consultants Ltd. (Cinotech)

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1108 <sup>(5)</sup>	Kai Tak Station and Associated Tunnels	June 2013	Kaden -Chun Wo Joint Venture	Environmental Pioneers & Solutions Ltd.
1108A <sup>(2)</sup>	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	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 <sup>(3)</sup>	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<sup>st</sup> January 2019.

### 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 seventy-seventh EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ETs during the period from 1 to 31 January 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-437/2012/A and/or 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 Contractor's ETs.

Works Contract	Contract Title	Works Covered in Environmental Permit No.
1101	Ma On Shan Modification Works	EP-438/2012/K

Works Contract	Contract Title	Works Covered in Environmental Permit No.
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-437/2012/A & EP-438/2012/K
1112	Hung Hom Station and Stabling Sidings	EP-437/2012/A & 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, 1111, 1103, 1106 and 1112 prepared by the respective Contractor's ETs are provided in Appendices A to E, 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 The construction works of Works Contract 1102 were substantially completed in December 2018. The Final EM&A Review Report for Works Contract 1102 summarising the waste management details, site inspection findings, environmental complaint records and investigations, and any notification of summons, prosecutions and corrective actions throughout the whole construction period are provided in Appendix F.
- 2.1.4 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
1103	Fung Tak Area	<ul style="list-style-type: none"> <li>Site clearance &amp; Backfilling works</li> </ul>
	Ma Chai Hang Area	<ul style="list-style-type: none"> <li>Civil &amp; Structural (C&amp;S) Works, Site Clearance, Architectural Builders Works and Finishes (ABWF) and Reprovisioning, Remedial and Improvement Works (RRIW)</li> </ul>
	Shui Chuen O	<ul style="list-style-type: none"> <li>Storage Area</li> </ul>
1106	Diamond Hill Station Area	<ul style="list-style-type: none"> <li>Defect rectification for SCL DIH station - minor ABWF works;</li> <li>TTA for site access and temporary footpath diversion at Choi Hung Road and Lung Cheung Road;</li> <li>Installation of salt water main and fire service main; and</li> <li>General site clearance works.</li> </ul>
1109	Works in To Kwa Wan	<ul style="list-style-type: none"> <li>Along Ma Tau Wai Road and TKW/MTW Road</li> </ul>

Works Contract	Site	Construction Activities
	(TKW) (formerly named as Ma Tau Wai (MTW))	Garden – Station construction; ABWF works; and Underground utilities reinstatement works.
	Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))	<ul style="list-style-type: none"> <li>• Olympic Garden – Construction of station entrance and ABWF works;</li> <li>• SUW Station – Construction of SUW station and ABWF works;</li> <li>• Tam Kung Road – Construction of aboveground structure and ABWF works; and</li> <li>• Nam Kok Road – Construction of station entrance and ABWF works.</li> </ul>
1111	Ho Man Tin	<ul style="list-style-type: none"> <li>• Steel mesh, planter works, hoarding removal</li> </ul>
	NSL (South)	<ul style="list-style-type: none"> <li>• Soil disposal, defect rectification, pipe connection, backfilling, planter construction, removal of pipe pile, chequer plate installation, erection work for kerb backing, planting</li> </ul>
	OB2 / TB1	<ul style="list-style-type: none"> <li>• Installation of working platform, defect rectification</li> </ul>
	OB2A / TB2	<ul style="list-style-type: none"> <li>• Defect rectification</li> </ul>
	NSL 9 & Oi Sen Path	<ul style="list-style-type: none"> <li>• Defect rectification, railing installation, reinstatement of slope, scaffolding erection, water pump replacement, minor steel work</li> </ul>
1112	Hung Hom Station (HUH)	<ul style="list-style-type: none"> <li>• Building Service works and water main connection at G.L J of HUH</li> <li>• Platform ABWF and E&amp;M works</li> <li>• Transplantation of trees from Kai Tak Nursery to final receptor</li> </ul>
	SAT Ventilation Shaft	<ul style="list-style-type: none"> <li>• Landscape preparation works</li> </ul>
	Concourse level & Mid-level walkway	<ul style="list-style-type: none"> <li>• Modification works</li> </ul>

- 2.1.5 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 E.
- 2.1.6 Water quality monitoring was not carried out during this reporting period since no dredging activity was conducted in the reporting month.
- 2.1.7 One complaint under Works Contract 1112 regarding construction noise was referred by EPD on 7 January 2019. Investigations were conducted and reported in respective EM&A Report. No 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.
- 2.1.8 Regular site inspections were conducted by the respective Contractor's 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 ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Exceedance due to the Project Construction (Yes/ No/ N/A)
<b>Works Contracts 1102 and 1103</b>					
DMS-1 <sup>(11)</sup>	C.U.H.K.A.A. Thomas Cheung School	N/A	148.7	260	N/A
<b>Works Contract 1103</b>					
DMS-2	Price Memorial Catholic Primary School	47.8 – 91.4	167.4	260	No
<b>Works Contracts 1103 and 1106</b>					
DMS-3	Hong Kong S.K.H Nursing Home <sup>(1)</sup>	84.5 – 131.5	159.1	260	No
<b>Works Contract 1106<sup>(10)</sup></b>					
DMS-4	Block 1, Rhythm Garden	41.3 – 93.1	160.4	260	No
<b>Works Contract 1108<sup>(5)</sup></b>					
<b>Works Contract 1109</b>					
DMS-6	Katherine Building <sup>(2)</sup>	42 – 79	156.8	260	No
DMS-7	Parc 22 <sup>(3)</sup>	50 – 84	166.7	260	No
DMS-8	SKH Good Shepherd Primary School	34 – 57	152.2	260	No
DMS-9	No. 12 Pau Chung Street <sup>(4)(9)</sup>	48 – 108	160.9	260	No
DMS-10	Chat Ma Mansion	55 – 87	170.4	260	No
<b>Works Contract 1111</b>					
AM1 <sup>(6)</sup>	No. 234 – 238 Chatham Road North <sup>(7)</sup>	21.4 – 68.4	183.9	260	No
<b>Works Contract 1112</b>					
AM2	Site Boundary of Finger Pier Adjacent To Harbourfront Horizon <sup>(8)</sup>	46.0 – 55.6	182	260	No
<b>Works Contract 11240<sup>(5)</sup></b>					

## 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.

MTR Corporation Limited

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

Monitoring Station ID	Location	Noise Level (L <sub>Aeq,30mins</sub> , dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected <sup>(7)</sup>		
Works Contracts 1102 and 1103						
NMS-CA-1 <sup>(12)</sup>	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	Price Memorial Catholic Primary School	61.1 – 62.5	66.0	< Baseline	70 (65 during examination period)	No
Works Contracts 1103 and 1106						
NMS-CA-3	Hong Kong S.K.H Nursing Home <sup>(1)</sup>	69.4 – 71.9	73.0	< Baseline	70	No
Works Contracts 1106 <sup>(11)</sup>						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	71.7 – 74.3	71.0	63.4 – 71.6	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade) <sup>(2)</sup>	72.1 – 74.1	74.0	< Baseline – 57.7	70 (65 during examination period)	No
Works Contract 1108 <sup>(6)</sup>						
Works Contract 1109						
NMS-CA-6	No. 16-23 Nam Kok Road <sup>(3)</sup>	62.3 – 62.9	76.1	< Baseline	75	No
NMS-CA-7	Skytower Tower 2	65.1 – 65.8	70.0	< Baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	72.9 – 73.4	75.4	< Baseline	70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring) <sup>(8)</sup>	No
NMS-CA-9	Kong Yiu Mansion <sup>(4)</sup>	69.6 – 70.1	69.2	59.0 – 62.8	75	No
NMS-CA-10	Chat Ma Mansion	75.8 – 76.4	76.6	< Baseline	75	No
Works Contract 1111						



MTR Corporation Limited

Monitoring Station ID	Location	Noise Level (L <sub>Aeq,30mins</sub> , dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected <sup>(7)</sup>		
NM1	Carmel Secondary School (South Block)	59.8 – 62.6	68.0	< Baseline	70 (65 during examination period) (68 during the period of conducting the continuous noise monitoring) <sup>(9)</sup>	No
NM2	No. 234 – 238 Chatham Road North <sup>(5)</sup>	63.1 – 66.7	79.0	< Baseline	75 (77) <sup>(10)</sup>	No
<i>Works Contract 1112</i> <sup>(6)</sup>						
<i>Works Contract 11240</i> <sup>(6)</sup>						

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.

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
1103	0	0	0
1106	0	0	0
1109	0	0	0
1111	0	0	0
1112	1	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 EPs (EP-437/2012/A and EP-438/2012/K). The status of required submissions under the EPs as of the reporting period are summarised in Tables 3.1 and 3.2.

Table 3.1 Summary of Status of Required Submissions for and 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 (1 <sup>st</sup> submission) 31 Aug 2012 (2 <sup>nd</sup> submission) 30 Nov 2012 (3 <sup>rd</sup> submission)
Condition 2.7	Management Organisation of Main Construction Companies	27 Jul 2012 (1 <sup>st</sup> submission) 21 Aug 2012 (2 <sup>nd</sup> submission) 19 Dec 2012 (3 <sup>rd</sup> submission) 22 Jan 2013 (4 <sup>th</sup> submission) 30 Apr 2013 (5 <sup>th</sup> submission) 21 May 2013 (6 <sup>th</sup> 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 (1 <sup>st</sup> submission) 28 Sep 2012 (2 <sup>nd</sup> submission) 30 Nov 2012 (3 <sup>rd</sup> submission) 11 Jan 2013 (4 <sup>th</sup> submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5 <sup>th</sup> submission) 26 Apr 2013 (6 <sup>th</sup> submission) 11 Jun 2013 (7 <sup>th</sup> submission) 12 Jul 2013 (Approved) 26 Jul 2013 (8 <sup>th</sup> submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9 <sup>th</sup> submission) 13 Sep 2013 (Approved) 20 Jan 2014 (10 <sup>th</sup> submission) 26 Feb 2014 (Approved) 31 Mar 2015 (Contract 1106 submission only) 13 Apr 2015 (Contract 1106 submission only) 15 Apr 2015 (Approved)
Condition 2.10	Continuous Noise Monitoring Plan (CNMP)	1 Aug 2012 (1 <sup>st</sup> submission) 28 Sep 2012 (2 <sup>nd</sup> submission) 30 Nov 2012 (3 <sup>rd</sup> submission) 11 Jan 2013 (4 <sup>th</sup> submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5 <sup>th</sup> submission) 26 Apr 2013 (6 <sup>th</sup> submission) 11 Jun 2013 (7 <sup>th</sup> submission) 12 Jul 2013 (Approved) 26 Jul 2013 (8 <sup>th</sup> submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9 <sup>th</sup> submission) 13 Sep 2013 (Approved) 20 Jan 2014 (10 <sup>th</sup> submission)

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

EP Condition (EP-438/2012/K)	Submission	Submission date
		C submission) 15 Jul 2016 (Batch 1 Version D approved) 15 Jul 2016 (Batch 2 Version C approved) 15 Sep 2016 (Batch 3 Version A submission) 4 Oct 2016 (Batch 3 Version A approved) 8 Mar 2017 (Batch 4 Version A) 7 Apr 2017 (Batch 4 Version A approved) 7 Jun 2017 (Final) 20 Jul 2017 (Approved)
Condition 2.28	As-built Drawings for Operational Ground-borne Noise Mitigation Measures	10 Aug 2017 (1 <sup>st</sup> submission)
Condition 2.30	As-built Drawings for Operational Air-borne Noise Mitigation Measures	4 Dec 2015 (1 <sup>st</sup> submission) 28 Dec 2015 (2 <sup>nd</sup> submission) 4 Feb 2016 (Approved) 20 Mar 2018 (3 <sup>rd</sup> submission)
Condition 2.31	Performance Test Report for Train Noise – Operational Airborne Railway Noise	15 Nov 2018 (Batch 1 Version A submission)
Condition 2.33	As-built Drawings for Landscape and Visual Mitigation Measures	4 Dec 2015 (1 <sup>st</sup> submission) 28 Dec 2015 (2 <sup>nd</sup> submission) 4 Feb 2016 (Approved) 22 Aug 2018 (3 <sup>rd</sup> submission) 5 Nov 2018 (4 <sup>th</sup> submission)
Condition 2.36	Contamination Assessment Plan (CAP) for the Temporary Magazine Site at TKO Area 137	23 Mar 2016 (1 <sup>st</sup> submission) 20 Apr 2016 (2 <sup>nd</sup> submission) 22 Apr 2016 (Approved)
Condition 2.36	Contamination Assessment Report (CAR) for the Temporary Magazine Site at TKO Area 137	19 May 2016 (1 <sup>st</sup> submission) 3 Jun 2016 (2 <sup>nd</sup> submission) 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 (1 <sup>st</sup> submission) 16 July 2018 (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. 1-75	Reported in previous Monthly EM&A Reports
	Monthly EM&A Report No. 76	14 January 2019

Table 3.2 Summary of Status of Required Submissions for EP-437/2012/A

EP Condition (EP-437/2012/A)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	30 Nov 2012
Condition 2.3	Notification of Information of Community Liaison Groups	30 Nov 2012
Condition 2.5	Management Organisation of Main Construction Companies	19 Dec 2012 (1 <sup>st</sup> submission) 30 Apr 2013 (2 <sup>nd</sup> submission)
Condition 2.6	Construction Programme and EP Submission Schedule	19 Dec 2012
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP)	30 Nov 2012 (1 <sup>st</sup> submission) 8 Feb 2013 (Approved) 26 Apr 2013 (2 <sup>nd</sup> submission) 11 Jun 2013 (3 <sup>rd</sup> submission) 27 Aug 2013 (Approved) 20 Jan 2014 (4 <sup>th</sup> submission) 28 Apr 2016 (Approved)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	30 Nov 2012 (1 <sup>st</sup> submission) 11 Jan 2013 (2 <sup>nd</sup> submission) 8 Feb 2013 (Approved) 20 Jan 2014 (3 <sup>rd</sup> submission) 28 Apr 2016 (Approved)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1 <sup>st</sup> submission) 12 Sep 2012 (2 <sup>nd</sup> submission) 15 Oct 2012 (Approved)
Condition 2.10	Sediment Management Plan	6 Jul 2012 (1 <sup>st</sup> submission) 12 Sep 2012 (2 <sup>nd</sup> submission) 5 Oct 2012 (3 <sup>rd</sup> submission) 15 Oct 2012 (Approved)
Condition 2.11	Visual, Landscape, Tree Planting & Tree Protection Plan (VLTTP)	14 Nov 2012 (1 <sup>st</sup> submission) 8 Feb 2013 (2 <sup>nd</sup> submission) 4 Feb 2015 (3 <sup>rd</sup> submission) 26 Jun 2015 (4 <sup>th</sup> submission) 12 May 2017 (5 <sup>th</sup> submission) 17 Apr 2018 (6 <sup>th</sup> submission)
Condition 2.16	Operational Ground-borne Noise Mitigation Measures Plan	23 Mar 2017 (1 <sup>st</sup> submission) 17 May 2017 (2 <sup>nd</sup> submission) 28 Jun 2017 (3 <sup>rd</sup> submission) 20 Jul 2017 (Approved)
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. 5-75	Reported in previous Monthly EM&A Reports
	Monthly EM&A Report No. 76	14 January 2019

---

**Appendix A**

**77<sup>th</sup> 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. 77

[Period from 1 to 31 January 2019]

Works Contract 1109 - Stations and Tunnels of  
Kowloon City Section

(13 February 2019)

Certified by: Mandy To. Mandy To

Position: Environmental Team Leader

Date: 13 February 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.77*

January 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](mailto: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.77*

January 2019

Reference 0171181

For and on behalf of  
ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed:



Position: Partner

Date: 13 February 2019

## CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>1.1</b>	<b>PURPOSE OF THE REPORT</b>	<b>1</b>
<b>1.2</b>	<b>STRUCTURE OF THE REPORT</b>	<b>1</b>
<b>2</b>	<b>PROJECT INFORMATION</b>	<b>3</b>
<b>2.1</b>	<b>BACKGROUND</b>	<b>3</b>
<b>2.2</b>	<b>GENERAL SITE DESCRIPTION</b>	<b>3</b>
<b>2.3</b>	<b>CONSTRUCTION PROGRAMME AND ACTIVITIES</b>	<b>3</b>
<b>2.4</b>	<b>PROJECT ORGANISATION</b>	<b>4</b>
<b>2.5</b>	<b>STATUS OF ENVIRONMENTAL LICENCES, NOTIFICATION AND PERMITS</b>	<b>4</b>
<b>3</b>	<b>ENVIRONMENTAL MONITORING REQUIREMENT</b>	<b>6</b>
<b>3.1</b>	<b>REGULAR CONSTRUCTION NOISE MONITORING</b>	<b>6</b>
<b>3.1.1</b>	<i>Monitoring Location</i>	<b>6</b>
<b>3.1.2</b>	<i>Monitoring Parameter and Frequency</i>	<b>6</b>
<b>3.1.3</b>	<i>Monitoring Equipment and Methodology</i>	<b>7</b>
<b>3.1.4</b>	<i>Action and Limit Levels</i>	<b>7</b>
<b>3.2</b>	<b>CONTINUOUS NOISE MONITORING</b>	<b>8</b>
<b>3.2.1</b>	<i>Monitoring Locations</i>	<b>8</b>
<b>3.2.2</b>	<i>Monitoring Parameter and Frequency</i>	<b>9</b>
<b>3.2.3</b>	<i>Monitoring Equipment and Methodology</i>	<b>9</b>
<b>3.2.4</b>	<i>Action and Limit Levels</i>	<b>9</b>
<b>3.3</b>	<b>CONSTRUCTION DUST MONITORING</b>	<b>10</b>
<b>3.3.1</b>	<i>Monitoring Location</i>	<b>10</b>
<b>3.3.2</b>	<i>Monitoring Parameter and Frequency</i>	<b>11</b>
<b>3.3.3</b>	<i>Monitoring Equipment</i>	<b>11</b>
<b>3.3.4</b>	<i>Monitoring Methodology</i>	<b>12</b>
<b>3.3.5</b>	<i>Action and Limit Levels</i>	<b>14</b>
<b>3.4</b>	<b>CULTURAL HERITAGE</b>	<b>14</b>
<b>3.5</b>	<b>LANDSCAPE AND VISUAL MITIGATION MEASURES</b>	<b>15</b>
<b>4</b>	<b>IMPLEMENTATION STATUS OF THE ENVIRONMENTAL PROTECTION REQUIREMENTS</b>	<b>16</b>
<b>5</b>	<b>MONITORING RESULTS</b>	<b>17</b>
<b>5.1</b>	<b>REGULAR CONSTRUCTION NOISE MONITORING</b>	<b>17</b>
<b>5.2</b>	<b>CONTINUOUS NOISE MONITORING</b>	<b>17</b>
<b>5.3</b>	<b>CONSTRUCTION DUST MONITORING</b>	<b>17</b>
<b>5.4</b>	<b>CULTURAL HERITAGE</b>	<b>18</b>
<b>5.5</b>	<b>WASTE MANAGEMENT</b>	<b>18</b>
<b>5.6</b>	<b>LANDSCAPE AND VISUAL MITIGATION MEASURES</b>	<b>19</b>
<b>6</b>	<b>ENVIRONMENTAL SITE INSPECTION</b>	<b>20</b>

7	ENVIRONMENTAL NON-CONFORMANCE	21
7.1	SUMMARY OF MONITORING EXCEEDANCE	21
7.2	SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE	21
7.3	SUMMARY OF ENVIRONMENTAL COMPLAINT	21
7.4	SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION	21
8	FUTURE KEY ISSUES	22
8.1	KEY ISSUES FOR THE COMING MONTH	22
8.2	MONITORING SCHEDULE FOR THE NEXT MONTH	22
8.3	CONSTRUCTION PROGRAMME FOR THE NEXT MONTH	22
9	CONCLUSIONS	23

#### LIST OF ANNEXES

<i>Annex A</i>	<i>The Alignment and Works Area for Works Contract</i>
<i>Annex B</i>	<i>Construction Programme for the Reporting Month and Coming Month</i>
<i>Annex C</i>	<i>Project Organisation Chart and Contact Detail</i>
<i>Annex D</i>	<i>Locations of Monitoring Stations for Noise and Dust Monitoring</i>
<i>Annex E</i>	<i>Monitoring Schedule of the Reporting Period and the Next Month</i>
<i>Annex F</i>	<i>Calibration Reports</i>
<i>Annex G</i>	<i>Summary of Event/Action Plans</i>
<i>Annex H</i>	<i>Summary of Implementation Status of Environmental Mitigation</i>
<i>Annex I</i>	<i>Regular Noise Monitoring Results</i>
<i>Annex J</i>	<i>Construction Dust Monitoring Results</i>
<i>Annex K</i>	<i>Waste Flow Table</i>
<i>Annex L</i>	<i>(Not Used)</i>
<i>Annex M</i>	<i>Environmental Complaint, Environmental Summon and Prosecution Log</i>

## 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 seventy-seventh monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 January 2019 to 31 January 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))

- Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and Underground utilities reinstatement works.

---

##### Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))

- Olympic Garden – Construction of station entrance and ABWF works;
  - SUW Station – Construction of SUW station and ABWF works;
  - Tam Kung Road – Construction of aboveground structure and ABWF works; and
  - Nam Kok Road – Construction of station entrance and ABWF works.
- 

### 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 5 times
  - NMS-CA-7 5 times
  - NMS-CA-8 5 times
  - NMS-CA-9 5 times
  - NMS-CA-10 5 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. 1,075 m<sup>3</sup> of inert C&D material was generated from the Project during the reporting month. 131 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 196 m<sup>3</sup> of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. No metal waste was generated during this reporting month. 27 kg 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 7 and 21 January 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 7, 14, 21 and 28 January 2019. The representative of the IEC joined the site inspection on 7 January 2019. Details of the audit findings and implementation status are presented in *Section 6*.

#### Environmental Exceedance/Non-conformance/Compliant/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 reporting period.

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**

---

##### Work in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))

- Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and underground utilities reinstatement works.

---

##### Work in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))

- Olympic Garden – Construction of station entrance and ABWF works;
  - Tam Kung Road – Construction of aboveground structure and ABWF works;
  - SUW Station – Construction of SUW station, and ABWF works; and
  - Nam Kok Road – Construction of station entrance and ABWF works.
-

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 seventy-seventh EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 January to 31 January 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**

## 2.1 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*

<b>Construction Activities undertaken</b>	
<u><i>Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))</i></u>	
<ul style="list-style-type: none"> <li>Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and underground utilities reinstatement works.</li> </ul>	
<u><i>Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))</i></u>	
<ul style="list-style-type: none"> <li>Olympic Garden – Construction of station entrance and ABWF works;</li> <li>SUW Station – Construction of SUW station and ABWF works;</li> <li>Tam Kung Road – Construction of aboveground structure and ABWF works; and</li> <li>Nam Kok Road – Construction of station entrance and ABWF works.</li> </ul>	

## 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 TKW	WT00019555-2014	30-September-2017	-
Site at MTW	WT00019556-2014	30-September-2017	-
Chemical Waste Producer Registration			
Site at TKW	5213-286-S3682-01	Throughout the Contract	-
Site at MTW	5213-242-S3682-02	Throughout the Contract	-
Construction Noise Permit			
- PME at SUW works Area (TBM)	GW-RE0673-18	21 October 2018 – 20 January 2019	Superceded by GW-RE0923-18
-	GW-RE0923-18	20 January 2019 – 19 April 2019	-
- PME at SUW works Area	GW-RE0654-18	3 October 2018 – 2 January 2019	Superceded by GW-RE0880-18
-	GW-RE0880-18	2 January 2019 – 1 April 2019	-
- PME at Olympic Garden	GW-RE0779-18	20 November 2018 – 19 April 2019	-
- PME at TKW works area	GW-RE0757-18	7 November 2018 – 6 February 2019	-
- PME at Lok Shan Road and Kiang Su Street	GW-RE0753-18	6 November 2018 – 5 February 2019	-
SP-Licence for TBM operation	L-3-249(1)	19 May 2015 – 18 May 2018	Notification for the cancellation of the Specified Process Licence has been given to EPD in Nov

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
			2016
Billing Account for Disposal of Construction Waste	7015758	Throughout the Contract	-

### 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 <sup>(a)</sup>	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 <sup>(b)</sup>	Kong Yiu Mansion	Façade
NMS-CA-10	Chat Ma Mansion	Façade
<b>Notes:</b>		
(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,	Calibrator: NC 73 (Serial No. 10486660)
NMS-CA-8, NMS-CA-9 and NMS-CA-10	Sound Level Meter: NL 52 (Serial No. 00331805)

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) 65 dB(A) during examination periods 79 dB(A) <sup>(b)</sup> 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)
<b>Notes:</b>			
(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 <sup>(a)</sup>	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
<b>Note:</b>	
(a) Subject to the latest Continuous Noise Monitoring Plan approved in October 2014 and	

Continuous Noise Monitoring Location <sup>(a)</sup>	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 <sup>(a)</sup>**

Proposed Continuous Noise Monitoring Stations	Description	Action/ Limit Level (a)	Measurement Period <sup>(a)</sup>
TKW-3-2(B)	Hing Fu Building	80	September 2014 – December 2014 <sup>(b)</sup>
MTW-12-3(A)	SKH Good Shepherd Primary School	80	August 2014 – January 2015 <sup>(b)</sup> , March 2015 – June 2015
MTW-12-4(A)	Kong Yiu Mansion	80	August 2014 – June 2015 <sup>(b)</sup>
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 <sup>(b)</sup>
MTW-16-1	SKH Good Shepherd Primary School	78	December 2012 – January 2013; April 2013 – 21 August 2013, 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 <sup>(a)</sup>	Katherine Building
DMS-7	Parc 22
DMS-8	SKH Good Shepherd Primary School
DMS-9 <sup>(b)</sup>	No. 12 Pau Chung Street
DMS-10	Chat Ma Mansion
<b>Notes:</b>	
(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 <sup>(a)</sup>	TE-5170 (Serial No. 0814), CM-AIR-43 (Orifice ID 2454)
DMS-10	TE-5170 (Serial No. 3573), CM-AIR-43 (Orifice ID 2454)
<b>Note:</b>	
(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  $\pm 3^\circ\text{C}$ ; 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<sup>3</sup>min<sup>-1</sup>, which was within the range specified in the EM&A Manual (i.e. 0.6 – 1.7 m<sup>3</sup>min<sup>-1</sup>);
- 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 ( $\mu\text{g m}^{-3}$ ) <sup>(a)</sup>	Limit Level ( $\mu\text{g m}^{-3}$ ) <sup>(a)</sup>
24-hour TSP	DMS-6	156.8	260
	DMS-7	166.7	260
	DMS-8	152.2	260
	DMS-9 <sup>(c)</sup>	160.9	260
	DMS-10	170.4	260
1-hour TSP <sup>(b)</sup>	DMS-6	288.8	500
	DMS-7	289.7	500
	DMS-8	300.0	500
	DMS-9 <sup>(c)</sup>	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*.

## **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	Seventy-sixth Monthly EM&A Report	14 January 2019

### 5.1 REGULAR CONSTRUCTION NOISE MONITORING

A total of 25 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, $\mu\text{gm}^{-3}$ (a)		Action Level, $\mu\text{gm}^{-3}$	Limit Level, $\mu\text{gm}^{-3}$
	Average	Range		
DMS-6	62	42 – 79	156.8	260
DMS-7	63	50 – 84	166.7	260
DMS-8	45	34 – 57	152.2	260
DMS-9 (a)	78	48 – 108	160.9	260
DMS-10	69	55 – 87	170.4	260
<b>Note:</b>				
(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 averaged 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.



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.

## 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
January 2019	1,075 m <sup>3</sup>	0 kg	196 m <sup>3</sup>	27 kg	131 kg	0 kg
<b>Notes:</b>						
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.						
(b) 1,075 m <sup>3</sup> 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 7 and 21 January 2019. Most of the mitigation measures given in *Annex H* have been implemented. Required Actions that were found are listed below:

#### 7 January 2019

- No observation was reported during the site inspection.

#### 21 January 2019

- No observation was reported during the site inspection.

Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 7, 14, 21 and 28 January 2019. The representative of the IEC joined the site inspection on 7 January 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:

7 January 2019

- There was no major observation during site inspection.

14 January 2019

- The Contractor was reminded to provide sufficient drip trays for the chemical containers stored on the hard paved ground at MTW/TKW Road Garden works area.

21 January 2019

- There was no major observation during site inspection.

28 January 2019

- There was no major observation during site inspection.

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 report period. 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*.

### 8.1 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
<u>Work in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))</u>
<ul style="list-style-type: none"> <li>Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and underground utilities reinstatement works.</li> </ul>
<u>Work in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))</u>
<ul style="list-style-type: none"> <li>Olympic Garden – Construction of station entrance and ABWF works;</li> <li>Tam Kung Road – Construction of aboveground structure and ABWF works;</li> <li>SUW Station – Construction of SUW station, and ABWF works; and</li> <li>Nam Kok Road – Construction of station entrance and ABWF works.</li> </ul>

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*.

This 77<sup>th</sup> monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 January 2019 to 31 January 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.

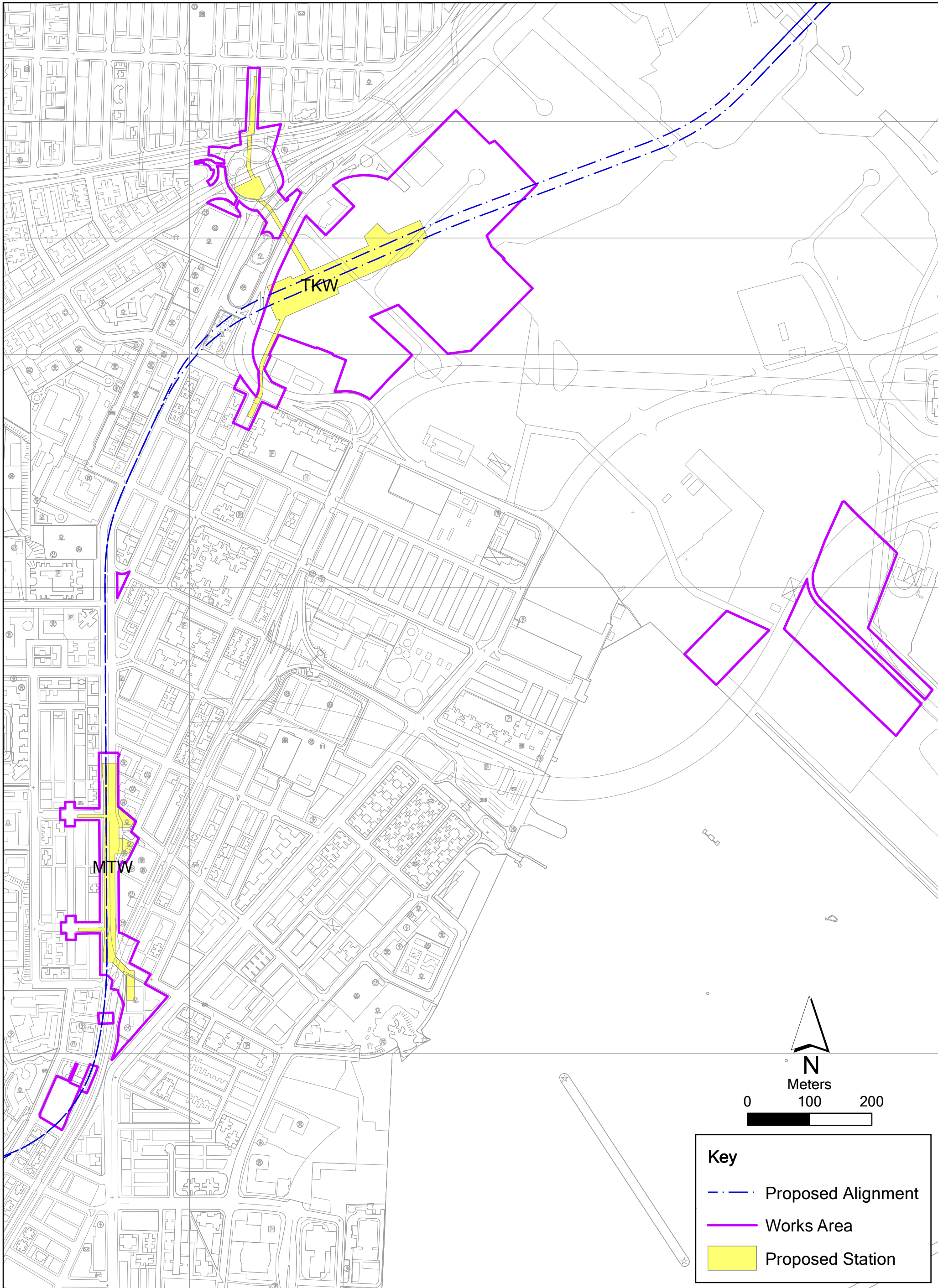
No complaint was received during reporting period.

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



**Key**

- · — · — Proposed Alignment
- Works Area
- Proposed Station



Annex B

## Construction Programme for the Reporting Month and the Coming Month

Data Date: 31-Jan-19																SAMSUNG - HSIN CHONG JOINT VENTURE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
THREE MONTH ROLLING PROGRAMME - JAN 2019																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Activity ID		Activity Name				Remaining Duration		Physical % Complete		Start		Finish		2018	2019					2018	Jan		Feb		Mar		Apr		May																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1109 - SUW & TKW Stations and Tunnels Jan 2019 (MPR2)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish	2018	2019				
							Jan	Feb	Mar	Apr	May
Portion 1											
01109.PDB14920	ABWF Internal Works Adit B; GL B2 to B12 - to Degree 3 completion	50	90%	15-Jan-18 A	03-Apr-19						
Portion 2											
01109.PDB14940	ABWF Internal Works Adit B; GL B12 to B23 - to Degree 3 completion	50	90%	15-Jan-18 A	03-Apr-19						
Portion 3											
01109.PDB14960	ABWF External & Internal Works Adit B; GL B23 to B31 - to Degree 3 completion	50	90%	19-Mar-18 A	03-Apr-19						
01109.PDB15970	E&M Internal & External Works Adit B; GL B23 to B31 - to Degree 3 completion	50	90%	19-Mar-18 A	03-Apr-19						
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)	31	20%	01-Dec-18 A	12-Mar-19						
01109.PDC27930B	Rectify and Complete all ABWF Defect and outstanding work (FoH)	31	20%	01-Dec-18 A	12-Mar-19						
Station - ABWF Works (Upper Platform Level)											
Major Works to Degree 3											
01109.PDC28150B	Rectify and Complete all ABWF Defect and outstanding work (BoH)	31	20%	01-Dec-18 A	12-Mar-19						
01109.PDC28250B	Rectify and Complete all ABWF Defect and outstanding work (FoH)	31	20%	01-Dec-18 A	12-Mar-19						
Station - ABWF Works (Lower Platform Level)											
Major Works to Degree 3											
01109.PDC28460B	Rectify and Complete all ABWF Defect and outstanding work (BoH)	31	20%	01-Dec-18 A	12-Mar-19						
01109.PDC28560B	Rectify and Complete all ABWF Defect and outstanding work (FoH)	31	20%	01-Dec-18 A	12-Mar-19						
TKW Station External Landscaping Works											
RRIW (TKW)											
Covered Walkway, Volley Ball Court, Garden, D-Wall and TTMS (TKW Vent Shaft)											
01109.PDC1450A	Covered Walkway	47	0%	01-Feb-19	30-Mar-19						
01109.PDC1450C20	D-Wall & Drainage at East-BMW/Shell Ingress - TTMS Stage 2	47	25%	15-Jan-19 A	30-Mar-19						
01109.PDC1450B	VolleyBall Court	69	0%	01-Feb-19	30-Apr-19						
01109.PDC1450C	PermanentBus Stop at south bound	69	0%	01-Feb-19	30-Apr-19						
01109.PDC1450C30	D-Wall & Drainage at East-BMW/Shell Ingress - TTMS Stage 3	22	0%	01-Apr-19	30-Apr-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)	21	0%	01-Feb-19	28-Feb-19						
Tam Kung Road Garden and TTMS											
01109.PDE1130A54	Water meter cabinet (GMS)	6	0%	01-Feb-19	11-Feb-19						
01109.PDE1130A51	TKA Rain Shelter Type C Footing & Cast-in (3 nos)	14	0%	01-Feb-19	20-Feb-19						



MTR Corporation Limited  
Shatin to Central Link Contract 1109

1109-MPR2-2R1, Page 2 of 3  
3MRP - Jan 2019 TASK filters: 3MRP Dates, >1days, MTRC 1109 - 3MRP.  
Printed:08-Feb-19

- Actual Work

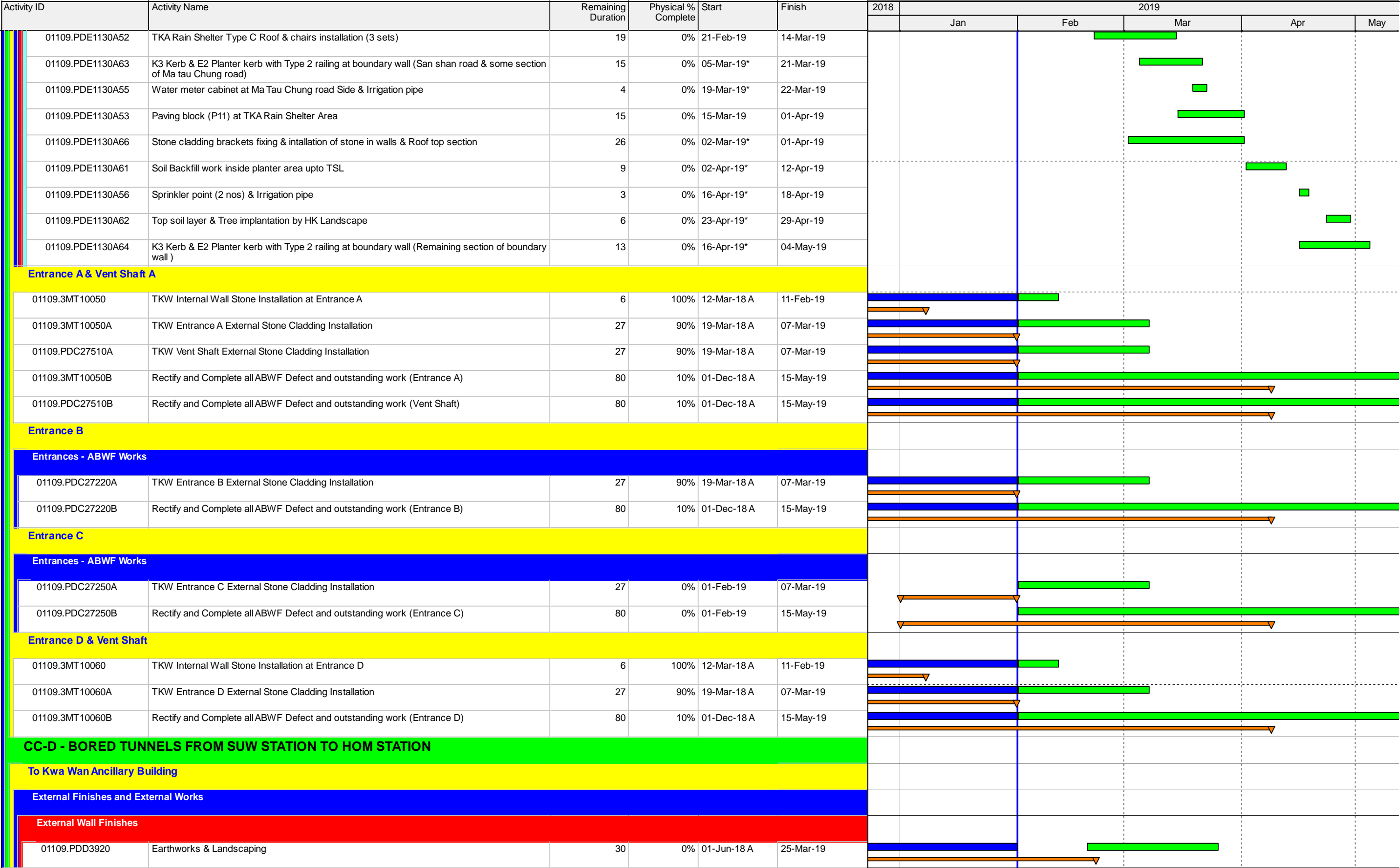
Remaining Work

Master Programme Rev.2

Last Month Update
- Milestone

MP Rev.2 Milestone

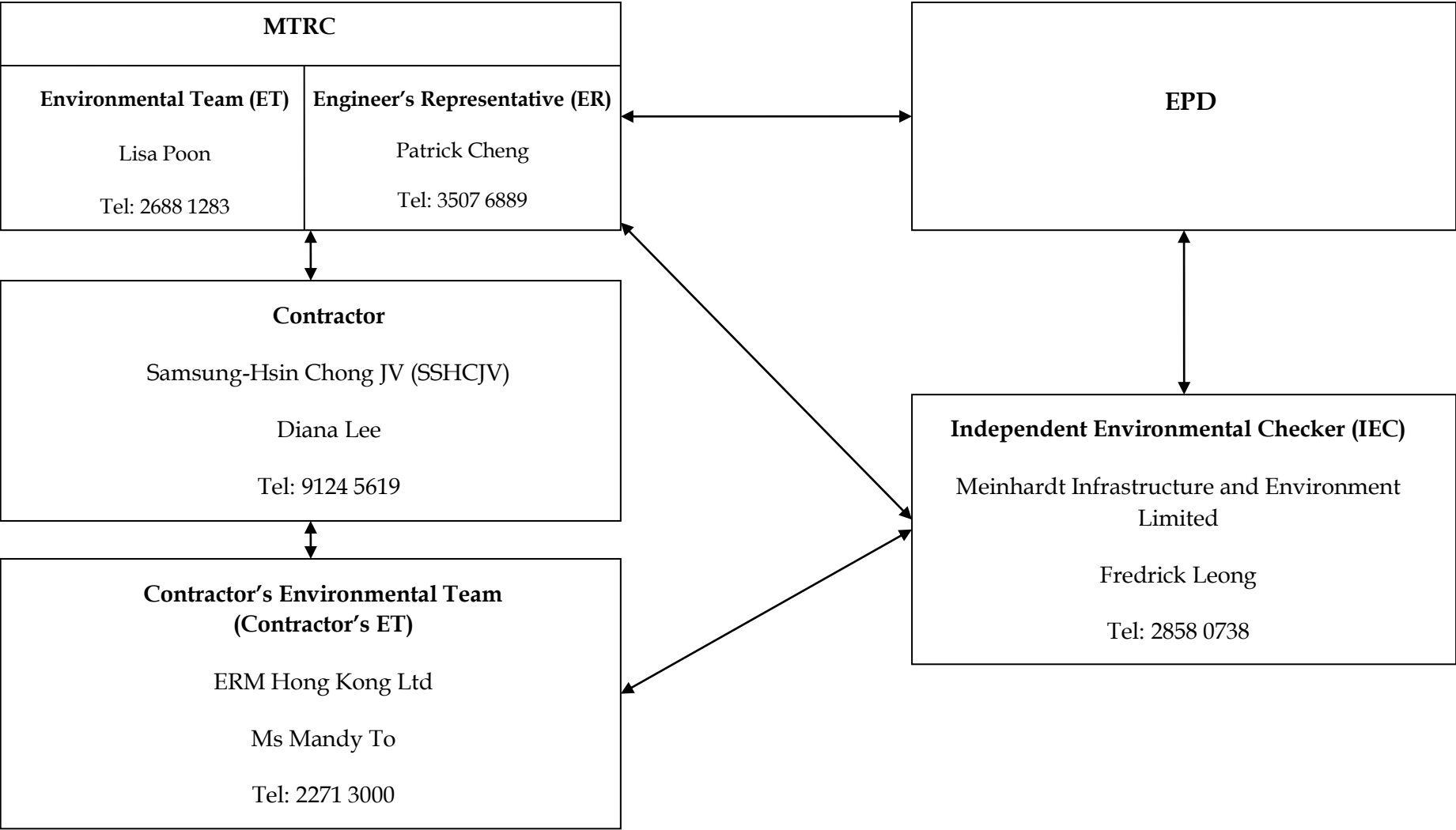
Last Month Milestone



Annex C

## Project Organization Chart and Contact Detail

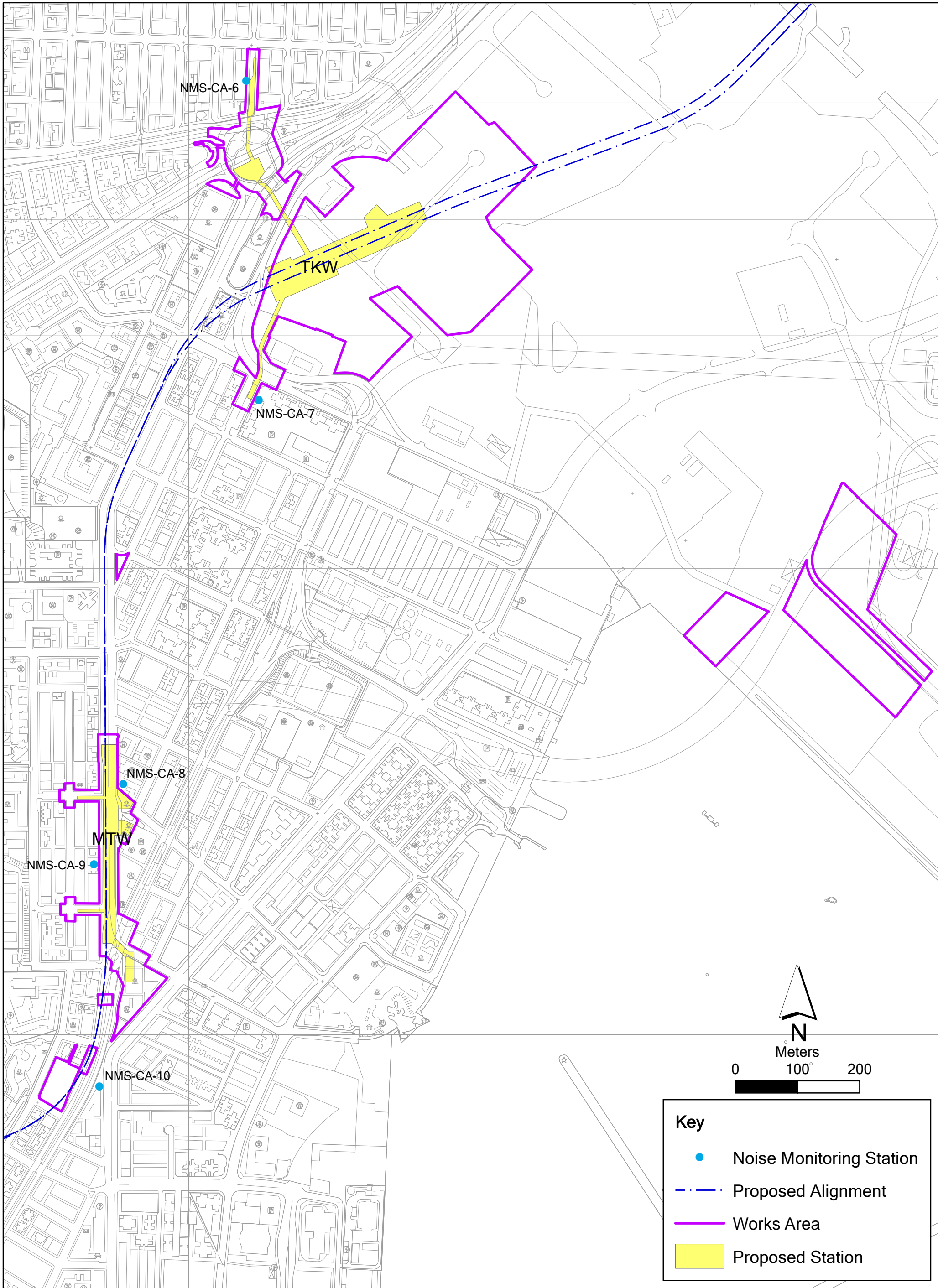
Annex C      Project Organization of SCL Works Contract 1109



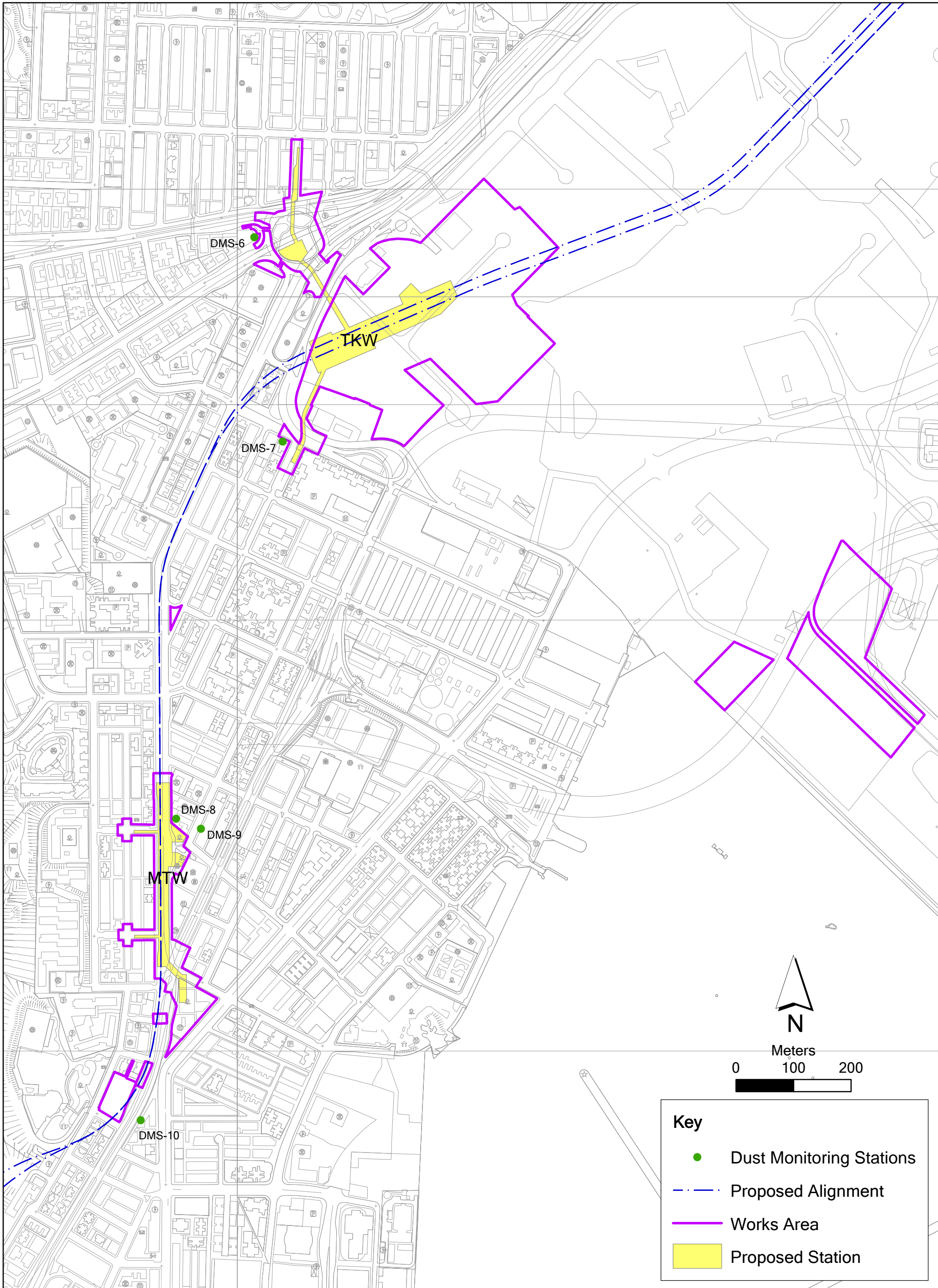
Annex D

## Locations of Noise and Dust Monitoring Stations









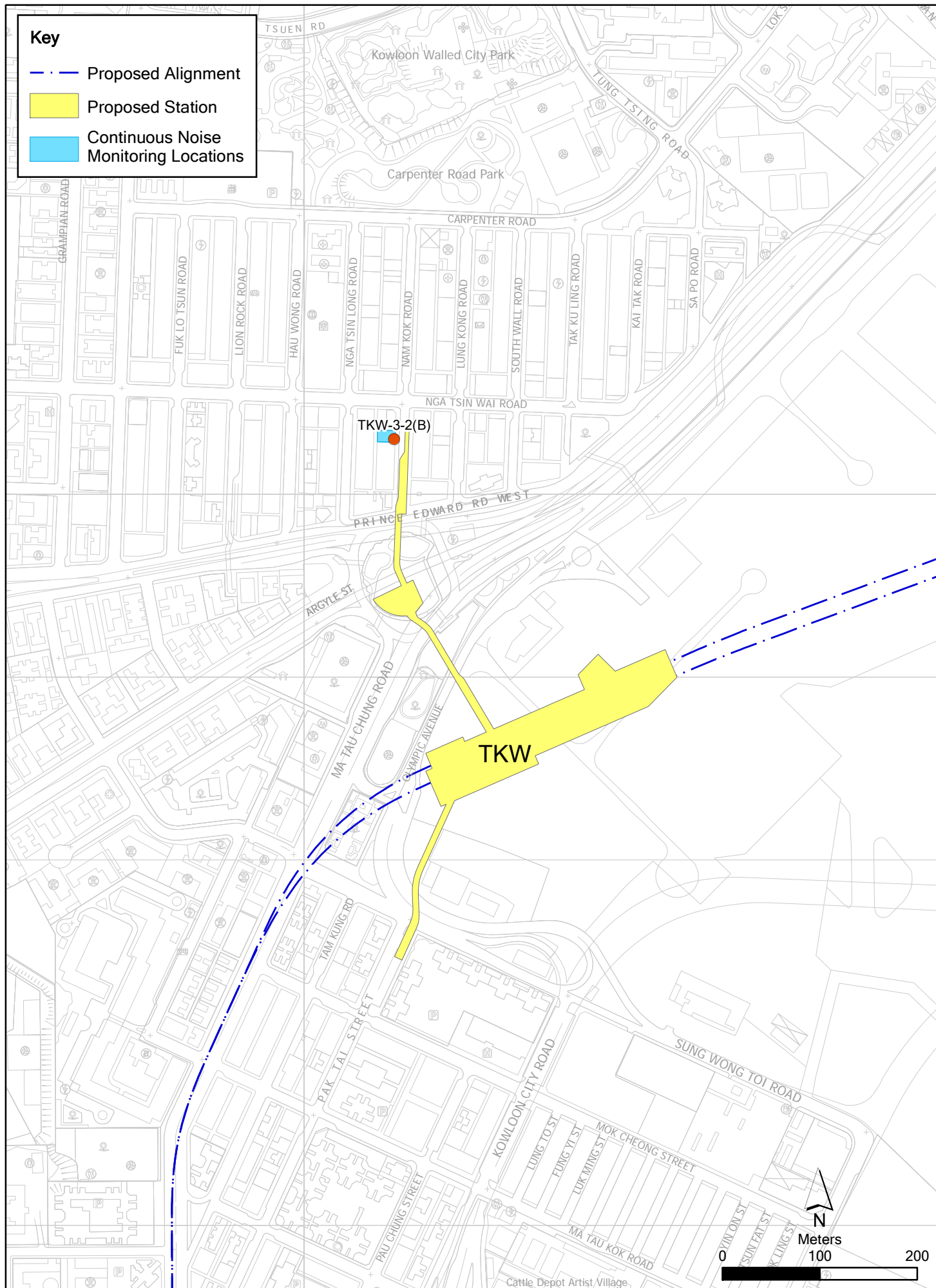


Figure 2.2a

## Continuous Noise Monitoring Locations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181\_Continuous\_Noise\_Monitoring\_Locations\_TKW.mxd  
Date: 5/11/2014

Environmental  
Resources  
Management





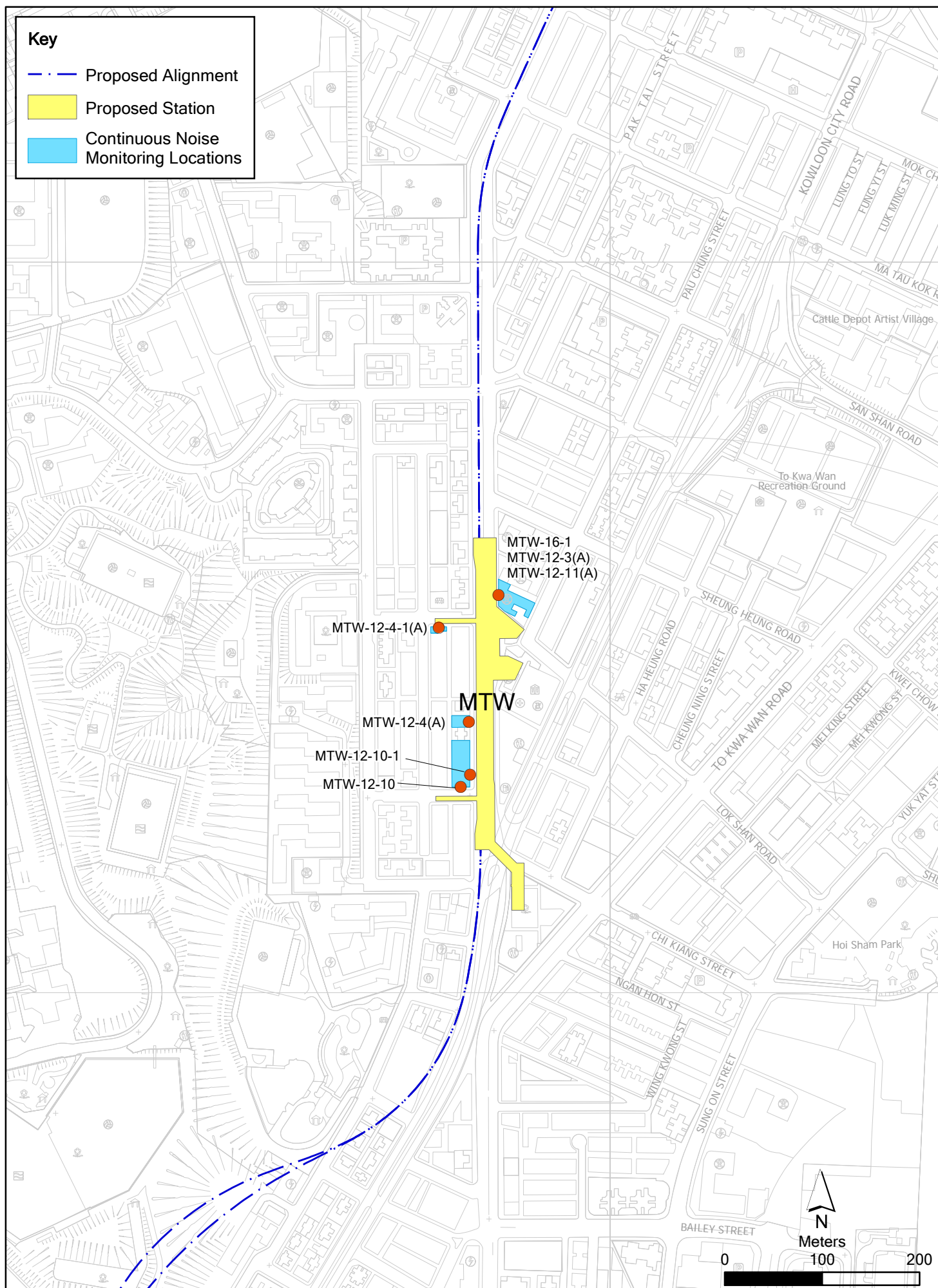


Figure 2.2b

## Continuous Noise Monitoring Locations

## 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 : January 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Jan	02-Jan	03-Jan	04-Jan	05-Jan
		Public Holiday	Noise Monitoring			
06-Jan	07-Jan	08-Jan	09-Jan	10-Jan	11-Jan	12-Jan
	Noise Monitoring					
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
				Noise Monitoring		
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
			Noise Monitoring			
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		
		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 : February 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Feb	02-Feb
03-Feb	04-Feb	05-Feb	06-Feb	07-Feb	08-Feb	09-Feb
		Public Holiday	Public Holiday	Public Holiday	Noise Monitoring	
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
				Noise Monitoring		
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
			Noise Monitoring			
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
		Noise 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: January 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Jan	02-Jan	03-Jan	04-Jan	05-Jan
		Public Holiday	24-hr TSP Monitoring			
06-Jan	07-Jan	08-Jan	09-Jan	10-Jan	11-Jan	12-Jan
	24-hr TSP Monitoring				24-hr TSP Monitoring	
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
				24-hr TSP Monitoring		
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
			24-hr TSP Monitoring			
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		
		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: February 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Feb	02-Feb
						24-hr TSP Monitoring
03-Feb	04-Feb	05-Feb	06-Feb	07-Feb	08-Feb	09-Feb
		Public Holiday	Public Holiday	Public Holiday	24-hr TSP Monitoring	
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
				24-hr TSP Monitoring		
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
			24-hr TSP Monitoring			
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
		24-hr TSP Monitoring				



Annex F

## Calibration Reports

## Annex F Calibration Reports

### Dust Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
<i>24-hr TSP</i>		<b>HVS</b>	<b>Calibrator</b>		
DMS-6	Katherine Building	TE-5170 (S/N 0107)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2018	5 May 2019
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2018	5 May 2019
DMS-8	SKH Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2018	5 May 2019
DMS-9	No. 12 Pau Chung Street	TE-5170 (S/N 0814)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2018	5 May 2019
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2018	5 May 2019

### 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	Rion NC-73 (S/N 10486660)	5 April 2018	5 April 2019
	Sound Level Meter	Rion NL-52 (S/N 00331805)	10 June 2018	10 June 2019

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler  
5-Point Calibration Record

Location : DMS-6(Katherine Building)  
Calibrated by : K.T.Ho  
Date : 05/11/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 19 Mar 2018  
Slope (m) : 2.05242  
Intercept (b) : -0.01383  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015  
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.565	1.744	55	55.24
2	13 holes	9.0	3.013	1.475	44	44.19
3	10 holes	6.6	2.580	1.264	36	36.16
4	7 holes	4.2	2.058	1.010	28	28.12
5	5 holes	2.8	1.681	0.826	16	16.07

Sampler Calibration Relationship (Linear Regression)

Slope(m): 40.823

Intercept(b): -15.626

Correlation Coefficient(r): 0.9940

Checked by: Magnum Fan

Date: 09/11/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : DMS-7(Parc 22)  
Calibrated by : K.T.Ho  
Date : 05/11/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 19 Mar 2018  
Slope (m) : 2.05242  
Intercept (b) : -0.01383  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015  
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.508	1.716	64	64.28
2	13 holes	8.4	2.911	1.425	50	50.22
3	10 holes	6.2	2.501	1.225	40	40.17
4	7 holes	4.0	2.009	0.985	32	32.14
5	5 holes	2.6	1.619	0.796	20	20.09

Sampler Calibration Relationship (Linear Regression)

Slope(m): 46.622                      Intercept(b): -15.941                      Correlation  
Coefficient(r): 0.9970

Checked by: Magnum Fan

Date: 09/11/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : DMS-8(SHK Good Shepherd Primary School)  
Calibrated by : K.T.Ho  
Date : 05/11/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 19 Mar 2018  
Slope (m) : 2.05242  
Intercept (b) : -0.01383  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015  
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.508	1.716	60	60.26
2	13 holes	8.6	2.945	1.442	52	52.23
3	10 holes	6.4	2.541	1.245	40	40.17
4	7 holes	4.2	2.058	1.010	30	30.13
5	5 holes	2.8	1.681	0.826	22	22.10

Sampler Calibration Relationship (Linear Regression)

Slope(m): 44.260                      Intercept(b): 14.239                      Correlation Coefficient(r): 0.9950

Checked by: Magnum Fan

Date: 09/11/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : DMS-9(No. 12 Pau Chung Street)  
Calibrated by : K.T.Ho  
Date : 05/11/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 19 Mar 2018  
Slope (m) : 2.05242  
Intercept (b) : -0.01383  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015  
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.5	3.551	1.737	64	64.28
2	13 holes	8.8	2.979	1.458	52	52.23
3	10 holes	6.4	2.541	1.245	40	40.17
4	7 holes	4.2	2.058	1.010	30	30.13
5	5 holes	2.6	1.619	0.796	18	18.08

Sampler Calibration Relationship (Linear Regression)

Slope(m): 49.032                      Intercept(b): -20.627                      Correlation Coefficient(r): 0.9989

Checked by: Magnum Fan

Date: 9/11/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : DMS-10(Chat Ma Mansion)  
Calibrated by : K.T.Ho  
Date : 05/11/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 19 Mar 2018  
Slope (m) : 2.05242  
Intercept (b) : -0.01383  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015  
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.421	1.673	60	60.26
2	13 holes	8.0	2.841	1.391	52	52.23
3	10 holes	5.6	2.377	1.165	46	46.20
4	7 holes	3.4	1.852	0.909	36	36.16
5	5 holes	2.0	1.420	0.699	28	28.12

Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.968                      Intercept(b): 6.107                      Correlation Coefficient(r): 0.9961

Checked by: Magnum Fan

Date: 09/11/2018



RECALIBRATION

DUE DATE:

March 19, 2019

# Certificate of Calibration

## Calibration Certification Information

Cal. Date: March 19, 2018      Rootsmeter S/N: 438320      Ta: 294 °K  
Operator: Jim Tisch      Pa: 746.8 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	1.4300	3.2	2.00
2	3	4	1	1.0040	6.4	4.00
3	5	6	1	0.9030	7.9	5.00
4	7	8	1	0.8590	8.7	5.50
5	9	10	1	0.7080	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)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
0.9917	0.6935	1.4113	0.9957	0.6963	0.8874
0.9874	0.9835	1.9959	0.9914	0.9875	1.2549
0.9854	1.0913	2.2315	0.9894	1.0957	1.4030
0.9843	1.1459	2.3405	0.9883	1.1506	1.4715
0.9789	1.3826	2.8227	0.9829	1.3882	1.7747
QSTD	m=	2.05242	QA	m=	1.28519
	b=	-0.01383		b=	-0.00869
	r=	0.99994		r=	0.99994

## Calculations

Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
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=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

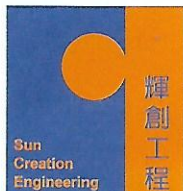
## Standard Conditions

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

## RECALIBRATION

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





輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181755

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0616)

Date of Receipt / 收件日期 : 20 March 2018

Description / 儀器名稱 : Sound Level Calibrator

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-73

Serial No. / 編號 : 10486660

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 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 5 April 2018

### 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).

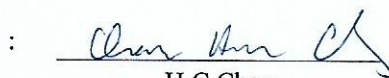
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- 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

11 April 2018

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 — 校正及檢測實驗室

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

Page 1 of 2

# Certificate of Calibration

## 校正證書

Certificate No. : C181755

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	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
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	93.7	$\pm 0.5$	$\pm 0.2$

### 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.988	1 kHz $\pm 2\%$	$\pm 1$

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.





輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C183089

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1132)

Date of Receipt / 收件日期 : 31 May 2018

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00331805

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 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 10 June 2018

### 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
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

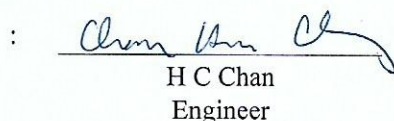
Tested By

測試

  
K C Lee  
Engineer

Certified By

核證

  
H C Chan  
Engineer

Date of Issue

簽發日期

14 June 2018

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

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

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 — 校正及檢測實驗室

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

Page 1 of 3

# Certificate of Calibration

## 校正證書

Certificate No. : C183089  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C180024
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2	Ref.
			Slow			94.2	± 0.3

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

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



# Certificate of Calibration

## 校正證書

Certificate No. : C183089  
證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	A	Fast	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.5
					250 Hz	85.5	-8.6 ± 1.4
					500 Hz	91.0	-3.2 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	95.4	+1.2 ± 1.6
					4 kHz	95.2	+1.0 ± 1.6
					8 kHz	93.2	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>C</sub>	C	Fast	94.00	63 Hz	93.3	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.5
					250 Hz	94.2	0.0 ± 1.4
					500 Hz	94.2	0.0 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	94.1	-0.2 ± 1.6
					4 kHz	93.4	-0.8 ± 1.6
					8 kHz	91.3	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04870

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	63 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)

- 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.

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

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

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	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and ER;</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required;</li> <li>3. Increase the monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the contractor;</li> <li>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing ;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measures;</li> <li>2. Report the results of investigation to the IEC, ET and ER;</li> <li>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification;</li> <li>4. Implement noise mitigation proposals.</li> </ol>
Exceeding Limit Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and EPD;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase the monitoring frequency;</li> <li>4. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Inform the IEC, ER and EPD the causes and actions taken for the exceedances</li> <li>7. Assess the effectiveness of the Contractor's remedial measures and keep the IEC, ER and EPD informed of the results</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER, and Contractor on the potential remedial measures;</li> <li>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reason(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem is still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

**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	1.	Check monitoring data submitted by the Works Contract 1109 ET	1.	Confirm receipt of notification of exceedance in writing	1.	Identify source with Works Contract 1109 ET
	2.	Repeat measurement. If two consecutive measurements exceed	2.	Check the Contractor’s working method	2.	Notify the Contractor and IEC	2.	If exceedance is confirmed, investigate the cause of exceedance and take immediate action to avoid further exceedance
		Action/Limit Level, the exceedance is then confirmed	3.	Discuss with the ER, Works Contract 1109 ET and Contractor on the potential remedial measures	3.	In consultation with the Works Contract 1109 ET and IEC, agree with the Contractor on the remedial measures to be implemented	3.	Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification
	3.	If exceedance is confirmed, notify IEC, ER and Contractor	4.	Review and advise the Works Contract 1109 ET and ER on the effectiveness of the remedial measures proposed by the Contractor	4.	Ensure the proper implementation of remedial measures	4.	Implement the agreed proposals
	4.	Investigate the cause of exceedance and check Contractor’s working procedures to determine possible mitigation to be implemented			5.	If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	5.	Liaise with ER to optimize the effectiveness of the agreed mitigation
	5.	Discuss jointly with the IEC, ER and Contractor and formulate remedial measures					6.	Revise and resubmit proposals if problem still not under control
	6.	Assess effectiveness of Contractor’s remedial actions and keep IEC and ER informed of the results					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
<b>Action Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Discuss with the Contractor, IEC and ER on the remedial measures required;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase the monitoring frequency</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notifications of exceedance in writing;</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reason(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Implement remedial measures;</li> <li>3. Amend working methods and agree them with the ER as appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase the monitoring frequency to daily;</li> <li>5. If exceedance continues, arrange meeting with the IEC, ER and Contractor;</li> <li>6. If exceedance stops, the monitoring frequency will resume normal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise the Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reasons and investigate the causes of exceedance;</li> <li>2. Submit proposals of remedial measures to the ER with a copy to the ET and IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend the proposal as appropriate.</li> </ol>

Event	Action			
	Contractor's Environmental Team (Contractor's ET)	Independent Environmental Checker (IEC)	Engineer Representative (ER)	The Contractor
<b>Limit Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase the monitoring frequency to daily;</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reason(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals of remedial measures to ER with a copy to the ET and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Amend proposal if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and EPD;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase the monitoring frequency to daily;</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep the IEC, EPD and ER informed of the results;</li> <li>7. If exceedance stops, the monitoring frequency will return to normal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER, and Contractor on the potential remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reason(s) and investigate the causes of exceedance;</li> <li>2. Take immediate actions to avoid further exceedance;</li> <li>3. Submit proposals of remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

**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	<ol style="list-style-type: none"> <li>1. Inform the Contractor, the IEC and the ER.</li> <li>2. Discuss remedial actions with the IEC, ER and Contractor.</li> <li>3. Monitor remedial actions until rectification has been completed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the inspection report.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures.</li> <li>4. Advise the ER on the effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notifications of nonconformity in writing.</li> <li>2. Review and agree on the remedial measures proposed by the Contractor.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify reasons and investigate the non-conformity.</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods and agree them with the ER as appropriate.</li> <li>4. Rectify the damage and undertake any necessary replacement.</li> </ol>
Repeated Nonconformity	<ol style="list-style-type: none"> <li>1. Identify Reasons.</li> <li>2. Inform the Contractor, IEC and ER.</li> <li>3. Increase the inspection frequency.</li> <li>4. Discuss remedial actions with the IEC, ER and Contractor.</li> <li>5. Monitor remedial actions until rectification has been completed.</li> <li>6. If non-conformity stops, the inspection frequency return to normal (ie., Once every two weeks)</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the inspection report.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ET and Contractor on possible remedial measures.</li> <li>4. Advise the ER on the effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor.</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Reasons and investigate the non-conformity.</li> <li>2. Implement remedial measures.</li> <li>3. Amend working methods and agree them with the ER as appropriate.</li> <li>4. Rectify the damage and undertake any necessary replacement.</li> <li>5. Stop relevant works as determined by the ER until the non-conformity is abated.</li> </ol>

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
<b>Cultural Heritage Impact</b>							
S4.9	CH3	<u>Submit an Archaeological Action Plan</u> 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	✓
<b>Ecology (Construction Phase)</b>							
S5.7	E5	<u>Good Site Practices</u> 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
		<p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> <li>• Erection of temporary geotextile silt or sediment fences/oil traps around earth-moving works to trap sediments and prevent them from entering watercourses;</li> <li>• Avoidance of soil storage against trees or close to water bodies;</li> <li>• 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;</li> <li>• No on-site burning of waste;</li> <li>• Store waste and refuse in appropriate receptacles.</li> </ul>					
<b>Landscape &amp; Visual (Construction Phase)</b>							
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> <li>• 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</li> </ul>	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
		ground may be set up on-site as necessary.					
		<p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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</li> </ul>					

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
S6.12	LV2	<p>trees in Contractor's works sites.</p> <p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> <li>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).</li> </ul> <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	Minimize visual & landscape impact	Contractor	Within Project Site	Construction Stage	√
<b>Construction Dust</b>							
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
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 <sup>2</sup> to achieve the dust removal efficiency	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	✓
S7.6.5	D3	<ul style="list-style-type: none"> <li>• Proper watering of exposed spoil should be undertaken throughout the construction phase;</li> <li>• 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;</li> <li>• Any dusty materials remaining after a stockpile has been removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty materials should not be extended beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by an impervious</li> </ul>	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
		<p>sheeting to ensure that the dusty materials do not leak from the vehicle;</p> <ul style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>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;</li> <li>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;</li> <li>Any area that involves demolition activities should be sprayed with water or</li> </ul>					

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
		<p>a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain an entirely wet surface</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• Any skip hoist for material transport should be totally enclosed by an impervious sheeting;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> </ul>					

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
		and <ul style="list-style-type: none"> <li>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.</li> </ul>					
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	✓
<b>Construction Noise (Airborne)</b>							
S8.3.6	N1	Implement the following good site practices: <ul style="list-style-type: none"> <li>only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work</li> </ul>	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
		<p>periods or should be throttled down to a minimum;</p> <ul style="list-style-type: none"> <li>• plant known to emit noise strongly in one direction, where possible, should be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the period of construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>					
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
		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	✓
<b>Water Quality</b>							
S10.7.1	W1	<p>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:</p> <p><u>Construction Runoffs and Site Drainage</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to</li> </ul>	To minimise water quality impact from construction site runoffs and general construction activities	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
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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<sup>3</sup>/s, a sedimentation basin of 30m<sup>3</sup> would be required and for a flow rate of 0.5 m<sup>3</sup>/s the basin would be 150 m<sup>3</sup>. The detailed design of the sand/silt traps shall be undertaken by the Contractor prior to the commencement of construction.</li> <li>• 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.</li> <li>• 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</li> </ul>					

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
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> 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.</li> <li>• Manholes (including newly constructed</li> </ul>					



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
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> </ul>					

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
		<p>silty water to public roads and drains.</p> <ul style="list-style-type: none"> <li>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.</li> <li>Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>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.</li> <li>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.</li> <li>Adopt best management practices</li> </ul>					
S10.7.1	W2	<p><u>Tunnelling Works</u></p> <ul style="list-style-type: none"> <li>Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge.</li> <li>The wastewater with a high concentration</li> </ul>	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
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>					
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <p>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.</p>	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	✓
S10.7.1	W4	<p><u>Groundwater from Contaminated Area in case contamination is found:</u></p> <ul style="list-style-type: none"> <li>• No direct discharge of groundwater from</li> </ul>	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
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>					

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
		<ul style="list-style-type: none"> <li>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.</li> </ul>					
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
		<p>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.</p> <ul style="list-style-type: none"> <li>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.</li> <li>Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.</li> </ul>	spillage				
<b>Waste Management (Construction Waste)</b>							
S11.4.1.1	WM1	<p><u>On-site sorting of C&amp;D (Construction and Demolition) material</u></p> <ul style="list-style-type: none"> <li>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</li> </ul>	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&amp;D) Material</u> <ul style="list-style-type: none"> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>• Carry out on-site sorting;</li> <li>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> </ul>	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
		<ul style="list-style-type: none"> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified;</li> <li>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&amp;D materials and minimize waste generation during the course of construction.</li> <li>Disposal of the C&amp;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</li> </ul>					
S11.5.1	WM3	<u>C&amp;D Waste</u> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;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.</li> <li>The Contractor should recycle as much of the C&amp;D materials as possible on-site.</li> </ul>	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
S11.5.1	WM4	<p>Public fill and C&amp;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.</p> <p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>• 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.</li> <li>• 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.</li> <li>• Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection.</li> </ul> <p>Participation in a local collection scheme</p>	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
S11.5.1	WM7	<p>should be considered by the Contractor.</p> <p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	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
		<ul style="list-style-type: none"> <li>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.</li> </ul>					

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 <sub>Aeq</sub> (30 min)	Baseline (dB(A)), L <sub>Aeq</sub> (30 min)	Corrected LAeq(dBA) <sup>(a)</sup>	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
02-Jan-19	11:05	11:35	Cloudy	62.4	76.1	-(b)	-	Traffic noise	14	0.5	NL-52 00331805	NC-73 10486660
07-Jan-19	11:05	11:35	Cloudy	62.9	76.1	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660
17-Jan-19	11:12	11:42	Fine	62.7	76.1	-(b)	-	Traffic noise	16	0.5	NL-52 00331805	NC-73 10486660
23-Jan-19	11:10	11:40	Sunny	62.3	76.1	-(b)	-	Traffic noise	17	0.5	NL-52 00331805	NC-73 10486660
29-Jan-19	11:10	11:40	Sunny	62.5	76.1	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660

Station      NMS-CA-7      Skytower Tower 2

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L <sub>Aeq</sub> (30 min)	Baseline (dB(A)), L <sub>Aeq</sub> (30 min)	Corrected LAeq(dBA) <sup>(a)</sup>	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
02-Jan-19	10:14	10:44	Cloudy	65.8	70.0	-(b)	-	Traffic noise	14	0.5	NL-52 00331805	NC-73 10486660
07-Jan-19	10:15	10:45	Cloudy	65.1	70.0	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660
17-Jan-19	10:15	10:45	Fine	65.7	70.0	-(b)	-	Traffic noise	16	0.5	NL-52 00331805	NC-73 10486660
23-Jan-19	10:18	10:48	Sunny	65.3	70.0	-(b)	-	Traffic noise	17	0.5	NL-52 00331805	NC-73 10486660
29-Jan-19	10:15	10:45	Sunny	65.1	70.0	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660

Station      NMS-CA-8      SKH Good Shepherd Primary School

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L <sub>Aeq</sub> (30 min)	Baseline (dB(A)), L <sub>Aeq</sub> (30 min)	Corrected LAeq(dBA) <sup>(a)</sup>	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
02-Jan-19	8:00	8:30	Cloudy	73.0	75.4	-(b)	-	Traffic noise	14	0.5	NL-52 00331805	NC-73 10486660
07-Jan-19	8:00	8:30	Cloudy	73.1	75.4	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660
17-Jan-19	8:00	8:30	Fine	73.4	75.4	-(b)	-	Traffic noise	16	0.5	NL-52 00331805	NC-73 10486660
23-Jan-19	8:00	8:30	Sunny	72.9	75.4	-(b)	-	Traffic noise	17	0.5	NL-52 00331805	NC-73 10486660
29-Jan-19	8:00	8:30	Sunny	73.1	75.4	-(b)	Backhoe	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660

Station      NMS-CA-9      Kong Yiu Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L <sub>Aeq</sub> (30 min)	Baseline (dB(A)), L <sub>Aeq</sub> (30 min)	Corrected LAeq(dBA) <sup>(a)</sup>	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
02-Jan-19	9:24	9:54	Cloudy	70.0	69.2	62.3	-	Traffic noise	14	0.5	NL-52 00331805	NC-73 10486660
07-Jan-19	9:22	9:52	Cloudy	69.8	69.2	60.9	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660
17-Jan-19	9:22	9:52	Fine	69.6	69.2	59.0	-	Traffic noise	16	0.5	NL-52 00331805	NC-73 10486660
23-Jan-19	9:25	9:55	Sunny	70.1	69.2	62.8	-	Traffic noise	17	0.5	NL-52 00331805	NC-73 10486660
29-Jan-19	9:22	9:52	Sunny	69.8	69.2	60.9	Backhoe	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660

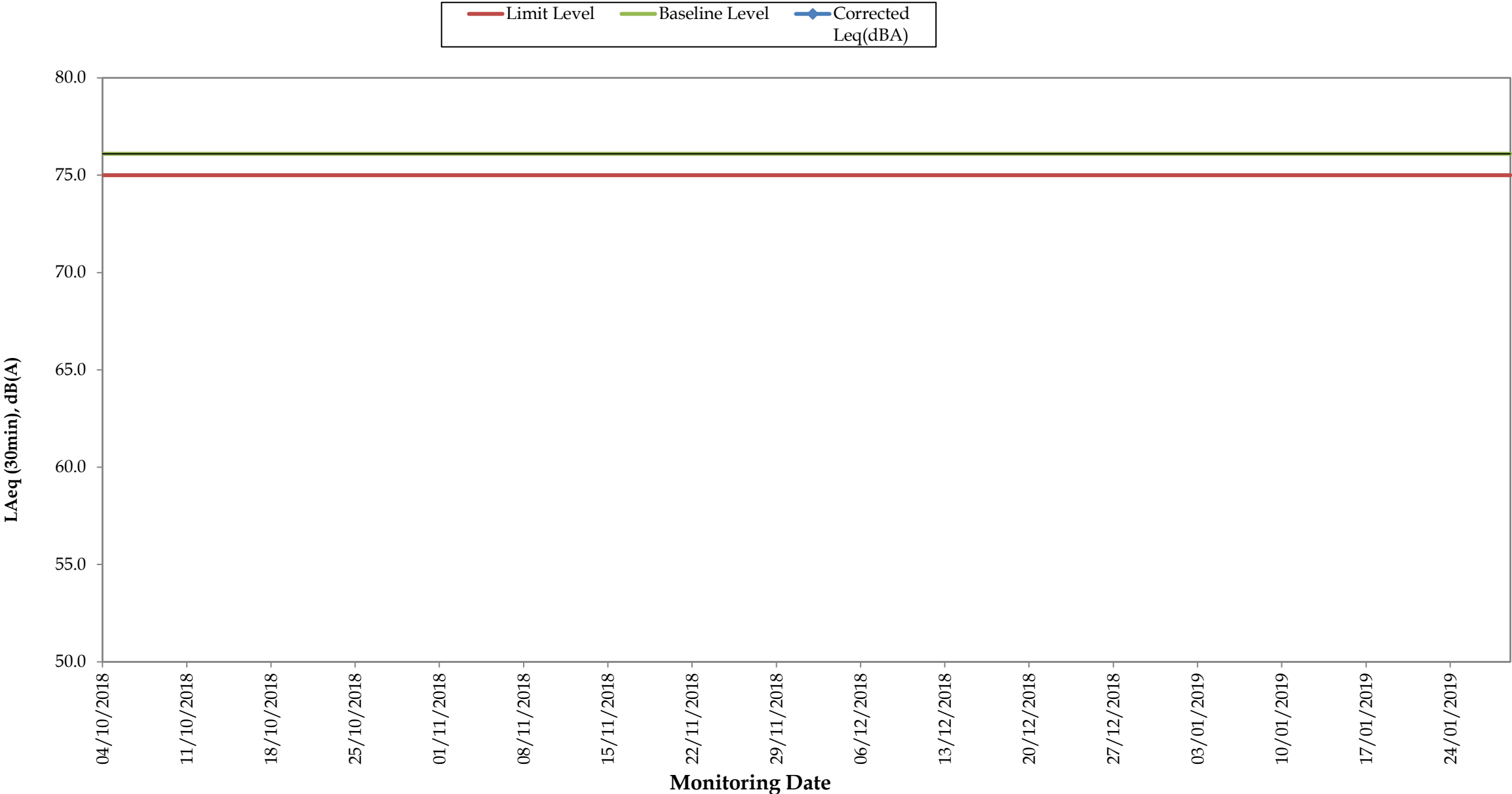
Station      NMS-CA-10      Chat Ma Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L <sub>Aeq</sub> (30 min) <sup>(c)</sup>	Baseline (dB(A)), L <sub>Aeq</sub> (30 min)	Corrected LAeq(dBA) <sup>(a)</sup>	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
02-Jan-19	8:42	9:12	Cloudy	76.0	76.6	-(b)	-	Traffic noise	14	0.5	NL-52 00331805	NC-73 10486660
07-Jan-19	8:42	9:12	Cloudy	76.0	76.6	-(b)	-	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660
17-Jan-19	8:40	9:10	Fine	76.4	76.6	-(b)	-	Traffic noise	16	0.5	NL-52 00331805	NC-73 10486660
23-Jan-19	8:43	9:13	Sunny	75.8	76.6	-(b)	-	Traffic noise	17	0.5	NL-52 00331805	NC-73 10486660
29-Jan-19	8:42	9:12	Sunny	76.1	76.6	-(b)	Backhoe	Traffic noise	19	0.5	NL-52 00331805	NC-73 10486660

Remarks:

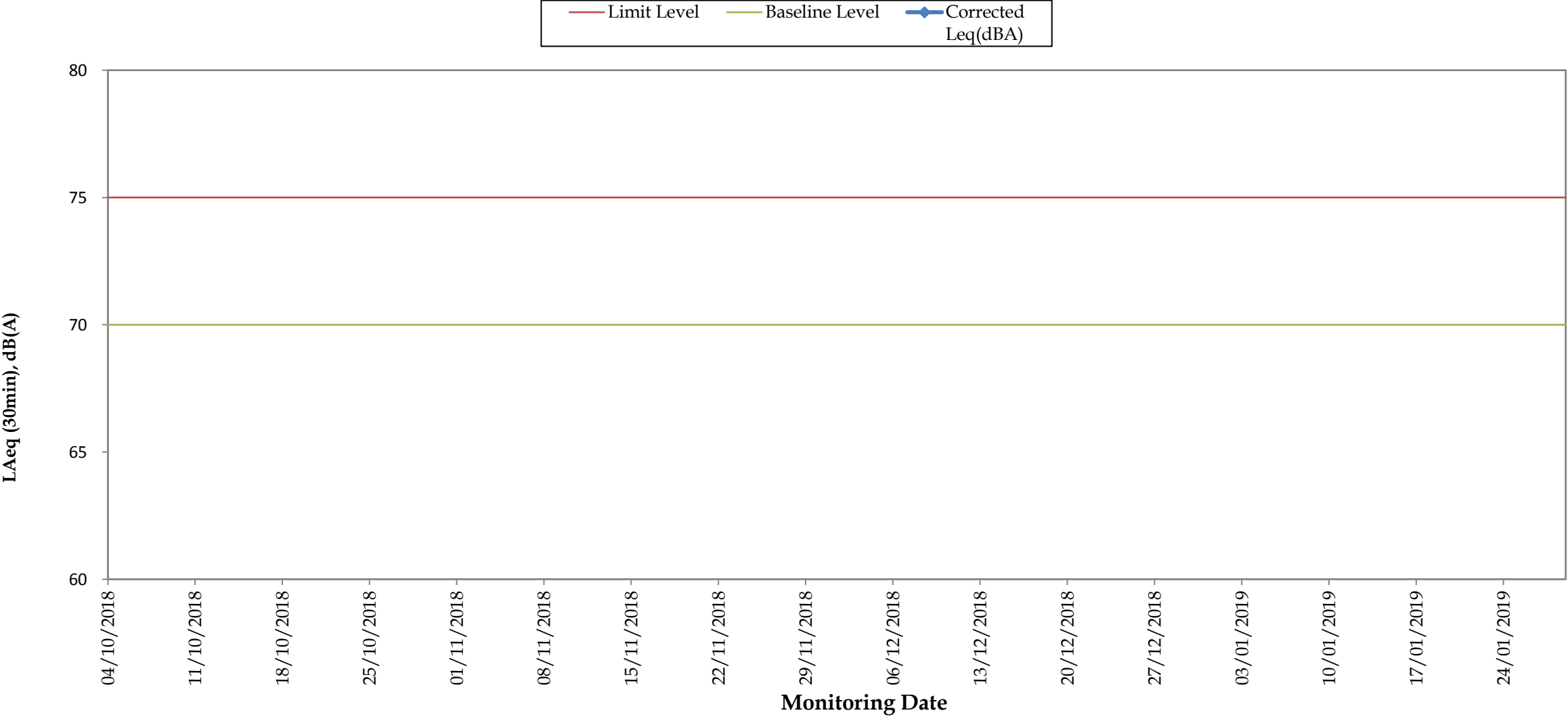
- (a) The Measured LAeq is corrected against the corresponding Baseline Level.  
(b) No correction was made as the measured noise levels were equal to or below the baseline noise levels.  
(c) The noise monitoring results carried out at NMS-CA-8 and NMS-CA-10 on 2, 7, 17, 23 and 29 January 2019 are higher 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.

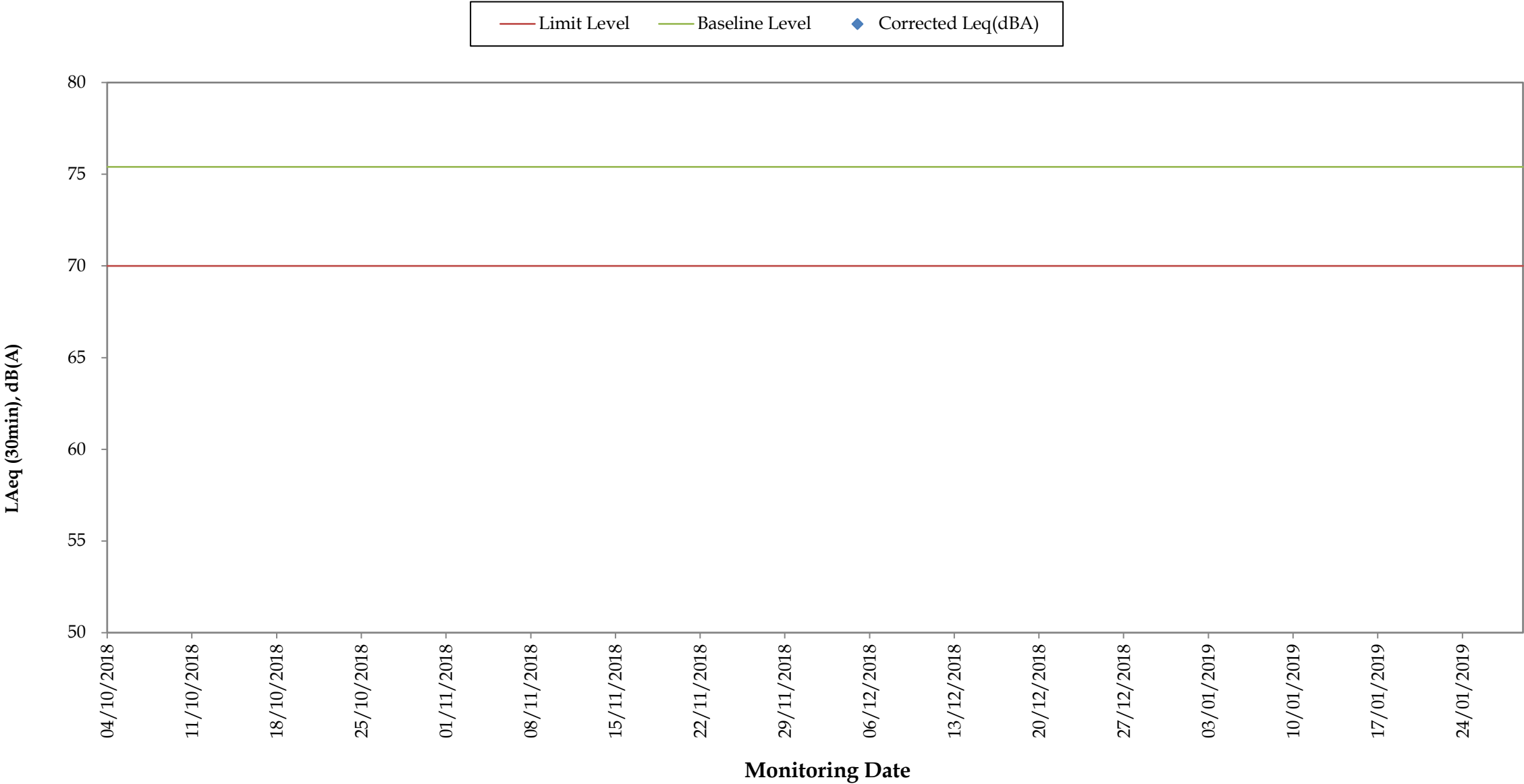
Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min)  
for the Past 4 Months



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**

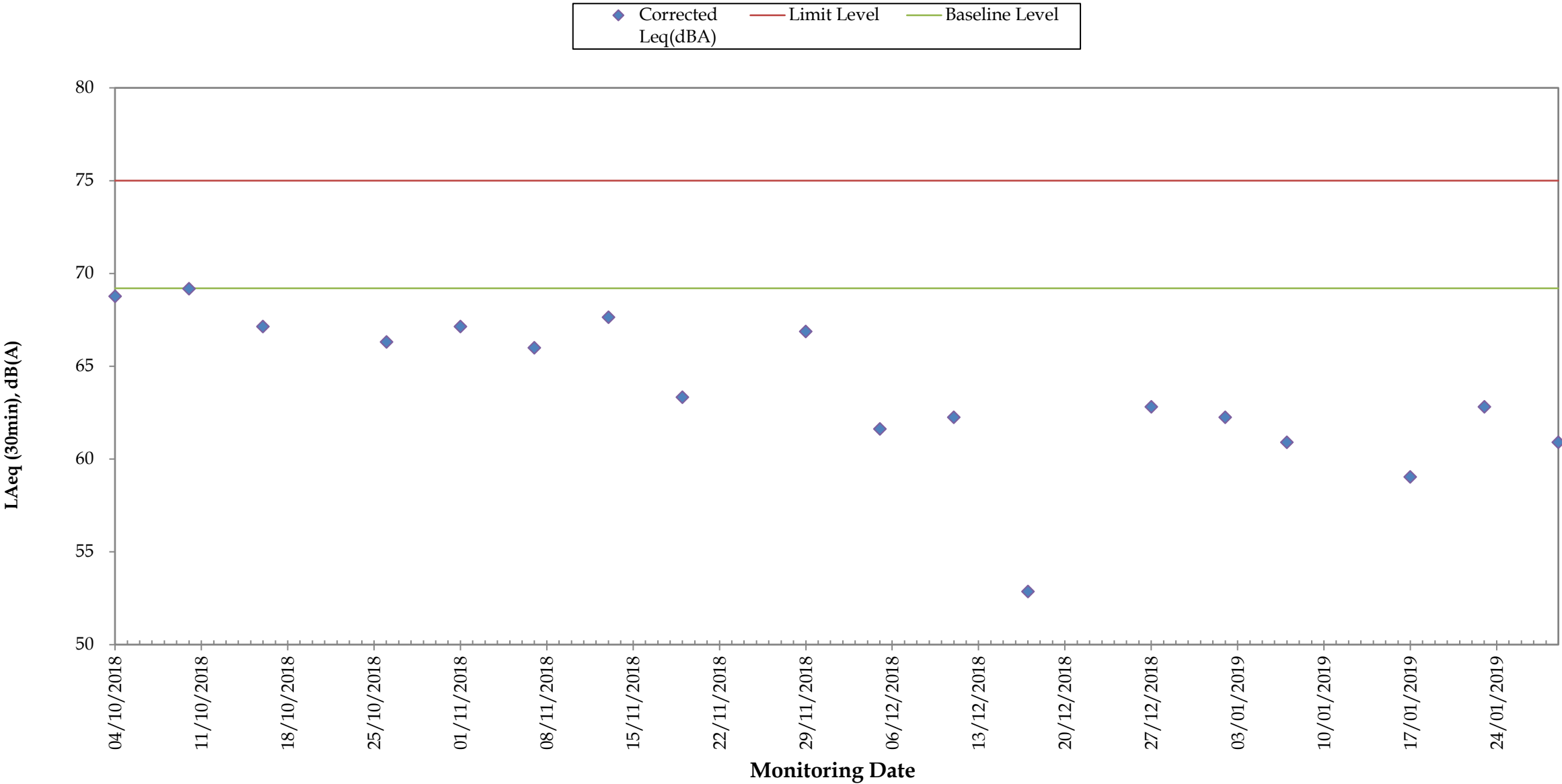


**Remarks:**

- 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



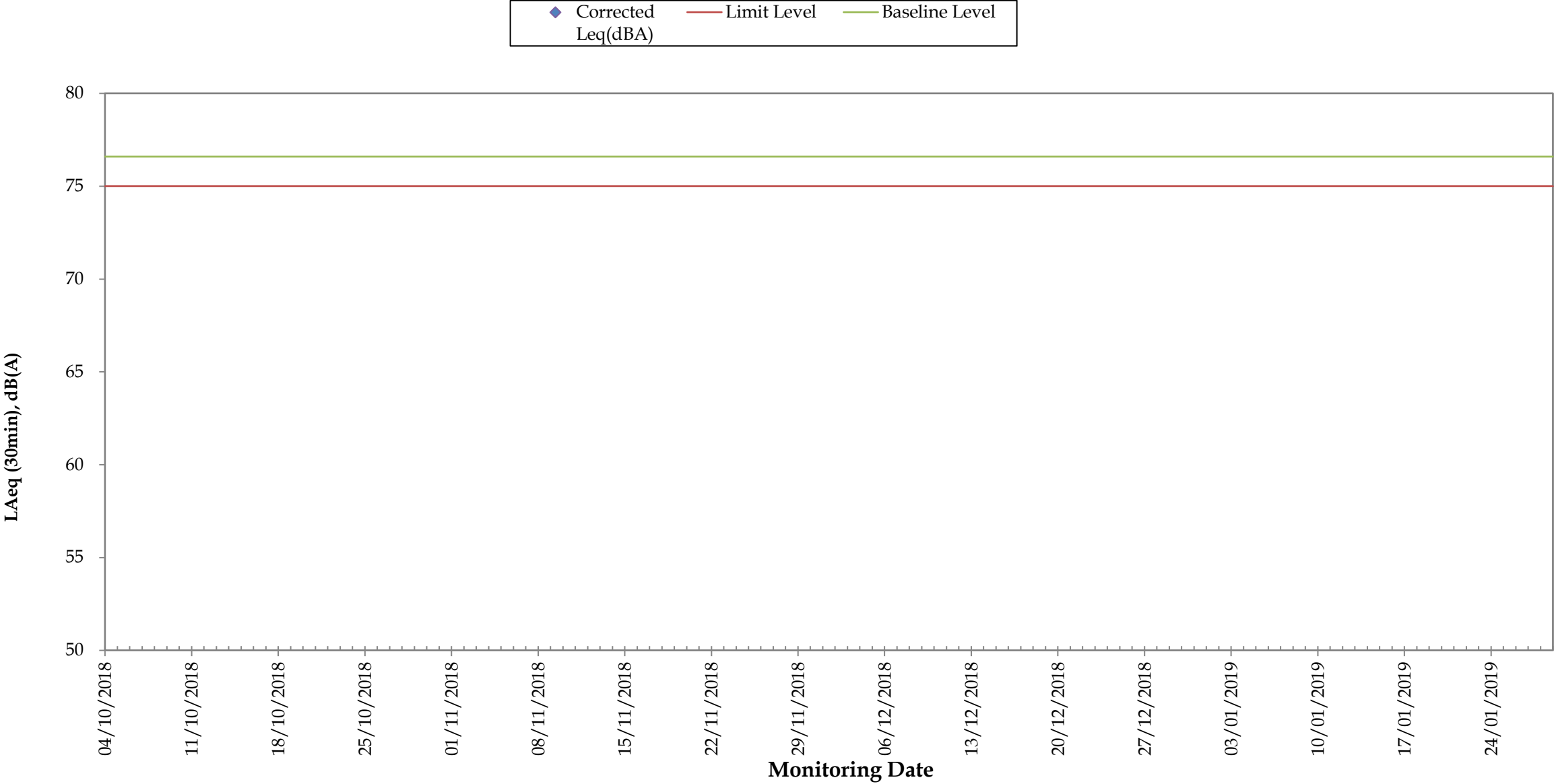
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion)  
(LAeq, 30min) ) for the Past 4 Months



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 levels 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 (m³/min)			TSP Conc.	Action Level	Limit Level	Observations /	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m³)	(µg/m³)	(µg/m³)	Remarks	ID	ID
02-Jan-19	10:55	03-Jan-19	10:55	Cloudy	2.6561	2.7840	19808.30	19832.30	24.00	1.41	1.41	1.41	63	156.8	260	-	0107	056421
07-Jan-19	10:55	08-Jan-19	10:55	Cloudy	2.6995	2.7816	19832.30	19856.30	24.00	1.36	1.36	1.36	42	156.8	260	-	0107	057130
11-Jan-19	8:45	12-Jan-19	8:45	Cloudy	2.6700	2.8242	19856.30	19880.30	24.00	1.36	1.36	1.36	79	156.8	260	-	0107	056406
17-Jan-19	11:00	18-Jan-19	11:00	Fine	2.7093	2.8280	19880.30	19904.30	24.00	1.36	1.36	1.36	61	156.8	260	-	0107	057148
23-Jan-19	11:00	24-Jan-19	11:00	Sunny	2.6632	2.7575	19904.30	19928.30	24.00	1.36	1.36	1.36	48	156.8	260	-	0107	057157
29-Jan-19	11:00	30-Jan-19	11:00	Sunny	2.6782	2.8308	19928.30	19952.30	24.00	1.36	1.36	1.36	78	156.8	260	-	0107	057166
												Minimum	42					
												Average	62					
												Maximum	79					

Station	DMS-7	Parc 22																
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m³/min)			TSP Conc.	Action Level	Limit Level	Observations /	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m³)	(µg/m³)	(µg/m³)	Remarks	ID	ID
02-Jan-19	10:04	03-Jan-19	10:04	Cloudy	2.6551	2.7444	9056.17	9080.17	24.00	1.24	1.24	1.24	50	166.7	260	-	3574	056420
07-Jan-19	10:05	08-Jan-19	10:05	Cloudy	2.7143	2.7898	9080.17	9104.17	24.00	1.01	1.01	1.01	52	166.7	260	-	3574	057129
11-Jan-19	8:30	12-Jan-19	8:30	Cloudy	2.6888	2.7969	9104.17	9128.17	24.00	1.01	1.01	1.01	74	166.7	260	-	3574	057138
17-Jan-19	10:04	18-Jan-19	10:04	Fine	2.7065	2.7887	9128.17	9152.17	24.00	1.01	1.01	1.01	57	166.7	260	-	3574	057147
23-Jan-19	10:08	24-Jan-19	10:08	Sunny	2.6865	2.7753	9152.17	9176.17	24.00	1.01	1.01	1.01	61	166.7	260	-	3574	057156
29-Jan-19	10:05	30-Jan-19	10:05	Sunny	2.6860	2.8085	9176.17	9200.17	24.00	1.01	1.01	1.01	84	166.7	260	-	3574	057165
												Minimum	50					
												Average	63					
												Maximum	84					

Station DMS-8 SKH Good Shepherd Primary School

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m <sup>3</sup> /min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )		ID	ID
02-Jan-19	8:05	03-Jan-19	8:05	Cloudy	2.6586	2.7351	10013.11	10037.11	24.00	1.27	1.27	1.27	42	152.2	260	-	3572	056419
07-Jan-19	8:05	08-Jan-19	8:05	Cloudy	2.6951	2.7543	10037.11	10061.11	24.00	1.14	1.14	1.14	36	152.2	260	-	3572	057128
11-Jan-19	8:15	12-Jan-19	8:15	Cloudy	2.6999	2.7918	10061.11	10085.11	24.00	1.14	1.14	1.14	56	152.2	260	-	3572	057137
17-Jan-19	8:05	18-Jan-19	8:05	Fine	2.7147	2.7889	10085.11	10109.11	24.00	1.14	1.14	1.14	45	152.2	260	-	3572	057146
23-Jan-19	8:05	24-Jan-19	8:05	Sunny	2.6727	2.7290	10109.11	10133.11	24.00	1.14	1.14	1.14	34	152.2	260	-	3572	057155
29-Jan-19	8:05	30-Jan-19	8:05	Sunny	2.6906	2.7839	10133.11	10157.11	24.00	1.14	1.14	1.14	57	152.2	260	-	3572	057164
												Minimum	34					
												Average	45					
												Maximum	57					

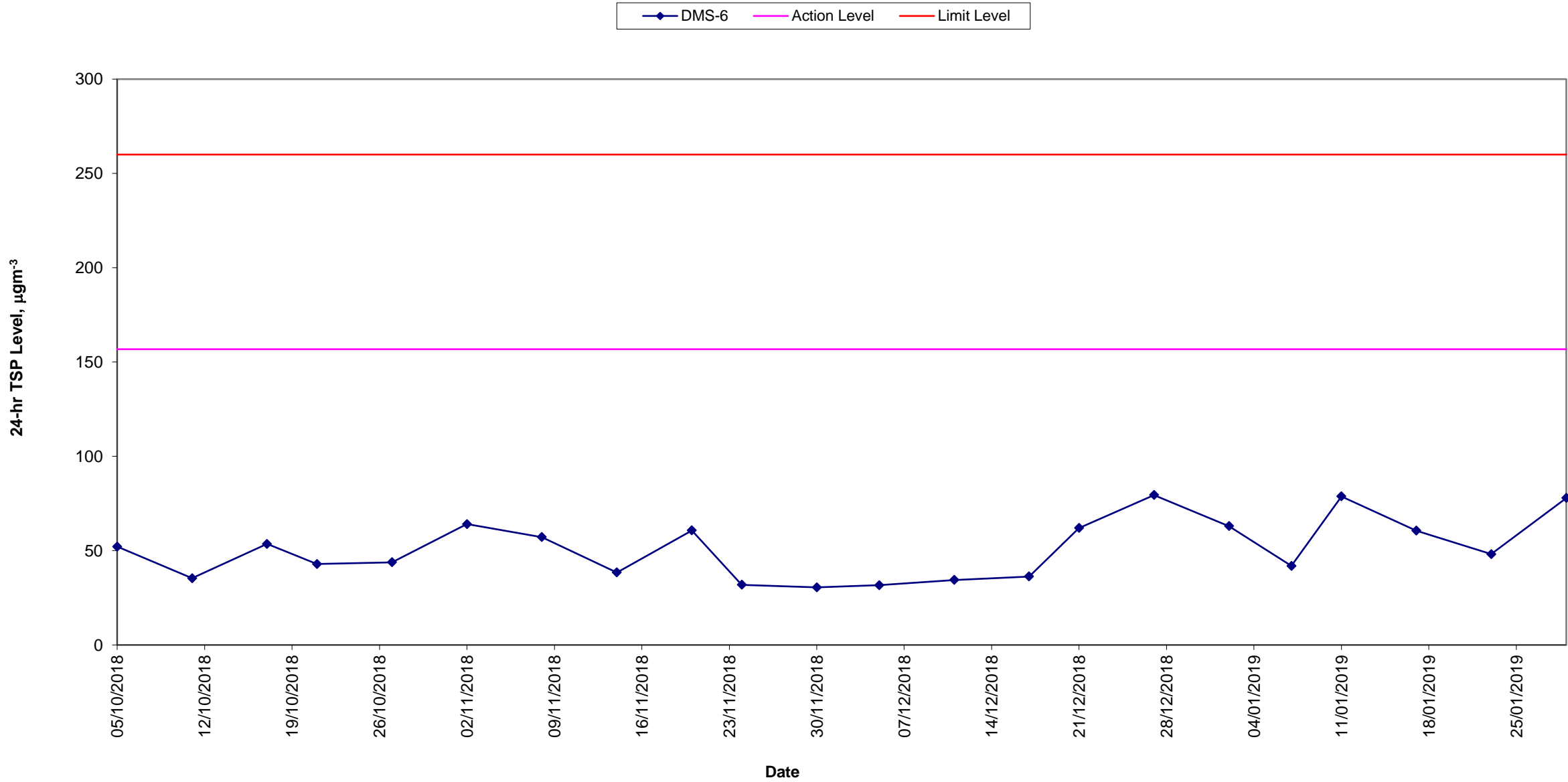
Station DMS-9 No. 12 Pau Chung Street

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m <sup>3</sup> /min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )		ID	ID
02-Jan-19	8:15	03-Jan-19	8:15	Cloudy	2.6434	2.8130	19980.40	20004.40	24.00	1.23	1.23	1.23	96	160.9	260	-	0814	056418
07-Jan-19	8:15	08-Jan-19	8:15	Cloudy	2.7303	2.8698	20004.40	20028.40	24.00	1.33	1.33	1.33	73	160.9	260	-	0814	057127
11-Jan-19	8:10	12-Jan-19	8:10	Cloudy	2.6961	2.9038	20028.40	20052.40	24.00	1.33	1.33	1.33	108	160.9	260	-	0814	057136
17-Jan-19	8:15	18-Jan-19	8:15	Fine	2.6821	2.8240	20052.40	20076.40	24.00	1.33	1.33	1.33	74	160.9	260	-	0814	057145
23-Jan-19	8:15	24-Jan-19	8:15	Sunny	2.6584	2.7505	20076.40	20100.40	24.00	1.33	1.33	1.33	48	160.9	260	-	0814	057154
29-Jan-19	8:15	30-Jan-19	8:15	Sunny	2.6910	2.8232	20100.40	20124.40	24.00	1.33	1.33	1.33	69	160.9	260	-	0814	057163
												Minimum	48					
												Average	78					
												Maximum	108					

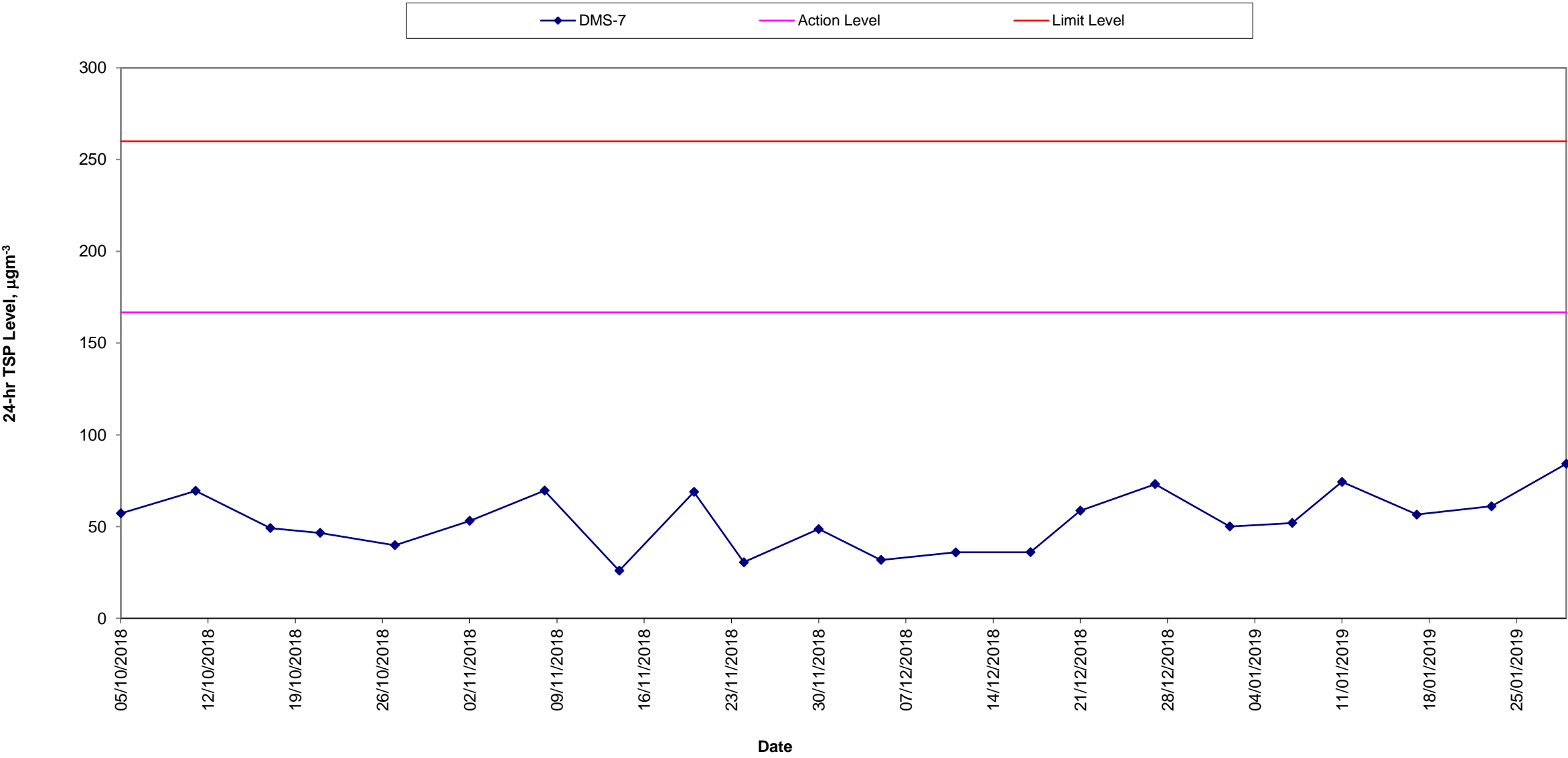
Station DMS-10 Chat Ma Mansion

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m <sup>3</sup> /min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )		ID	ID
02-Jan-19	8:45	03-Jan-19	8:45	Cloudy	2.6632	2.7690	10429.40	10453.40	24.00	1.09	1.09	1.09	67	170.4	260	-	3573	056417
07-Jan-19	8:44	08-Jan-19	8:44	Cloudy	2.6823	2.7805	10453.40	10477.40	24.00	1.07	1.07	1.07	64	170.4	260	-	3573	056426
11-Jan-19	8:00	12-Jan-19	8:00	Cloudy	2.7014	2.8296	10477.40	10501.40	24.00	1.07	1.07	1.07	83	170.4	260	-	3573	057135
17-Jan-19	8:42	18-Jan-19	8:42	Fine	2.6925	2.7811	10504.40	10528.40	24.00	1.07	1.07	1.07	58	170.4	260	-	3573	057144
23-Jan-19	8:45	24-Jan-19	8:45	Sunny	2.6648	2.7495	10528.40	10552.40	24.00	1.07	1.07	1.07	55	170.4	260	-	3573	057153
29-Jan-19	8:44	30-Jan-19	8:44	Sunny	2.6787	2.8127	10549.40	10573.40	24.00	1.07	1.07	1.07	87	170.4	260	-	3573	057162
												Minimum	55					
												Average	69					
												Maximum	87					

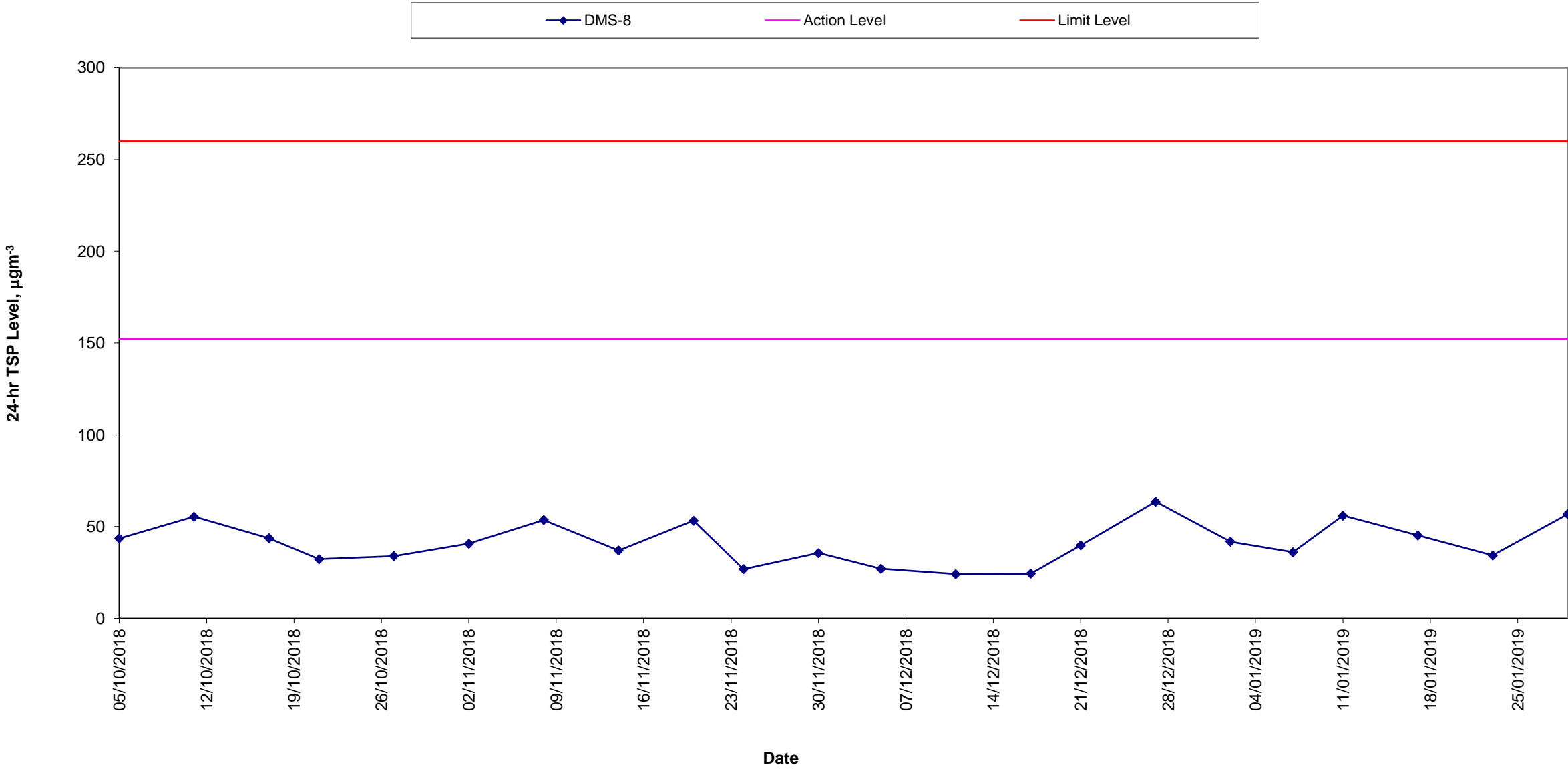
Construction Dust Monitoring Results for the Past 4 Months  
DMS-6 (Katherine Building)



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

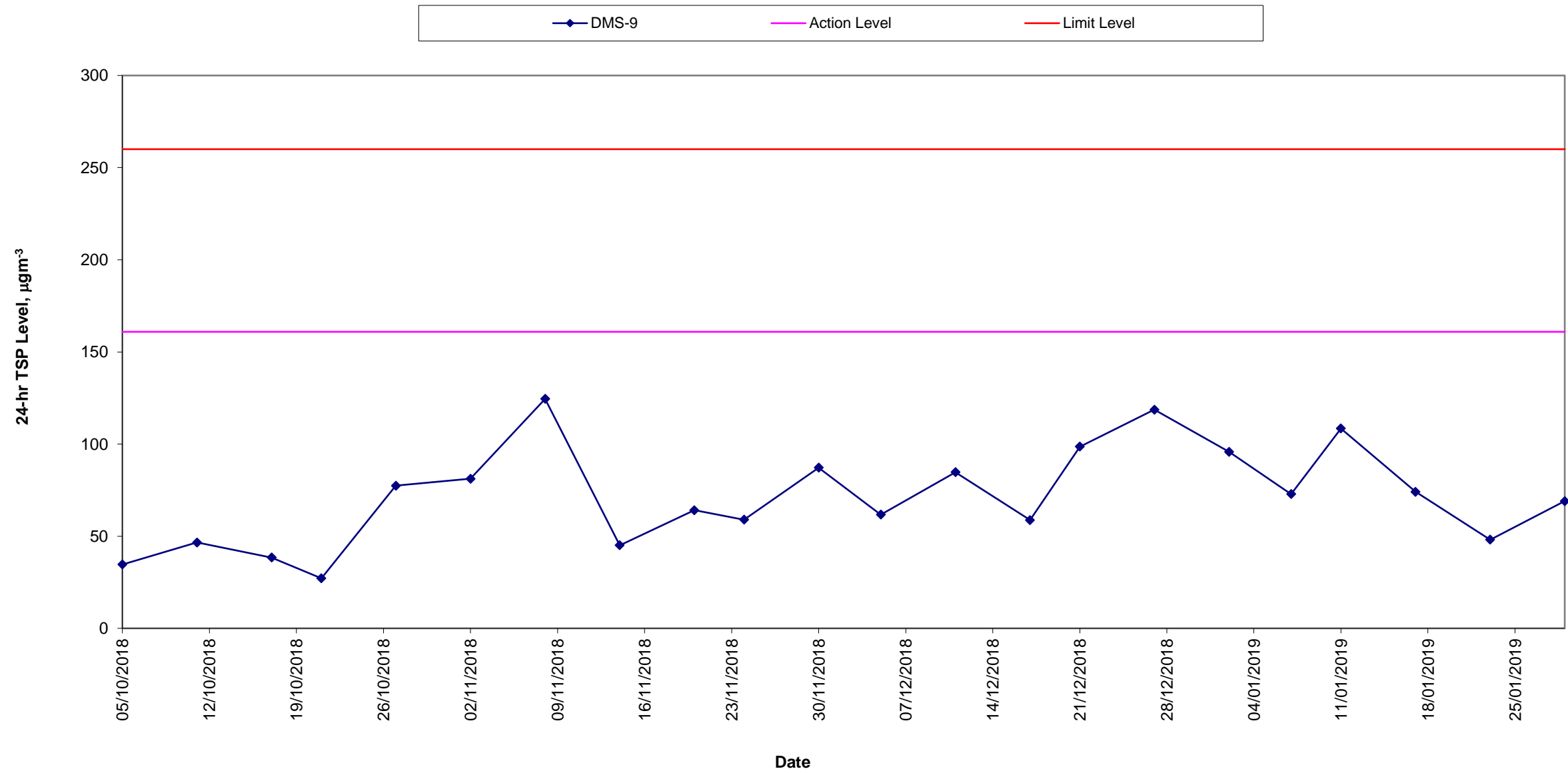


Construction Dust Monitoring Results for the Past 4 Months  
DMS-8 (SKH Good Shepherd Primary School)

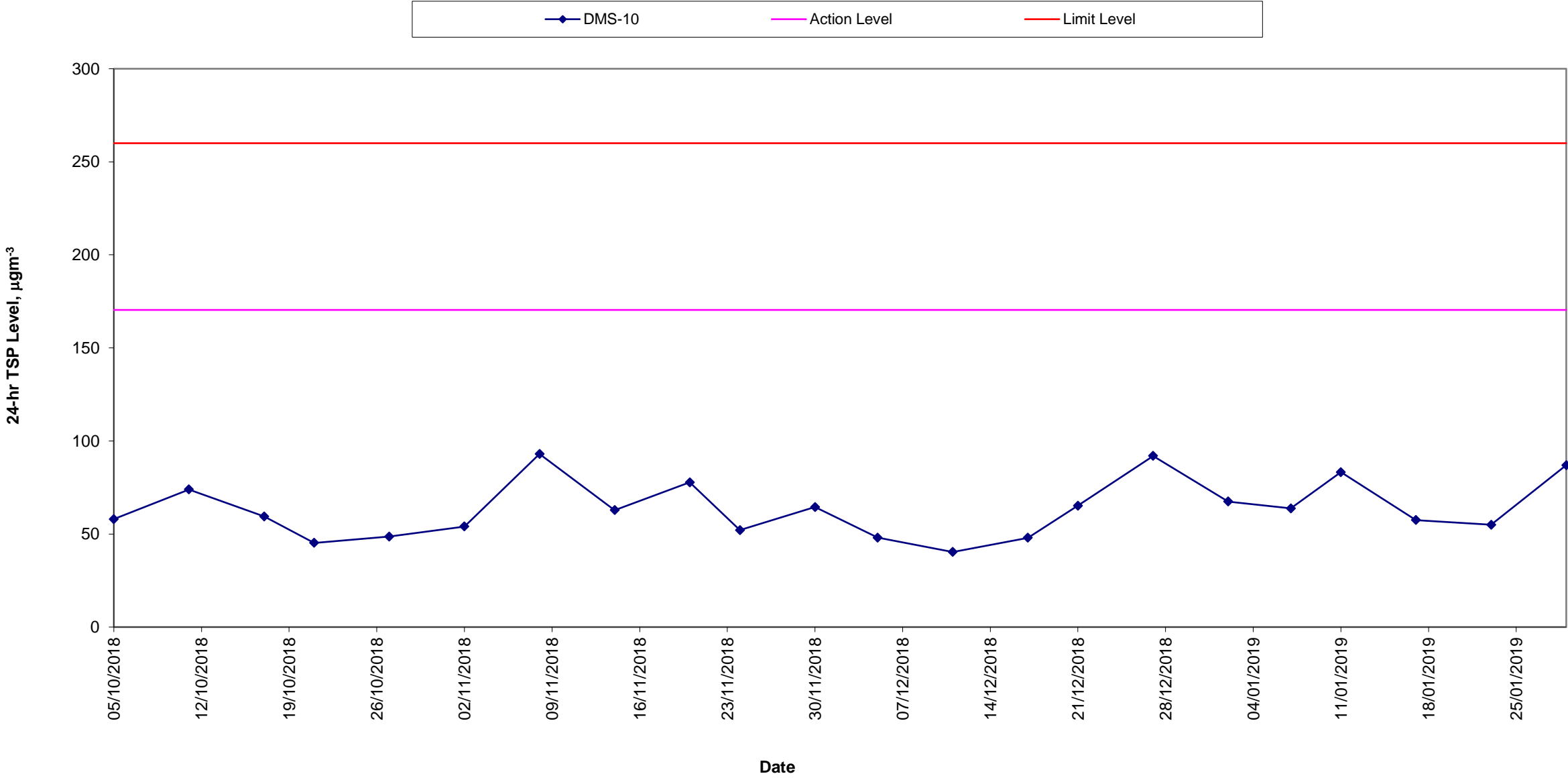




**Construction Dust Monitoring Results for the Past 4 Months  
DMS-9 (No.12 Pau Chung Street)**



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

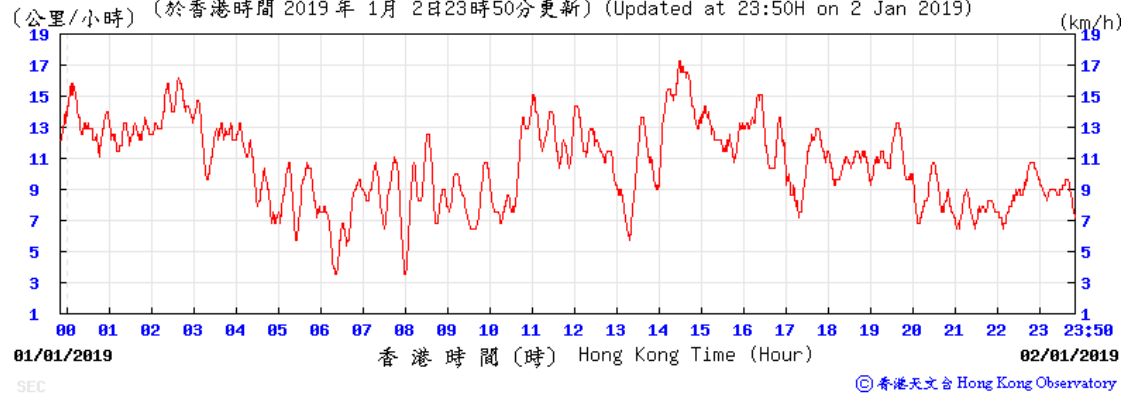


## Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

### 2-3 January 2019

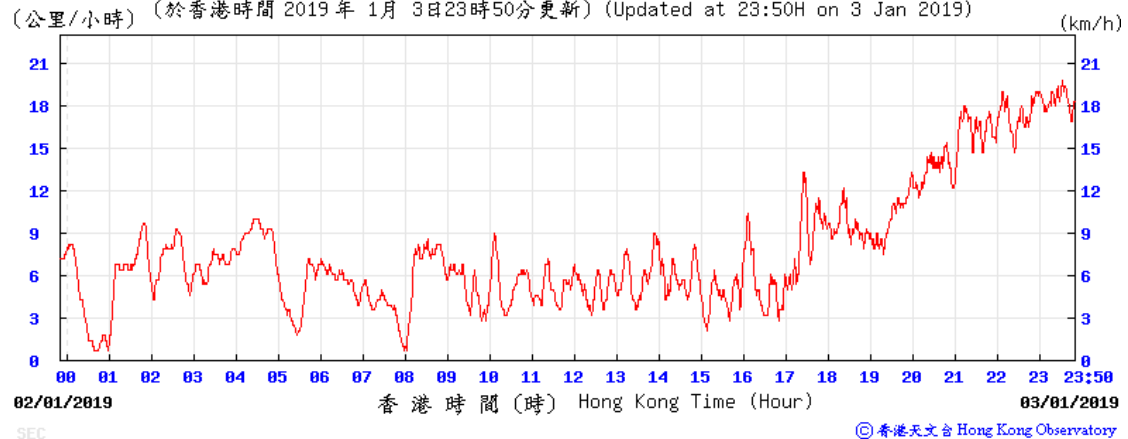
Wind Speed:

(公里/小時) (於香港時間 2019 年 1 月 2 日 23 時 50 分更新) (Updated at 23:50H on 2 Jan 2019)



Wind Speed:

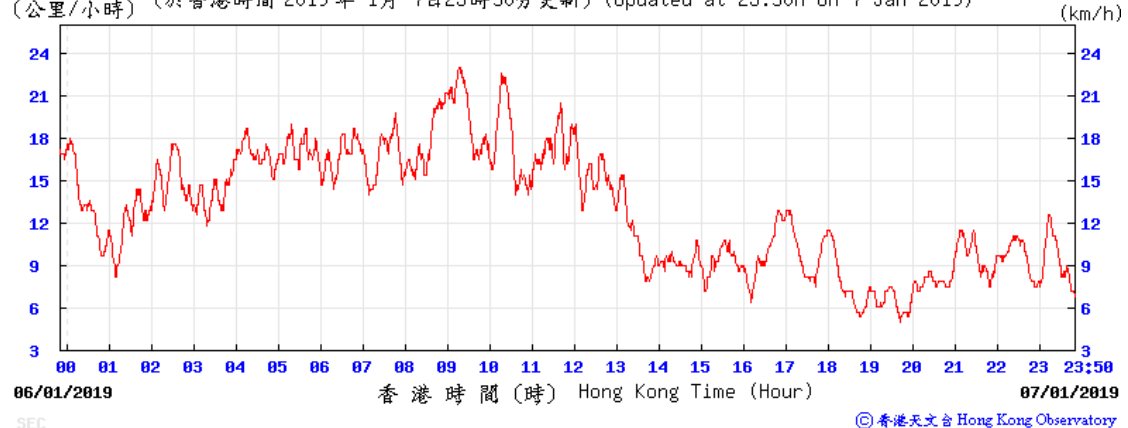
(公里/小時) (於香港時間 2019 年 1 月 3 日 23 時 50 分更新) (Updated at 23:50H on 3 Jan 2019)



### 7-8 January 2019

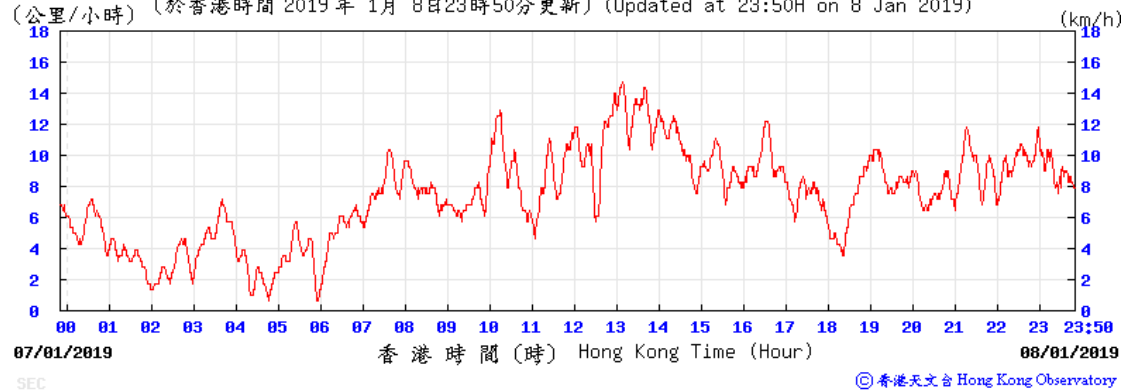
Wind Speed:

(公里/小時) (於香港時間 2019 年 1 月 7 日 23 時 50 分更新) (Updated at 23:50H on 7 Jan 2019)



Wind Speed:

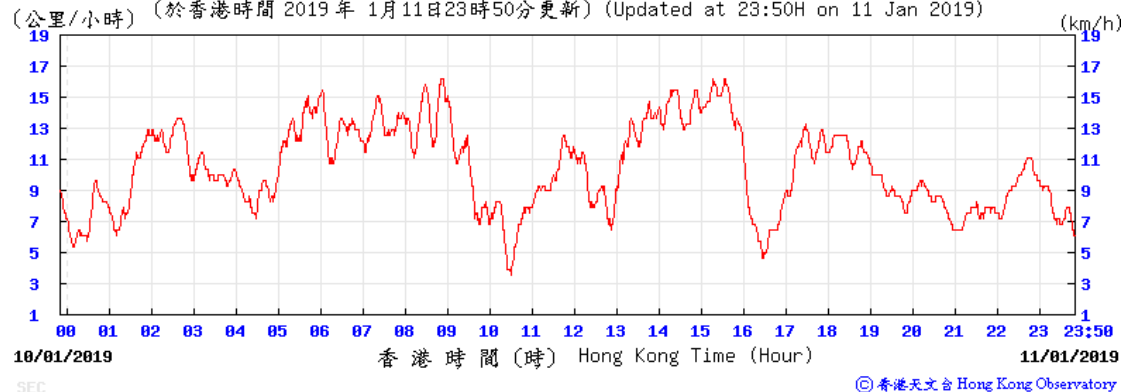
(公里/小時) (於香港時間 2019 年 1 月 8 日 23 時 50 分更新) (Updated at 23:50H on 8 Jan 2019)



## 11-12 January 2019

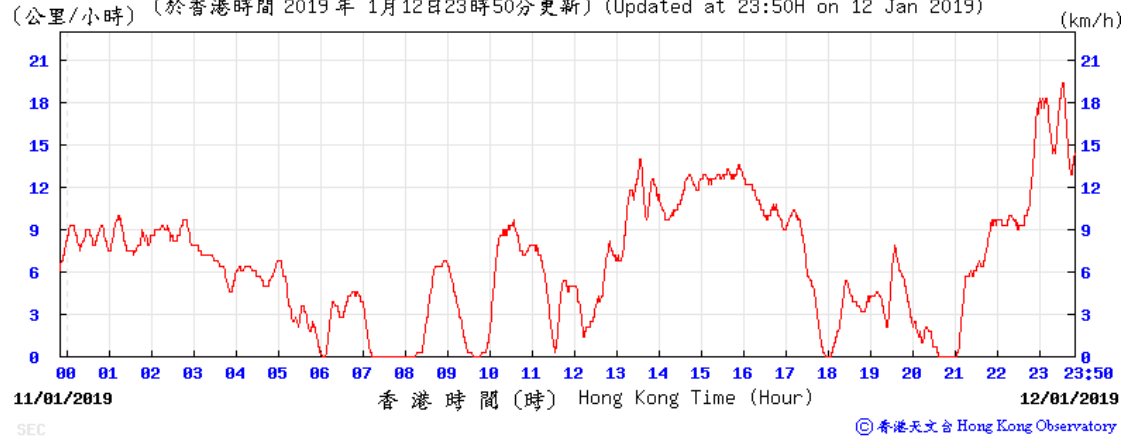
Wind Speed:

(公里/小時) (於香港時間 2019 年 1 月 11 日 23 時 50 分更新) (Updated at 23:50H on 11 Jan 2019)



Wind Speed:

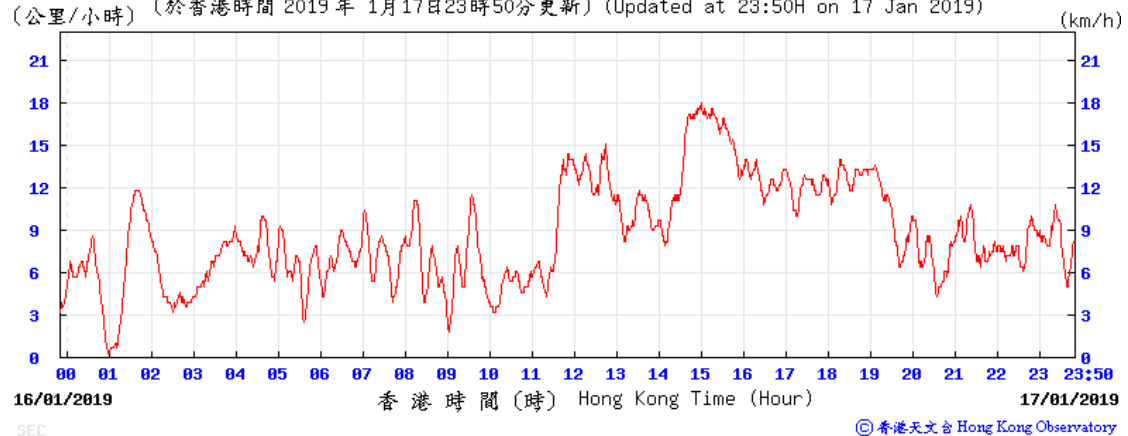
(公里/小時) (於香港時間 2019 年 1 月 12 日 23 時 50 分更新) (Updated at 23:50H on 12 Jan 2019)



## 17-18 January 2019

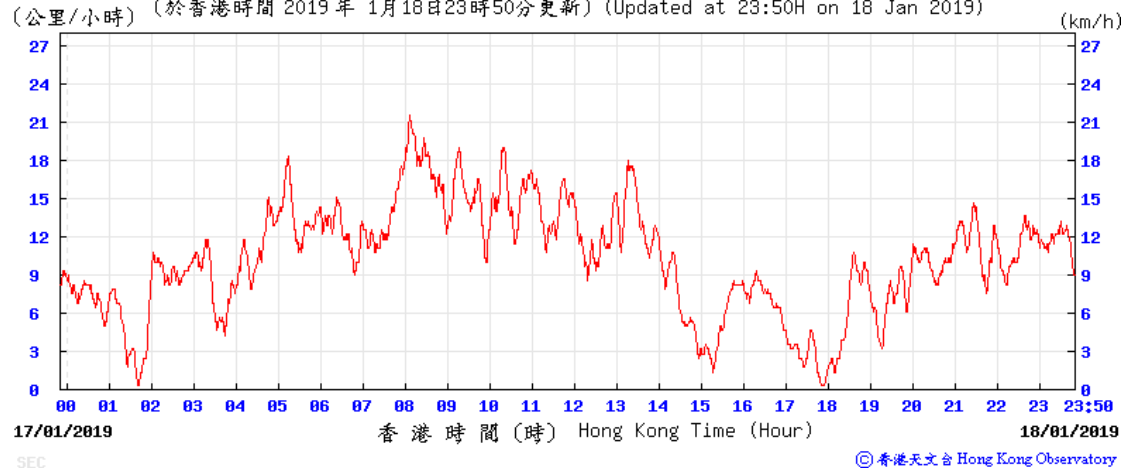
Wind Speed:

(公里/小時) (於香港時間 2019 年 1月17日23時50分更新) (Updated at 23:50H on 17 Jan 2019)



Wind Speed:

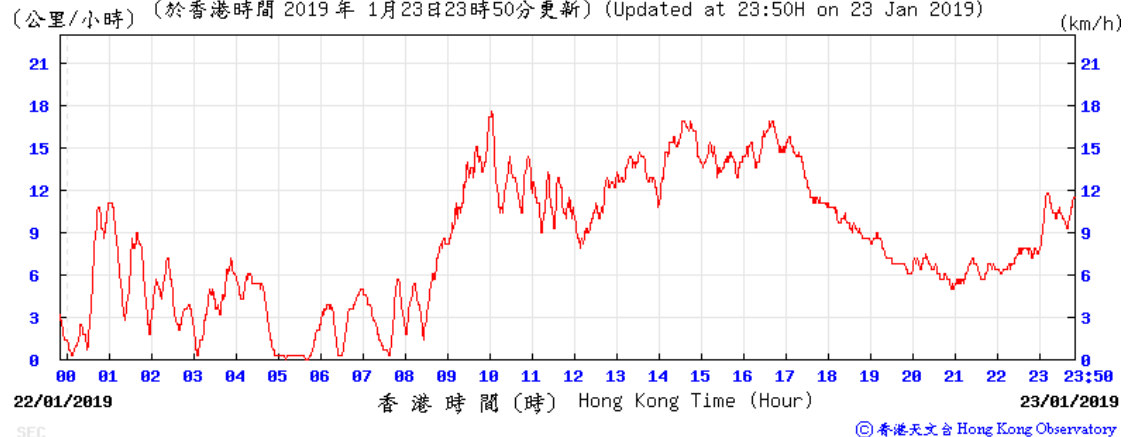
(公里/小時) (於香港時間 2019 年 1月18日23時50分更新) (Updated at 23:50H on 18 Jan 2019)



## 23-24 January 2019

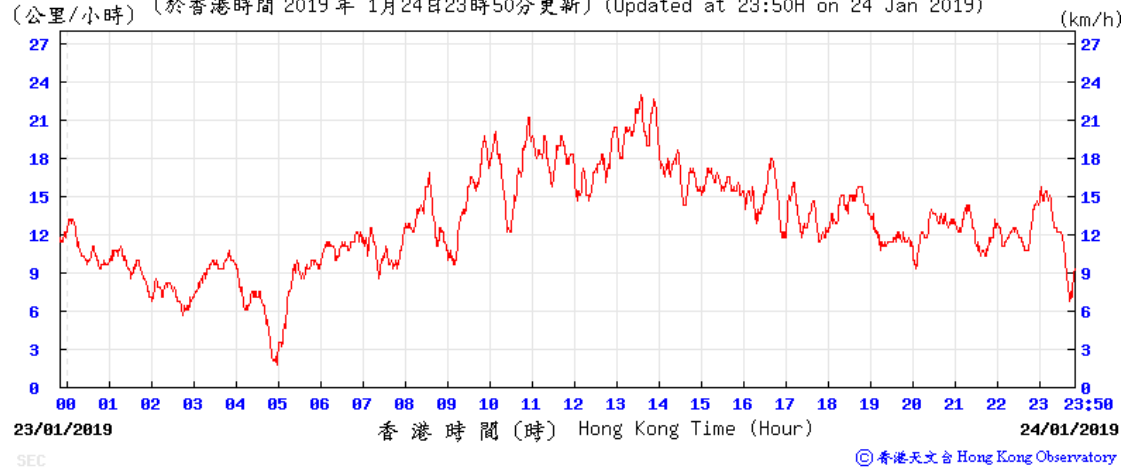
Wind Speed:

(公里/小時) (於香港時間 2019 年 1月23日23時50分更新) (Updated at 23:50H on 23 Jan 2019)



Wind Speed:

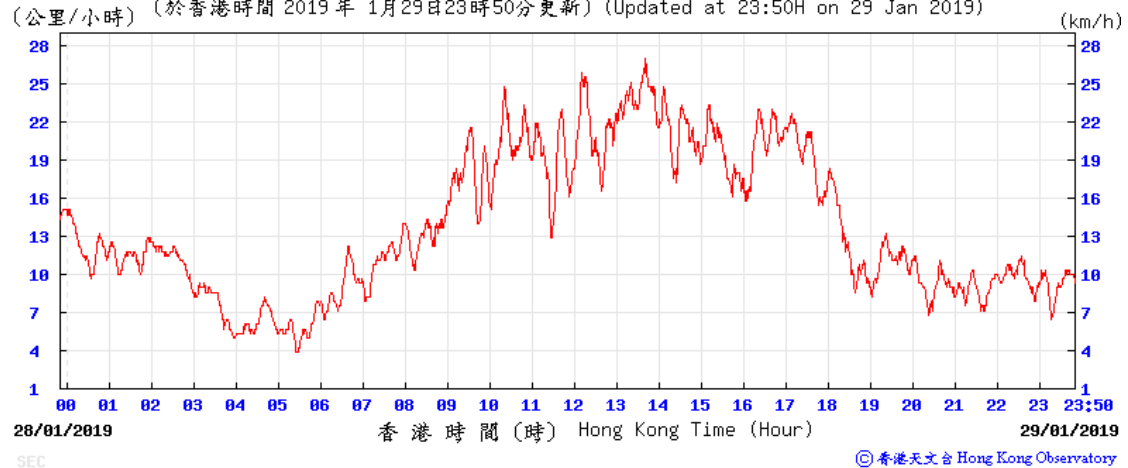
(公里/小時) (於香港時間 2019 年 1月24日23時50分更新) (Updated at 23:50H on 24 Jan 2019)



## 29-30 January 2019

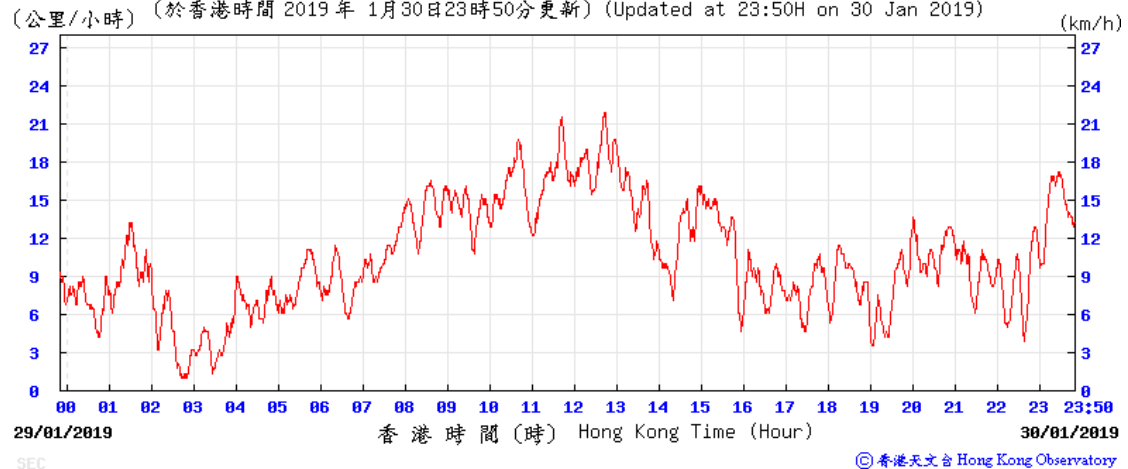
Wind Speed:

(公里/小時) (於香港時間 2019 年 1月29日23時50分更新) (Updated at 23:50H on 29 Jan 2019)



Wind Speed:

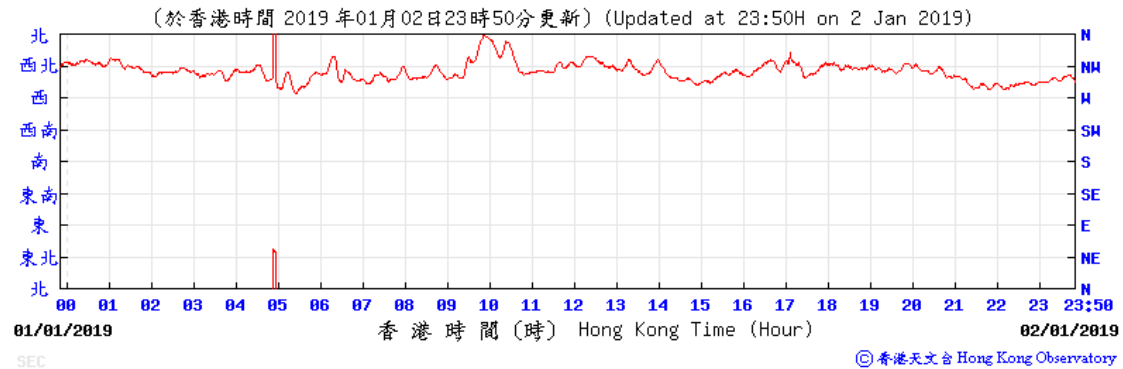
(公里/小時) (於香港時間 2019 年 1月30日23時50分更新) (Updated at 23:50H on 30 Jan 2019)



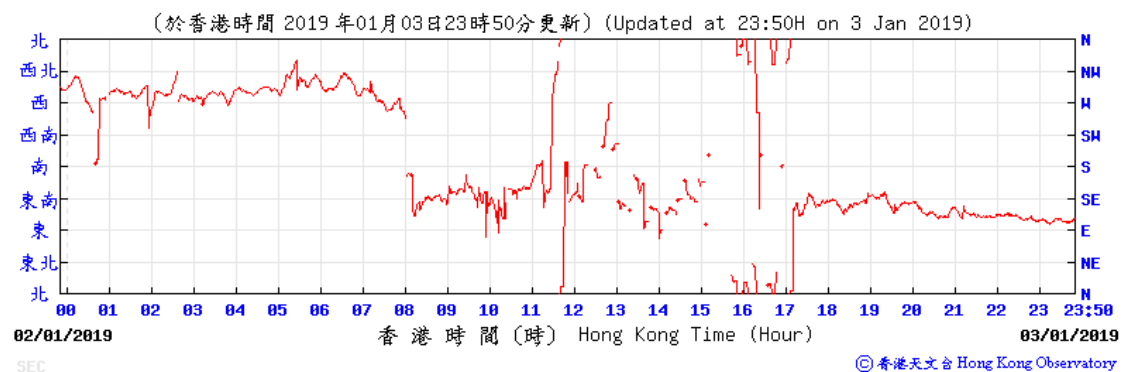
## Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

### 2-3 January 2019

Wind Direction:

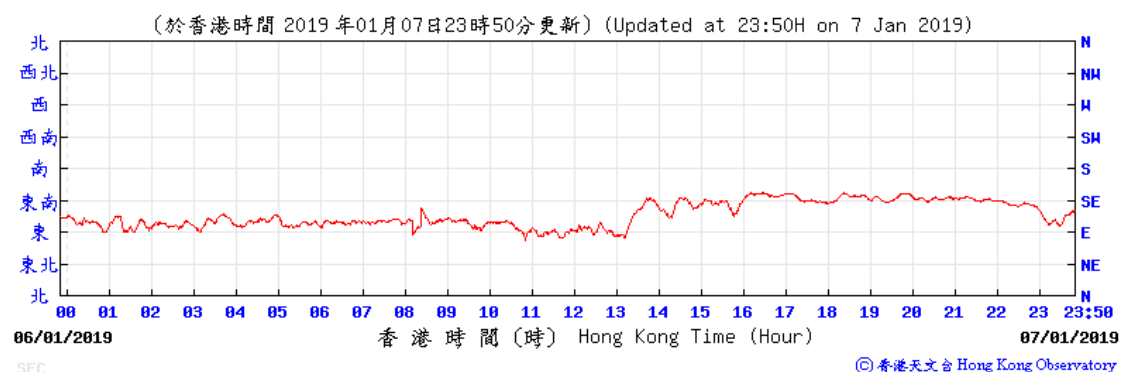


Wind Direction:

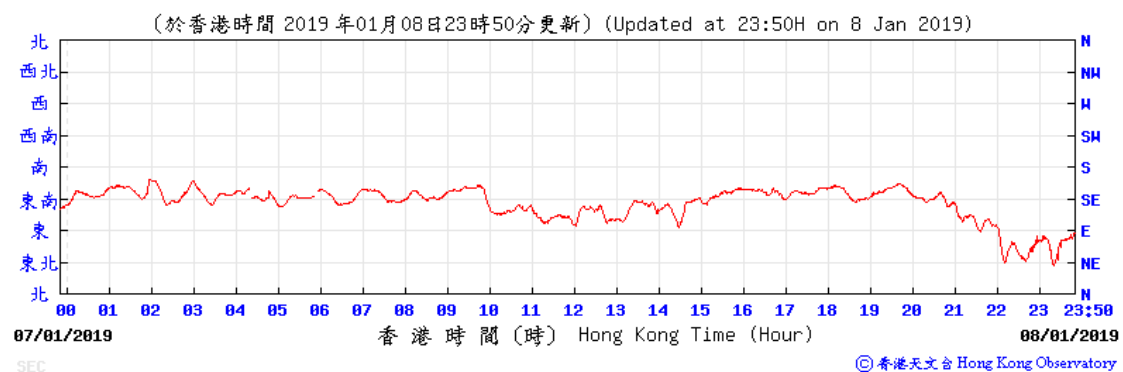


### 7-8 January 2019

Wind Direction:

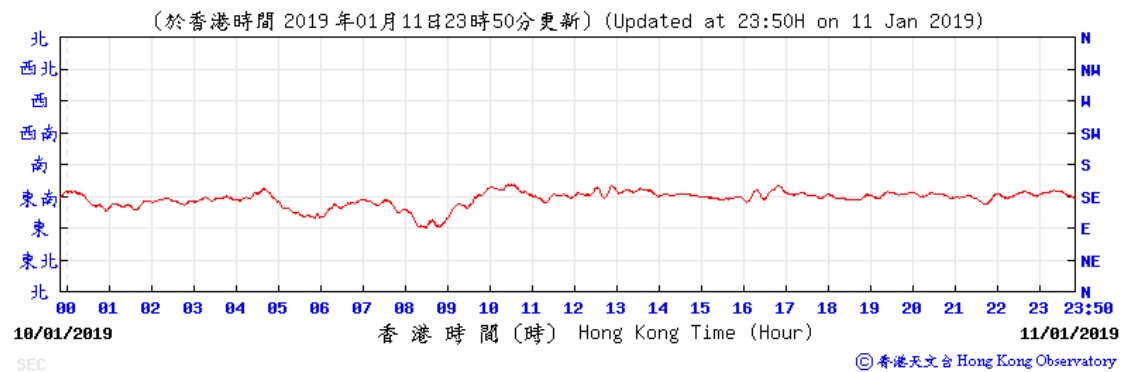


Wind Direction:

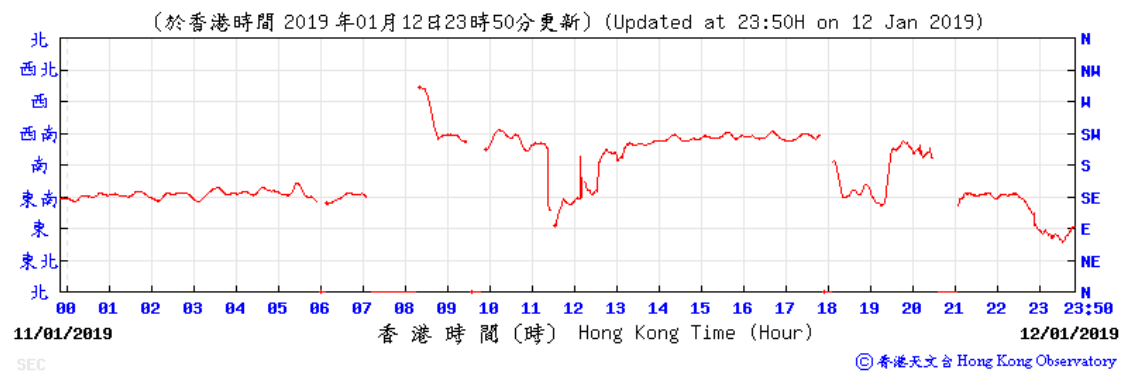


## 11-12 January 2019

Wind Direction:

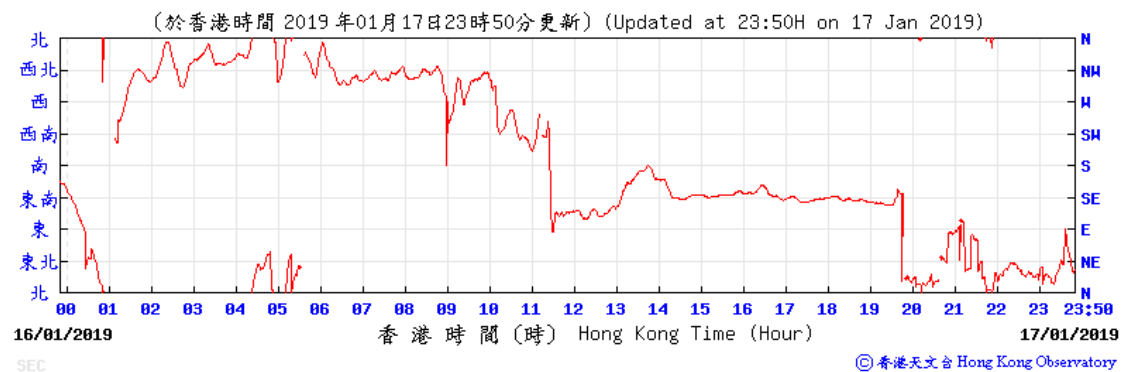


Wind Direction:

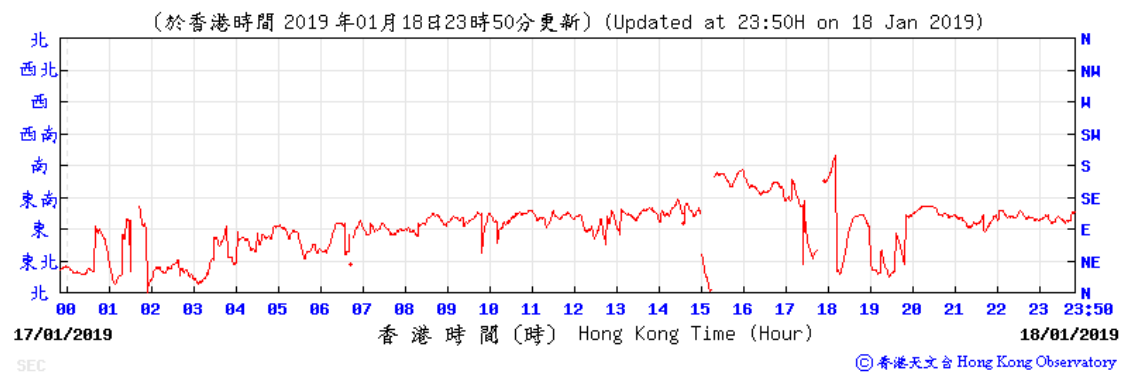


## 17-18 January 2019

Wind Direction:



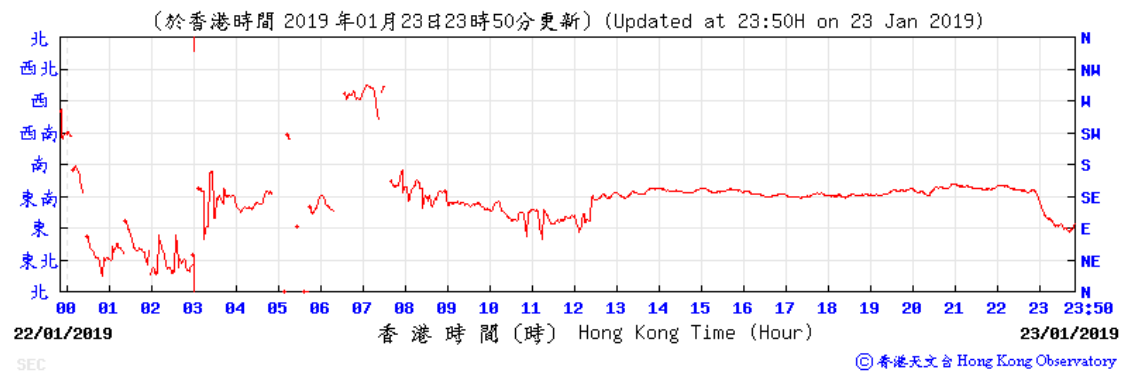
Wind Direction:



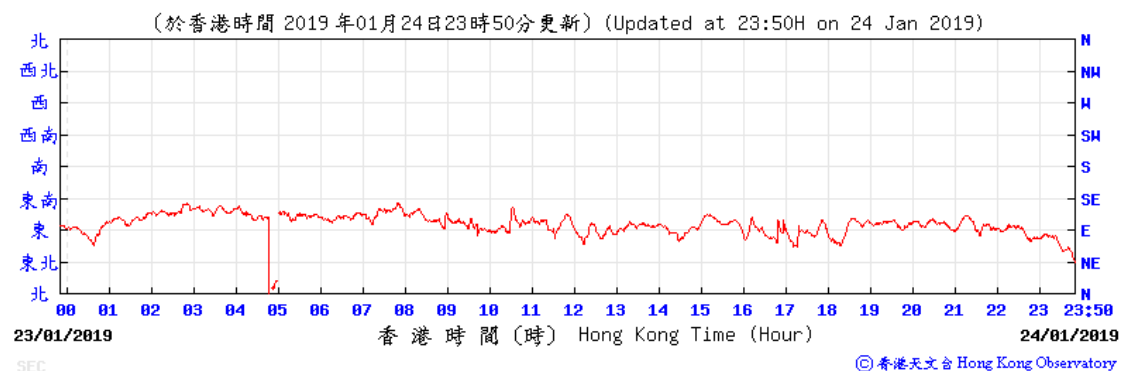


## 23-24 January 2019

Wind Direction:

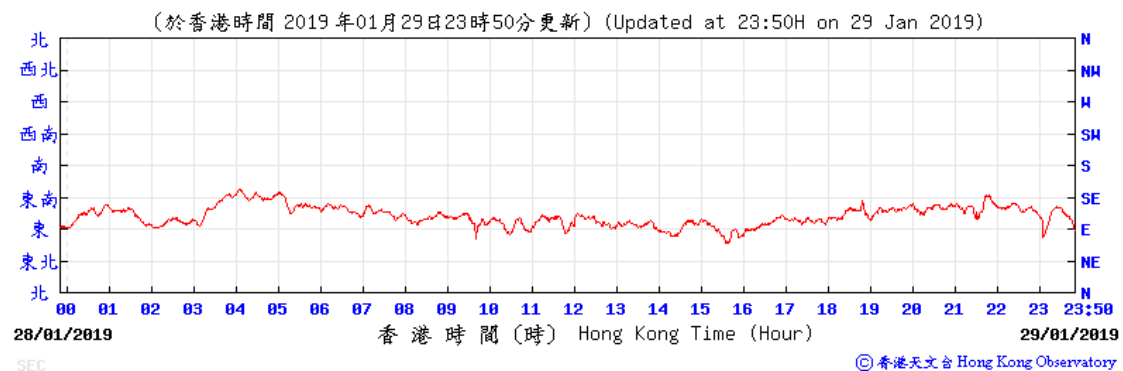


Wind Direction:

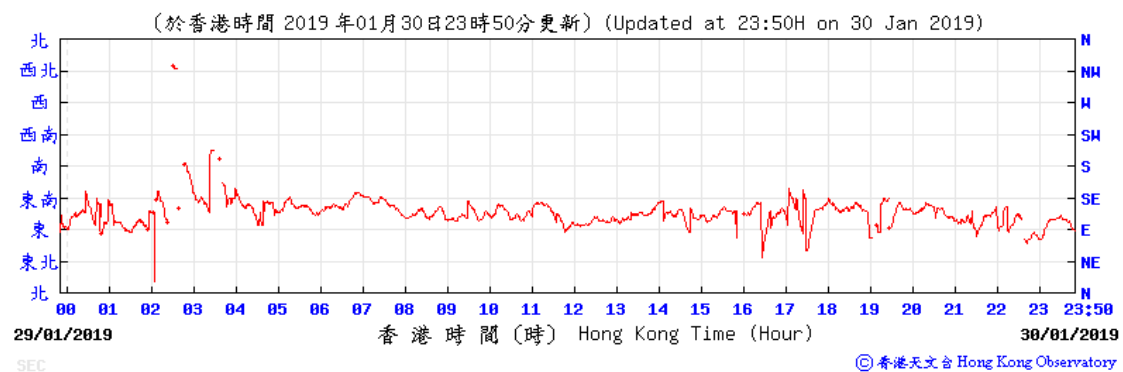


## 29-30 January 2019

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	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	Chemical Waste	Others, e.g. general refuse	
	(in '000m³)	(See Note 3) (in '000m³)	(in '000m³)	(in '000m³)	(See Note 5) (in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(See Note 2) (in '000kg)	(See Note 10) (in'000kg)	( See Note 5) (in '000m³)	(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 '000m³)	(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 '000m³)	(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
Sub-total	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
Total	1020.886	0.000	0.605	8.829	45.985	938.732	24.066	2.668	12.800	7.619	60.223	31.123	27.416	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
Overall Total	44	0

---

**Appendix B**

**73<sup>rd</sup> Monthly EM&A Report for Works Contract 1111 –  
Hung Hom North Approach Tunnels**

---

**Gammon-Kaden SCL 1111 Joint Venture****Shatin to Central Link -  
Tai Wai to Hung Hom Section and  
Mong Kok East to Hung Hom Section****Works Contract 1111 -  
Hung Hom North Approach Tunnels****Monthly EM&A Report for  
January 2019**

[February 2019]

	Name	Signature
Prepared & Checked:	Sammi Lam	
Reviewed, Approved & Certified:	Y T Tang (Contractor's Environmental Team Leader)	

Version: 0

Date: 12 February 2019

**Disclaimer**

This Monthly EM&A Report is prepared for Gammon-Kaden SCL1111 JV and is given for its sole benefit in relation to and pursuant to SCL1111 and may not be disclosed to, quoted to or relied upon by any person other than Gammon-Kaden SCL1111 JV without our prior written consent. No person (other than Gammon-Kaden SCL1111 JV) into whose possession a copy of this report comes may rely on this report without our express written consent and Gammon-Kaden SCL1111 JV may not rely on it for any purpose other than as described above.

AECOM Asia Co. Ltd.

15/F, Grand Central Plaza, Tower 1, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong

Tel: (852) 3922 9000

Fax: (852) 2317 7609

www.aecom.com

**Table of Contents**

	Page
<b>EXECUTIVE SUMMARY4 .....</b>	<b>1</b>
<b>1 INTRODUCTION.....</b>	<b>3</b>
1.1 Purpose of the Report .....	3
1.2 Report Structure.....	3
<b>2 PROJECT INFORMATION.....</b>	<b>4</b>
2.1 Background .....	4
2.2 Site Description .....	4
2.3 Construction Programme and Activities .....	5
2.4 Project Organisation.....	5
2.5 Status of Environmental Licences, Notification and Permits .....	6
<b>3 ENVIRONMENTAL MONITORING REQUIREMENTS.....</b>	<b>7</b>
3.1 Construction Dust Monitoring.....	7
3.2 Regular Construction Noise Monitoring .....	9
3.3 Continuous noise monitoring .....	11
3.4 Landscape and Visual.....	12
<b>4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES.....</b>	<b>13</b>
<b>5 MONITORING RESULTS.....</b>	<b>15</b>
5.1 Construction Dust Monitoring.....	15
5.2 Regular Construction Noise Monitoring .....	15
5.3 Continuous Noise Monitoring .....	15
5.4 Waste Management.....	16
5.5 Landscape and Visual.....	16
<b>6 ENVIRONMENTAL SITE INSPECTION AND AUDIT.....</b>	<b>17</b>
<b>7 ENVIRONMENTAL NON-CONFORMANCE.....</b>	<b>17</b>
7.1 Summary of Monitoring Exceedances .....	17
7.2 Summary of Environmental Non-Compliance.....	17
7.3 Summary of Environmental Complaints.....	17
7.4 Summary of Environmental Summon and Successful Prosecutions.....	18
<b>8 FUTURE KEY ISSUES.....</b>	<b>19</b>
8.1 Construction Programme for the Project.....	19
8.2 Key Issues for the Coming Month.....	19
8.3 Monitoring Schedule for the Next Two Month.....	19
<b>9 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>20</b>
9.1 Conclusions.....	20
9.2 Recommendations .....	20

**List of Tables**

Table 1.1	Contact Information of Key Personnel
Table 2.1	Status of Environmental Licenses, Notifications and Permits
Table 3.1	Air Quality Monitoring Equipment
Table 3.2	Locations of Air Quality Monitoring Stations
Table 3.3	Air Quality Monitoring Parameters, Frequency and Duration
Table 3.4	Noise Monitoring Parameters, Frequency and Duration
Table 3.5	Noise Monitoring Equipment for Regular Noise Monitoring
Table 3.6	Locations of Impact Noise Monitoring Stations
Table 3.7	Summary of Proposed Continuous Noise Monitoring Location
Table 3.8	Noise Monitoring Equipment for Continuous Noise Monitoring
Table 3.9	Summary of Proposed Continuous Noise Monitoring Plan
Table 4.1	Status of Required Submission under Environmental Permit
Table 5.1	Summary of 24-hour TSP Monitoring Results in the Reporting Period
Table 5.2	Summary of Impact Noise Monitoring Results in the Reporting Period
Table 6.1	Observations and Recommendations of Site Audit

**List of Figures**

Figure 1.1	General Layout Plan
Figure 2.1	Location of Air Quality Monitoring Station
Figure 3.1	Locations of Impact Noise Monitoring Stations

**List of Appendices**

Appendix A	Construction Programme
Appendix B	Project Organisation Structure
Appendix C	Implementation Schedule of Environmental Mitigation Measures
Appendix D	Summary of Action and Limit Levels
Appendix E	Calibration Certificates of Equipment
Appendix F	EM&A Monitoring Schedules
Appendix G	Air Quality Monitoring Results and their Graphical Presentations
Appendix H	Noise Monitoring Results and their Graphical Presentations
Appendix I	Event and Action Plan
Appendix J	Cumulative Statistics on Complaints, Notification of Summons and Successful Prosecutions
Appendix K	Monthly Summary Waste Flow Table

## EXECUTIVE SUMMARY

Shatin to Central Link Contract 1111 – Hung Hom North Approach Tunnels (hereafter called “the Project”) covers part of the construction of the Shatin to Central Link (SCL) which aimed to convey a total of 17km extension of the existing Ma On Shan Line (MOL) through east Kowloon to West Rail Line and also East Rail Line (EAL) through Hung Hom across the harbour to Admiralty Station (ADM). The Project covers construction activities at Mong Kok Freight Terminal and part of the construction activities located at Hung Hom Area for SCL (TAW-HUH), SCL (MKK-HUH) and SCL (HHS).

The EM&A programme commenced in January 2013. The impact EM&A for the Project includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 and 31 January 2019. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Soil disposal, defect rectification, pipe connection, backfilling, planter construction, removal of pipe pile, chequer plate installation, erection work for kerb backing, planting
OB2 / TB1	Installation of working platform, defect rectification
OB2A / TB2	Defect rectification
NSL 9 & Oi Sen Path	Defect rectification, railing installation, reinstatement of slope, scaffolding erection, water pump replacement, minor steel work

Noise mitigation measure of vertical noise barrier P3 substantially completed in March 2018.

### Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level of 24-hour TSP monitoring was recorded at the monitoring location in the reporting month.

### Breaches of Action and Limit Levels for Noise

#### Regular Noise Monitoring

No Action Level exceedance was recorded since no noise related complaint during 0700 to 1900 hours on normal weekdays was received in the reporting month.

No exceedance of Limit Level of noise was recorded in the reporting month.

#### Continuous Noise Monitoring

As the construction works identified by the Construction Noise Mitigation Measures Plan (CNMMP) to be potentially causing exceedance of noise criteria have been completed, no continuous noise monitoring was carried out during this reporting month.

### Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons and successful prosecution were received in the reporting month.



**Future Key Issues**

Key issues to be considered in the coming month included:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Soil disposal, defect rectification, pipe connection, backfilling, planter construction, removal of pipe pile, chequer plate installation, erection work for kerb backing, planting
OB2 / TB1	Installation of working platform, defect rectification
OB2A / TB2	Defect rectification
NSL 9 + Oi Sen Path	Defect rectification, railing installation, reinstatement of slope, scaffolding erection, water pump replacement, minor steel work

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

## **1 INTRODUCTION**

Gammon-Kaden SCL1111 Joint Venture (GKSCLJV) was commissioned by MTR as the Civil Contractor for Works Contract 1111. AECOM Asia Company Limited (AECOM) was appointed by GKSCLJV as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

### **1.1 Purpose of the Report**

- 1.1.1 This is the seventy-third monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 31 January 2019.

### **1.2 Report Structure**

- 1.1.2 This monthly EM&A Report is organised as follows:

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

## 2 PROJECT INFORMATION

### 2.1 Background

- 2.1.1 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 via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); 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).
- 2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (Register No.: AEIAR-167/2012), SCL – Mong Kok East to Hung Hom Section [SCL (MKK-HUH)] (Register No.: AEIAR-165/2012) and SCL - Stabling Sidings at Hung Hom Freight Yard [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, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS) (EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-438/2012 and EP-437/2012. The latest Environmental Permit (EP No: EP-438/2012/K and EP-437/2012/A) were issued by Director of Environmental Protection (DEP) on 4 October 2016 and 28 November 2017 respectively.
- 2.1.3 The construction of the SCL is divided into different civil construction works contracts and Works Contract 1111 – Hung Hom North Approach Tunnels (hereafter referred to as “the Project”) covers construction activities at Mong Kok Freight Terminal and part of the construction activities located at Hung Hom under the two EPs.

### 2.2 Site Description

- 2.2.1 The major construction activities under Works Contract 1111 include:
- SCL (MKK-HUH) – (i) Construction of an realigned and modified railway from Portal 1A near Oi Man Estate to Hung Hom Station; (ii) Construction of Noise Enclosure at Portal 1A; (iii) modification works on the existing Homantin Siding; and (iv) new EVA near Hung Hom Station.
  - SCL (TAW-HUH) – Part of the railway tunnel from Ho Man Tin Station to Hung Hom.
  - SCL (HHS) – Construction of tracks and noise barrier of Hung Hom Stabling Sidings.
- 2.2.2 **Figure 1.1** shows the works areas for the Works Contract 1111.

**2.3 Construction Programme and Activities**

2.3.1 The major construction activities undertaken in the reporting month are summarised below:-

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Soil disposal, defect rectification, pipe connection, backfilling, planter construction, removal of pipe pile, chequer plate installation, erection work for kerb backing, planting
OB2 / TB1	Installation of working platform, defect rectification
OB2A / TB2	Defect rectification
NSL 9 & Oi Sen Path	Defect rectification, railing installation, reinstatement of slope, scaffolding erection, water pump replacement, minor steel work

2.3.2 Noise mitigation measure of vertical noise barrier P3 substantially completed in March 2018.

2.3.3 The construction programme is presented in **Appendix A**

**2.4 Project Organisation**

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarised in **Table 1.1**.

**Table 1.1 Contact Information of Key Personnel**

Party	Role	Position	Name	Telephone	Fax
MTR	Residential Engineer (ER)	Construction Manager	Mr. Michael Fu	3127 6201	3124 6422
		SCL Project Environmental Team Leader	Ms. Lisa Poon	3127 6295	3127 6422
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
GKSCKJV	Contractor	Project Manager	Mr. Alan Yan	9855 0361	3904 9630
		Environmental Manager	Ms. Michelle Tang	3904 9663	
		Environmental Officer	Ms. Phoebe Ng	3904 9665	
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	2317 7609

**2.5 Status of Environmental Licences, Notification and Permits**

2.5.1 Relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 2.1**.

**Table 2.1 Status of Environmental Licenses, Notifications and Permits**

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-437/2012/A	28 Nov 2017	-	Valid	
EP-438/2012/K	4 Oct 2016	-	Valid	-
Construction Noise Permit				
GW-RE0760-18	10 Nov 2018	9 Feb 2019	Valid	CNP for Reinstatement Works at NSL 3-6
GW-RE0900-18	5 Jan 2019	4 Apr 2019	Valid	CNP for OB2 & OB2A Maintenance Work at Chatham Rd North
Wastewater Discharge License				
WT00018688-2014	14 Apr 2014	30 Apr 2019	Valid	For inside Hung Hom Freight Terminal at Cheong Tung Road
WT00019068-2014	25 Jun 2014	30 Jun 2019	Valid	For Oi Sen Path
WT00019895-2014	24 Sep 2014	30 Sep 2019	Valid	For near Hong Chong Road, Hung Hom at MTRC Ho Man Tin Sidings
WT00020525-2014	30 Dec 2014	31 Dec 2019	Valid	For Chatham Road North
WT00020727-2015	6 Feb 2015	28 Feb 2020	Valid	For Chatham Road North above the railway
WT00022080-2015	13 Aug 2015	31 Aug 2020	Valid	For near Chatham Road North, EWL 9
WT00030411-2018	21 Feb 2018	28 Feb 2023	Valid	For near Winslow Street
Chemical Waste Producer Registration				
5213-641-G2618-01	22 Mar 2013	End of Project	Valid	For Winslow Street Playground Works
5213-641-G2618-03	8 Apr 2013	End of Project	Valid	For Hung Hom Station Works
5213-213-G2618-06	16 Apr 2013	End of Project	Valid	For Ho Man Tin Sidings Works
5213-236-G2618-10	14 Jun 2013	End of Project	Valid	For Chatham Road North - Hong Chong Road Works
5213-236-G2618-11	27 May 2013	End of Project	Valid	For Chatham Road North- NSL8 & EWL8 Works
5213-213-G2618-12	14 Apr 2014	End of Project	Valid	For Hung Hom Freight Terminal - NSL 3-5 Works
5213-236-G2618-14	8 May 2014	End of Project	Valid	For Oi Sen Path Works
5213-236-G2618-15	9 Feb 2015	End of Project	Valid	For NSL7 & EWL7 Works
5213-236-G2618-16	3 Aug 2015	End of Project	Valid	For EWL9 Works
Billing Account for Construction Waste Disposal				
7016658	24 Jan 2013	End of Project	Account Active	
Notification Under Air Pollution Control (Construction Dust) Regulation				
353991	02 Jan 2013	End of Project	Notified	
Clinical Waste Producer Premises Code				
PC01/RE/00362644	30 Jan 2014	End of Project	Valid	For Hung Hom Freight Yard Works

### 3 ENVIRONMENTAL MONITORING REQUIREMENTS

#### 3.1 Construction Dust Monitoring

##### *Monitoring Requirements*

- 3.1.1 In accordance with the approved EM&A Manuals, 24-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required. Impact 24-hour TSP monitoring should be carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in **Appendix D**.

##### *Monitoring Equipment*

- 3.1.2 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at each designated monitoring station. The HVS meets all the requirements of the EM&A Manual. Brand and model of the equipment is given in **Table 3.1**.

**Table 3.1 Air Quality Monitoring Equipment**

Equipment	Brand and Model
High Volume Sampler (24-hour TSP)	Andersen Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. GS 2310 (S/N:8259) )
Calibration Kit	TISCH Environmental Orifice (Model TE-5025A (Orifice I.D.: 0988))

##### *Monitoring Locations*

- 3.1.3 One monitoring station was set up at the proposed location in accordance with the approved EM&A Manuals for SCL (TAW-HUH), SCL (MKK-HUH) and SCL (HHS) as well as the works areas of the Project. The location of the construction dust monitoring station is summarised in **Table 3.2** and shown in **Figure 2.1**.

**Table 3.2 Locations of Construction Dust Monitoring Stations**

ID	Location	Monitoring Station
AM1	No. 234 – 238 Chatham Road North	Roof top of the premises facing Chatham Road North

Note:

- (1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-238 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.

##### *Monitoring Methodology*

#### 3.1.4 24-hour TSP Monitoring

- (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS as far as practicable:-
- A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
  - The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
  - A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
  - A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
  - No furnace or incinerator flues nearby.
  - Airflow around the sampler was unrestricted.
  - Permission was obtained to set up the samplers and access to the monitoring stations.
  - A secured supply of electricity was obtained to operate the samplers.
  - The sampler was located more than 20 meters from any dripline.

- (x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
  - (xi) Flow control accuracy was kept within  $\pm 2.5\%$  deviation over 24-hour sampling period.
- (b) 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  $\pm 3$  °C; the relative humidity (RH) was < 50% and not variable by more than  $\pm 5\%$ . 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.
- (c) 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 m<sup>3</sup>/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m<sup>3</sup>/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 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.
- (d) Maintenance and Calibration
- (i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
  - (ii) HVSs were calibrated using TE-5025A Calibration Kit upon installation and thereafter at bi-monthly intervals.
  - (iii) Calibration certificate of the TE-5025A Calibration Kit and the HVSs are provided in **Appendix E**.

***Monitoring Schedule for the Reporting Month***

3.1.5 The schedule for environmental monitoring in January 2019 is provided in **Appendix F**.

**3.2 Regular Construction Noise Monitoring*****Monitoring Requirements***

- 3.2.1 In accordance with the EM&A Manuals, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3.4** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit level of the noise monitoring is provided in **Appendix D**.

**Table 3.4 Noise Monitoring Parameters, Frequency and Duration**

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. Leq, L10 and L90 would be recorded.	At least once per week

***Monitoring Equipment***

- 3.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.5**.

**Table 3.5 Noise Monitoring Equipment for Regular Noise Monitoring**

Equipment	Brand and Model
Integrated Sound Level Meter	Model No. B&K2238 (S/N: 2285692 & 2800927) Model No. B&K2250-L (S/N: 2681366)
Acoustic Calibrator	Model No. B&K4231 (S/N: 3006428)

***Monitoring Locations***

- 3.2.3 Two monitoring stations were set up at the proposed locations in accordance with the approved EM&A Manuals for SCL (TAW-HUH), SCL (MKK-HUH) and SCL (HHS) as well as the works areas of the Project. Locations of the noise monitoring stations are summarised in **Table 3.6** and shown in **Figure 3.1**.

**Table 3.6 Locations of Regular Construction Noise Monitoring Stations**

ID	Location	Monitoring Station	Type of Measurement
NM1	Carmel Secondary School (South Block)	1m from the exterior of the roof top façade of the premises facing Oi Sen Path	Façade
NM2	No. 234 – 238 Chatham Road North <sup>(1)</sup>	Free-field on the rooftop of the premise	Free Field

Note:

- (1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-238 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.



**Monitoring Methodology****3.2.4 Monitoring Procedure**

- (a) The sound level meter was set on a tripod at a height of 1.2 m above the ground for free-field measurements at NM2. A correction of +3 dB(A) shall be made to the free field measurements.
- (b) Façade measurements were made at NM1.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - (i) frequency weighting: A
  - (ii) time weighting: Fast
  - (iii) time measurement:  $L_{eq(30\text{-minutes})}$  during non-restricted hours i.e. 0700 – 1900 on normal weekdays.
- (e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (f) During the monitoring period, the  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (g) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

**3.2.5 Maintenance and Calibration**

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- (c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix E**.

**Monitoring Schedule for the Reporting Month**

- 3.2.6 The schedule for environmental monitoring in January 2019 is provided in **Appendix F**.

**3.3 Continuous noise monitoring*****Monitoring Requirements***

- 3.3.1 According to EP conditions under EP-437/2012/A (Condition 2.8) and EP-438/2012/K (Condition 2.10), continuous noise monitoring should be conducted at the NSRs as identified by the Construction Noise Mitigation Measures Plan (CNMMP) to have residual air-borne noise impacts. A CNMMP and Continuous Noise Monitoring Plan (CNMP) were submitted to EPD on 20 January 2014.

***Monitoring Locations***

- 3.3.2 With reference to the CNMP, continuous noise monitoring should be conducted during period at which the predicted airborne construction noise levels exceed the relevant noise criteria at the respective NSRs. The proposed continuous noise monitoring locations are presented in **Table 3.7** and shown in **Figure 2.1**.

**Table 3.7 Summary of Proposed Continuous Noise Monitoring Location**

NSR ID	NSR Description	Uses	Proposed Continuous Noise Monitoring Location	Alternative Noise Monitoring Location
OM4a	Carmel Secondary School (South Block)	Educational	NM1	-
HH2	Wing Fung Building	Residential	NM2	No. 234-238 Chatham Road North <sup>(1)</sup>

Note:

(1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-238 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.

***Monitoring Equipment***

- 3.3.3 Continuous noise monitoring will be performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator will be deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.8**.

**Table 3.8 Noise Monitoring Equipment for Continuous Noise Monitoring**

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. 2238)
Acoustic Calibrator	Rion (Model No. NC-74)

***Monitoring Parameters, Frequency and Duration***

- 3.3.4 Continuous noise level will be measured in terms of the A-weighted equivalent continuous sound pressure level for 30 minutes ( $L_{eq, 30 \text{ min}}$ ) for time period between 0700 and 1900 hours on normal working hours (i.e. Mondays to Saturdays) during the construction period that the predicted noise levels exceed the relevant noise criteria at the identified NSRs. The recommended measurement period for the continuous noise monitoring programme in the CNMP is summarised in **Table 3.9**.

**Monitoring Methodology**

- 3.3.5 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. Measurement will be accepted as valid only if the calibration level before and after the noise measurement agrees to within 1.0dB. Noise measurement will be made in accordance with standard acoustical principles and practices in relation to weather conditions.

**Event and Action Plan**

- 3.3.6 Summary of the proposed continuous noise monitoring programme are presented in **Table 3.9**. The Event and Action Plan for the continuous noise monitoring programme recommended in the CNMP is presented in **Appendix I**.

**Table 3.9 Summary of Proposed Continuous Noise Monitoring Programme**

Monitoring Location	NSR Description	Action/Limit Level, dB(A)	Measurement Period
NM1	Carmel Secondary School (South Block)	68 <sup>(1)</sup>	Feb and Jun 2014, Jan and Feb 2015 <sup>(3)</sup> Mar 2015 <sup>(4)</sup>
NM2	No. 234-238 Chatham Road North <sup>(2)</sup>	77	Sep to Dec of 2014 Jan / Mar to May 2015

Note:

- (1) Action/Limit level will only be applicable during the examination period.  
 (2) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-238 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.  
 (3) Based on 2014-2015 Calendar of Carmel Secondary School, the examination periods are scheduled in January and February 2015. The continuous noise monitoring was conducted in January and February 2015.  
 (4) Additional continuous noise monitoring was conducted in March 2015 according to the latest 2014-2015 Calendar of Carmel Secondary School.

**3.4 Landscape and Visual**

- 3.4.1 As per the EM&A Manuals, the landscape and visual mitigation measures should be implemented and site inspections should be undertaken once every two weeks during the construction period. A summary of the implementation status is presented in **Section 6**.

#### 4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EPs and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C**. Status of required submissions under the EPs during the reporting period is summarised in **Table 4.1**.

**Table 4.1 Status of Required Submission under Environmental Permit**

EP Condition	Submission	Submission Date
Condition 3.4 (EP-437/2012/A) & Condition 3.4 (EP-438/2012/K)	Monthly EM&A Report for December 2019	14 January 2019

## 5 MONITORING RESULTS

### 5.1 Construction Dust Monitoring

- 5.1.1 The monitoring results for 24-hour TSP are summarised in **Table 5.1**. Detailed air quality monitoring results and wind monitoring data extracted from the nearest Automatic Weather Station are presented in **Appendix G**.

**Table 5.1 Summary of 24-hour TSP Monitoring Results in the Reporting Period**

ID	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
AM1	37.0	21.4 – 68.4	183.9	260

- 5.1.2 No Action and Limit Level exceedance was recorded for 24-hour TSP monitoring at the monitoring location in the reporting month.
- 5.1.3 The event and action plan is annexed in **Appendix I**.
- 5.1.4 Major dust sources during the monitoring included construction dust from the Project site and other nearby construction sites and also nearby traffic emission.

### 5.2 Regular Construction Noise Monitoring

- 5.2.1 The monitoring results for noise are summarized in **Table 5.2** and the monitoring data is provided in **Appendix H**.

**Table 5.2 Summary of Impact Noise Monitoring Results in the Reporting Period**

ID	Range, dB(A), $L_{eq}$ (30 mins)	Limit Level, dB(A), $L_{eq}$ (30 mins)
NM 1 <sup>(2)</sup>	<Baseline	70 (65) <sup>(1)</sup>
NM 2 <sup>(2)</sup>	<Baseline	75

Note:

- (1) Daytime noise Limit Level of 70dB(A) applies to education institutions while 65dB(A) applies during school examination period.
- (2) Baseline correction will be made to the measured  $L_{eq}$  when the measured noise level exceeded the corresponding baseline noise level and presented in the table. No correction was made to NM2 as all measured noise levels were below the baseline noise level.

- 5.2.2 No noise complaint was received in the reporting month during 0700 to 1900 hours on normal weekdays; hence, no Action Level exceedance was recorded.
- 5.2.3 No Limit Level exceedance of noise was recorded at all monitoring stations in the reporting month.
- 5.2.4 The event and action plan is annexed in **Appendix I**.
- 5.2.5 Major noise sources during the monitoring included construction noise from the Project site and other nearby construction sites, nearby traffic noise and noise from school activities and the community.

### 5.3 Continuous Noise Monitoring

- 5.3.1 As the construction works that have been identified by the CNMMP to be potentially causing exceedance of noise criteria have not commenced during this reporting month, no continuous noise monitoring was carried out.

#### 5.4 Waste Management

- 5.4.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.
- 5.4.2 As advised by the Contractor, 527 m<sup>3</sup> of inert C&D material was generated. 527 m<sup>3</sup> were disposed as public fills at TM38. No public fills was disposed at TKO137. No public fills was delivered to Hung Hom Barging Point, handled by other project and reused in the Contract. While 15,970 kg of general refuse was disposed at NENT landfill in the reporting month, No metal, paper and plastic were collected by recycling contractor in the reporting month. No Type 1 marine dumping was delivered to Hung Hom Barging Point. No chemical waste was collected by licensed contractor in the reporting period. The waste flow table is annexed in **Appendix K**.
- 5.4.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 5.4.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

#### 5.5 Landscape and Visual

- 5.5.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted on 10 and 24 January 2019. A summary of the site inspection is provided in **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.
- 5.5.2 The event and action plan is annexed in **Appendix I**.

**6 ENVIRONMENTAL SITE INSPECTION AND AUDIT**

- 6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the site inspection is provided in **Appendix C**.
- 6.1.2 In the reporting month, 5 site inspections were carried out on 3, 10, 17, 24 and 31 January 2019. The one held on 17 January 2019 was a joint inspection with the IEC, ER, the Contractor and the ET. No non-compliance was recorded during the site inspections. Details of observations recorded during the site inspections are presented in **Table 6.1**.

**Table 6.1 Observations and Recommendations of Site Audit**

Parameters	Date	Observations and Recommendations	Follow up
Water Quality	N/A	N/A	N/A
Air Quality	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Waste/ Chemical Management	N/A	N/A	N/A
Landscape & Visual	17 January 2019	<ul style="list-style-type: none"> <li>The Contractor was reminded to remove the construction materials near the retained and transplanted trees at Winslow Street. (Reminder)</li> </ul>	The item was rectified by the Contractor on 24 January 2019.
Permits/ Licenses	N/A	N/A	N/A

- 6.1.3 All of the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period. No outstanding follow-up action will be reported in the next reporting period.

**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.
- 7.1.2 No noise complaint during 0700 to 1900 hours on normal weekdays was received in the reporting month; hence, no Action Level exceedance was recorded.
- 7.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 7.1.4 As the construction works that have been identified by the CNMMP to be potentially causing exceedance of noise criteria have not commenced during this reporting month, no continuous noise monitoring was carried out.

**7.2 Summary of Environmental Non-Compliance**

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

**7.3 Summary of Environmental Complaints**

- 7.3.1 No environmental related complaint was received in the reporting month. Cumulative statistics on environmental complaints is provided in **Appendix J**.

#### **7.4 Summary of Environmental Summon and Successful Prosecutions**

- 7.4.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix J**.



## 8 FUTURE KEY ISSUES

### 8.1 Construction Programme for the Project

#### *Construction Programme for the Next Two Month*

8.1.1 The major construction works in February 2019 and March 2019 will be:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Soil disposal, defect rectification, pipe connection, backfilling, planter construction, removal of pipe pile, chequer plate installation, erection work for kerb backing, planting
OB2 / TB1	Installation of working platform, defect rectification
OB2A / TB2	Defect rectification
NSL 9 + Oi Sen Path	Defect rectification, railing installation, reinstatement of slope, scaffolding erection, water pump replacement, minor steel work

### 8.2 Key Issues for the Coming Month

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

### 8.3 Monitoring Schedule for the Next Two Month

8.3.1 The tentative schedule for environmental monitoring in February 2019 and March 2019 is provided in **Appendix F**.

## 9 CONCLUSIONS AND RECOMMENDATIONS

### 9.1 Conclusions

- 9.1.1 24-hour TSP and noise monitoring were carried out in the reporting month.
- 9.1.2 All 24-hour TSP monitoring results complied with the Action / Limit Level at in the reporting month.
- 9.1.3 No noise complaint during 0700 to 1900 hours on normal weekdays was received in the reporting month; hence, no Action Level exceedance was recorded.
- 9.1.4 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 9.1.5 As the construction works that have been identified by the CNMMP to be potentially causing exceedance of noise criteria have not commenced during this reporting month, no continuous noise monitoring was carried out.
- 9.1.6 5 nos. of environmental site inspections were carried out in January 2019. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.
- 9.1.7 Referring to the Contractor's information, no complaint, notification of summons and successful prosecution was received in the reporting month.

### 9.2 Recommendations

- 9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:-

#### Air Quality Impact

- No specific observation was identified in the reporting month.

#### Construction Noise Impact

- No specific observation was identified in the reporting month.

#### Water Quality Impact

- No specific observation was identified in the reporting month.

#### Chemical/ Waste Management

- No specific observation was identified in the reporting month.

#### Landscape and Visual Impact

- Remove the construction materials near the retained and transplanted trees and provide proper protection for the trees.

#### Permits/Licenses

- No specific observation was identified in the reporting month.

---

## FIGURES

---

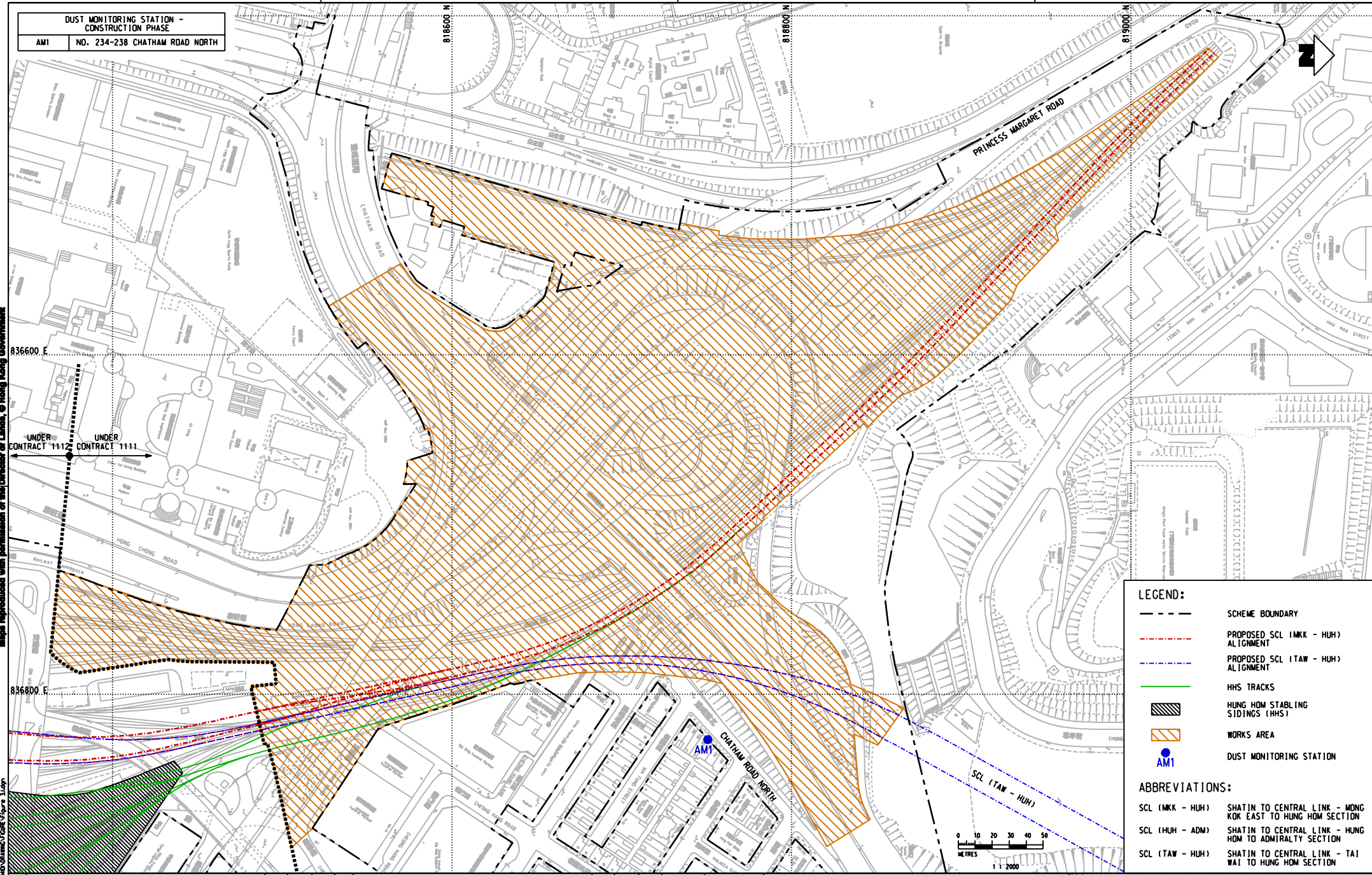




DUST MONITORING STATION -  
CONSTRUCTION PHASE  
AM1 NO. 234-238 CHATHAM ROAD NORTH

Map reproduced with permission of the Director of Lands, © Hong Kong Government

PROJECT: MTR SHATIN TO CENTRAL LINK  
DRAWING: CONTRACT 1111, LOCATION OF AIR QUALITY MONITORING STATION  
SCALE: 1:2000  
DATE: 08/JAN/2013



**LEGEND:**

- SCHEME BOUNDARY
- - - PROPOSED SCL (MKK - HUH) ALIGNMENT
- - - PROPOSED SCL (TAW - HUH) ALIGNMENT
- HHS TRACKS
- ▨ HUNG HOM STABLING SIDINGS (HHS)
- ▨ WORKS AREA
- AM1 DUST MONITORING STATION

**ABBREVIATIONS:**

SCL (MKK - HUH)	SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
SCL (HUH - ADM)	SHATIN TO CENTRAL LINK - HUNG HOM TO ADMIRALTY SECTION
SCL (TAW - HUH)	SHATIN TO CENTRAL LINK - TAI WAI TO HUNG HOM SECTION

REV				DESCRIPTION				BY				DATE				APPROVED			

DATE	08/JAN/2013
DESIGNED	LCL
CHECKED	LCL
APPROVED	LMW
DRAWN	HD

MTR	
SHATIN TO CENTRAL LINK	
CONTRACTOR	Gammon Kaden
ORIGINATOR	AECOM

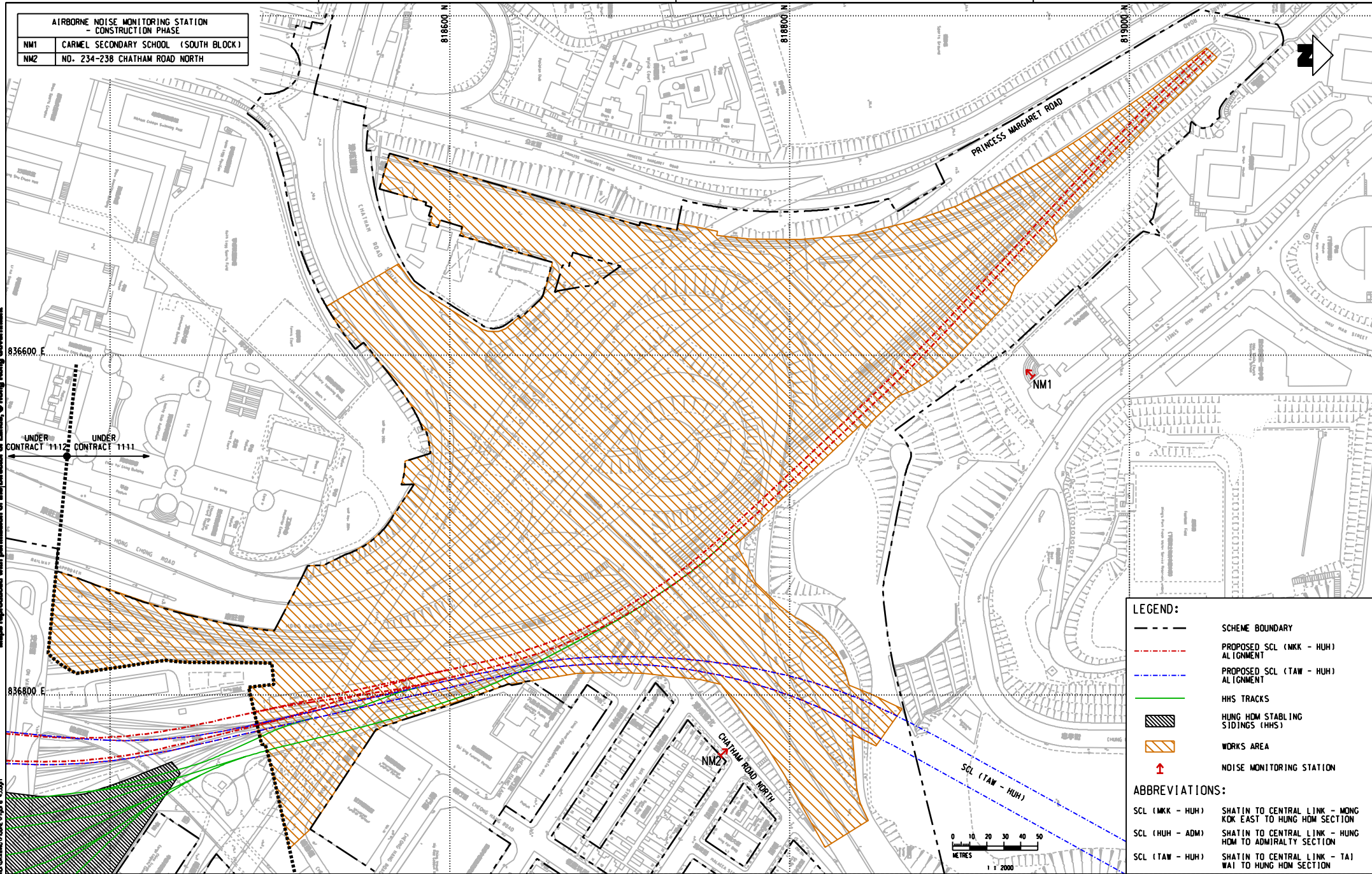
SCALE	1:2000 (A3)
FIGURE NO.	FIGURE 2.1
REV.	-



AIRBORNE NOISE MONITORING STATION - CONSTRUCTION PHASE	
NM1	CARMEL SECONDARY SCHOOL (SOUTH BLOCK)
NM2	NO. 234-238 CHATHAM ROAD NORTH

Map reproduced with permission of the Director of Lands, © Hong Kong Government

PROJECT: SHATIN TO CENTRAL LINK  
DRAWN: 14/10/13  
CHECKED: 14/10/13  
DATE: 14/10/13  
BY: 14/10/13  
APPROVED: 14/10/13  
REVISION: 14/10/13



**LEGEND:**

- SCHEME BOUNDARY
- - - PROPOSED SCL (MKK - HUH) ALIGNMENT
- - - PROPOSED SCL (TAW - HUH) ALIGNMENT
- HKS TRACKS
- ▨ HUNG HOM SIDINGS (HHS)
- ▨ WORKS AREA
- ↑ NOISE MONITORING STATION

**ABBREVIATIONS:**

- SCL (MKK - HUH) SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
- SCL (HUH - ADM) SHATIN TO CENTRAL LINK - HUNG HOM TO ADMIRALTY SECTION
- SCL (TAW - HUH) SHATIN TO CENTRAL LINK - TAI WAI TO HUNG HOM SECTION

DRAWN: HD DESIGNED: LCLL CHECKED: LCLL APPROVED: LNW DATE: 08/JAN/2013	<b>MTR</b> <b>SHATIN TO CENTRAL LINK</b> CONTRACTOR: Gammon Kaden ORIGINATOR: AECOM
--	--

TITLE: CONTRACT 1111 HUNG HOM NORTH APPROACH TUNNELS LOCATION OF NOISE MONITORING STATION (CONSTRUCTION PHASE)	SCALE: 1 : 2000 (A3) FIGURE NO.: FIGURE 3.1
--	--



---

## **APPENDIX A**

### **Construction Programme**

---

Activity ID	Activity Name	Dur	Start	Finish	2015												2016												2017												2018											
					D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A																			
NDMP - Rev B																																																				
Additional Noise Barrier under Option 2																																																				
OP2-010	Exercise Option 2 - Noise Barriers along EWL	0d		14-Jul-14 A																																																
OP2-020	Design	48d	02-Mar-15*	30-Apr-15																																																
OP2-030	Fabrication	126d	02-May-15	30-Sep-15																																																
OP2-040	Delivery to Site	30d	02-Oct-15	06-Nov-15																																																
OP2-050	Steelwork & Panel Installation	118d	07-Nov-15	02-Apr-16																																																
CLP Cable Laying from Winslow Street to NSL9 (Drawing 1111/C/000/GKJV/SK/0011)																																																				
CLP-010	CLP Cable Laying from Zone 7 to Zone 1	140d	08-Sep-16	25-Jan-17																																																
CLP-020	CLP Power on	0d		30-Jan-17*																																																
North South Line (NSL)																																																				
(1) NSL/EWL Area 3A (50m)																																																				
Preparation Works																																																				
N3A-1010	Possess areas and site clearance	24d	17-Mar-14	14-Apr-14																																																
N3A-1020	Trial pits / expose existing utilities	24d	24-Mar-14	24-Apr-14																																																
N3A-1030	Remove existing track (by MTR)	12d	24-Mar-14	07-Apr-14																																																
N3A-1040	Predrilling (19 no.s)	19d	31-Mar-14	25-Apr-14																																																
STA Buiding Demolition Works																																																				
N3A-1280	BD amendment for demolition	60d	17-Mar-14	31-May-14																																																
N3A-1290	Vacate Building	6d	12-May-14	17-May-14																																																
N3A-1300	Erect protective measures	12d	19-May-14	31-May-14																																																
N3A-1310	Demolish building structure	24d	03-Jun-14	30-Jun-14																																																
Cofferdam																																																				
N3A-1050	Install 2.4m Height Hoarding (NTH)	24d	18-Mar-14	10-May-14																																																
N3A-1060	West Side Pipe Piles (42 no.s), 2 Rigs	42d	02-Jul-14 A	19-Aug-14																																																
N3A-1070	Drive sheetpile at south side of cofferdam	48d	02-Jul-14 A	26-Aug-14																																																
N3A-1080	Sheetpile rectification works	48d	27-Aug-14	15-Nov-14																																																
N3A-1090	East Side Pipe Piles (42 no.s) & SHP (20 no.s), 1 Rig	124d	28-May-14	24-Oct-14																																																
N3A-1100	Grout Curtain	60d	03-Sep-14	15-Nov-14																																																
N3A-1110	Grout curtain cut off wall between Area 3A & 3B	18d	03-Sep-14	15-Oct-14																																																
N3A-1120	Instrumentation & Dewatering System	6d	06-Nov-14	15-Nov-14																																																
N3A-1130	Pumping Test	7d	19-Nov-14	26-Nov-14																																																
Excavation and Lateral Support																																																				
N3A-1140	Pre-pumping test ELS (not affected by shunt neck piling)	7d	19-Nov-14	26-Nov-14																																																
N3A-1150	Excavate to Below S1 - Stage 1 (south side)	3d	09-Dec-14	11-Dec-14																																																
N3A-1160	Install S1 & decking - Stage 1 (south side)	6d	12-Dec-14	17-Dec-14																																																
N3A-1170	Break RC structure & ELS to S2 (south side)	31d	17-Dec-14	24-Jan-15																																																
N3A-1180	Southside Shunt Neck piles completed & site clearance	0d		31-Jan-15																																																
N3A-1190	Excavate to Below S1 - Stage 2 (north side)	2d	26-Jan-15	27-Jan-15																																																
N3A-1200	Install S1 & decking - Stage 2 (north side)	6d	28-Jan-15	03-Feb-15																																																
N3A-1210	Excavation to Below S2	5d	04-Feb-15	09-Feb-15																																																
N3A-1220	Install S2	5d	10-Feb-15	14-Feb-15																																																
N3A-1230	Excavation to Below S3	7d	16-Feb-15	26-Feb-15																																																
N3A-1240	Install S3	7d	27-Feb-15	06-Mar-15																																																
N3A-1250	Excavation to S4	9d	07-Mar-15	17-Mar-15																																																
N3A-1260	Install S4	9d	18-Mar-15	27-Mar-15																																																
N3A-1270	Excavation to Formation Level @ -10.6 mPD	10d	28-Mar-15	13-Apr-15																																																
Tunnel Structure (5 Bays)																																																				
Bay N3A-01																																																				
N3A01-110	Place Blinding Layer	1d	14-Apr-15	14-Apr-15																																																
N3A01-120	Construct Tunnel Base with Kicker	12d	15-Apr-15	28-Apr-15																																																
N3A01-130	Place Infill Concrete/Compacted Fill up to S4	10d	29-Apr-15	11-May-15																																																
N3A01-140	Remove S4	3d	12-May-15	14-May-15																																																
N3A01-150	Construct NSL Wall up to S3	10d	15-May-15	27-May-15																																																
N3A01-160	Place Infill Concrete/Compacted Fill up to S3	14d	28-May-15	12-Jun-15																																																
N3A01-170	Remove S3	3d	13-Jun-15	16-Jun-15																																																
N3A01-180	Construct NSL Roof (Travelling Form)	12d	17-Jun-15	02-Jul-15																																																
N3A01-190	Tunnel Walkway & Degree 1 Works & Bulkhead Wall	12d	03-Jul-15	16-Jul-15																																																
N3A01-200	Place Infill Concrete/compacted fill up to S2	14d	03-Jul-15	18-Jul-15																																																
N3A01-210	Remove S2	3d	20-Jul-15	22-Jul-15																																																
N3A01-220	Construct EWL Lower Wall	12d	23-Jul-15	05-Aug-15																																																
N3A01-230	Place compacted fill to bottom of 1650 Drain	5d	06-Aug-15	11-Aug-15																																																
N3A01-240	Lay 1650 Stormwater Drain	6d	12-Aug-15	18-Aug-15																																																
N3A01-250	Place compacted fill to S1	11d	19-Aug-15	31-Aug-15																																																
N3A01-260	Remove S1	3d	01-Sep-15	03-Sep-15																																																
N3A01-270	Construct EWL Upper Wall	12d	04-Sep-15	17-Sep-15																																																
N3A01-290	Place compacted fill to final formation level	6d	18-Sep-15	24-Sep-15																																																
N3A01-300	Key Date 3G	0d		24-Sep-15																																																
Bay N3A-02																																																				
N3A02-110	Place Blinding Layer	1d	15-Apr-15	15-Apr-15																																																
N3A02-120	Construct Tunnel Base with Kicker	12d	29-Apr-15	13-May-15																																																
N3A02-130	Place Infill Concrete/Compacted Fill up to S4	9d	14-May-15	23-May-15																																																
N3A02-140	Remove S4	2d	26-May-15	27-May-15																																																
N3A02-150	Construct NSL Wall up to S3	10d	28-May-15	08-Jun-15																																																
N3A02-160	Place Infill Concrete/Compacted Fill up to S3	13d	09-Jun-15	24-Jun-15																																																
N3A02-170	Remove S3	2d	25-Jun-15	26-Jun-15																																																
N3A02-180	Construct NSL Roof (Travelling Form)	12d	03-Jul-15	16-Jul-15																																																
N3A02-190	Tunnel Walkway & Works for Degree 1 Completion	12d	17-Jul-15	30-Jul-15																																																
N3A02-200	Place Infill Concrete/compacted fill up to S2	13d	17-Jul-15	31-Jul-15																																																
N3A02-210	Remove S2	2d	01-Aug-15	03-Aug-15																																																
N3A02-220	Construct EWL Lower Wall	12d	06-Aug-15	19-Aug-15																																																
N3A02-230	Place compacted fill to bottom of 1650 Drain	3d	20-Aug-15	22-Aug-15																																																
N3A02-240	Lay 1650 Stormwater Drain	6d	24-Aug-15	29-Aug-15																																																
N3A02-250	Place compacted fill to S1	10d	31-Aug-15	10-Sep-15																																																
N3A02-260	Remove S1	2d	11-Sep-15	12-Sep-15																																																
N3A02-270	Construct EWL Upper Wall	10d	18-Sep-15	30-Sep-15																																																
N3A02-290	Place compacted fill to final formation level	2d	02-Oct-15	03-Oct-15																																																
Bay N3A-03																																																				
N3A03-120	Place Blinding Layer	1d	16-Apr-15	16-Apr-15																																																
N3A03-130	Construct Tunnel Base with Kicker	12d	14-May-15	28-May-15																																																
N3A03-140	Place Infill Concrete/Compacted Fill up to S4	9d	29-May-15	08-Jun-15																																																
N3A03-150	Remove S4	2d	09-Jun-15	10-Jun-15																																																
N3A03-160	Construct NSL Wall up to S3	10d	11-Jun-15	23-Jun-15																																																
N3A03-170	Place Infill Concrete/Compacted Fill up to S3	13d	24-Jun-15	09-Jul-15																																																
N3A03-180	Remove S3	2d	10-Jul-15	11-Jul-15																																																
N3A03-190	Construct NSL Roof (Travelling Form)	12d	17-Jul-15	30-Jul-15																																																
N3A03-200	Tunnel Walkway & Works for Degree 1 Completion (inside)	12d	31-Jul-15	13-Aug-15																																																
N3A03-210	Place Infill Concrete/compacted fill up to S2	13d	31-Jul-15	14-Aug-15																																																
N3A03-220	Remove S2	2d	15-Aug-15	17-Aug-15																																																
N3A03-230	Construct EWL Lower Wall	12d	20-Aug-15	02-Sep-15																																																
N3A03-240	Place compacted fill to bottom of 1650 Drain	3d	03-Sep-15	05-Sep-15																																																
N3A03-250	Lay 1650 Stormwater Drain	6d	07-Sep-15	12-Sep-15																																																
N3A03-260	Place compacted fill to S1	10d	14-Sep-15	24-Sep-15																																																
N3A03-270	Remove S1	2d	25-Sep-15	26-Sep-15																																																
N3A03-280	Construct EWL Upper Wall	10d	02-Oct-15	13-Oct-15																																																
N3A03-300	Place compacted fill to final formation level	2d	14-Oct-15	15-Oct-15																																																
Bay N3A-04 - Depends on NSL3B Excavation																																																				
N3A04-100	Excavation reached approx -10.5 mPD	0d		11-Jun-15																																																

<div><div></div><div></div></div> <div>Gammon – Kaden SCL 1111 Joint Venture</div>		NON-DEMOLITION MASTER PROGRAMME		Date	Revision	Checked	Approved
		REVISION B		15-Jul-15	meeting comments incorporated		
				16-Jul-15	meeting comments incorporated		
				17-Sep-15	activity lagging time removed		

NDMPB-35

P 1 of 16

















[illegible]



[illegible]

[illegible]



Activity ID	Activity Name	Dur	Start	Finish	2015					2016					2017					2018																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
					D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	N8B21-160	Construct NSL Upper Wall with retaining structure	15d	03-Nov-16	19-Nov-16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

[illegible]



[illegible]





Activity ID	Activity Name	Dur	Start	Finish	2015							2016							2017							2018					
					D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
	E0702-210	Remove S1	2d	27-Jan-16	28-Jan-16																										
	E0702-220	Place compacted fill to final formation level (0.5m)	2d	29-Jan-16	30-Jan-16																										
	Bay E07-03																														
	E0703-110	Place Blinding Layer (at approx -6mPD)	1d	20-Oct-15	20-Oct-15																										
	E0703-120	Construct Tunnel Base with Kicker	12d	17-Nov-15	30-Nov-15																										
	E0703-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	01-Dec-15	09-Dec-15																										
	E0703-140	Remove S3	2d	10-Dec-15	11-Dec-15																										
	E0703-150	Construct EWL Wall up to S2	10d	12-Dec-15	23-Dec-15																										
	E0703-160	Place infill concrete/compacted fill up to S2 (4m)	13d	24-Dec-15	11-Jan-16																										
	E0703-170	Remove S2	2d	12-Jan-16	13-Jan-16																										
	E0703-180	Construct EWL Roof (Travelling Form)	15d	21-Jan-16	06-Feb-16																										
	E0703-190	Tunnel Walkway & Works for Degree 1 Completion	6d	11-Feb-16	17-Feb-16																										
	E0703-200	Place compacted fill up to S1 (1.5m)	5d	11-Feb-16	16-Feb-16																										
	E0703-210	Remove S1	2d	17-Feb-16	18-Feb-16																										
	E0703-220	Place compacted fill to final formation level (0.5m)	2d	19-Feb-16	20-Feb-16																										
	Bay E07-02																														
	E0704-110	Place Blinding Layer (at approx -6mPD)	1d	22-Oct-15	22-Oct-15																										
	E0704-120	Construct Tunnel Base with Kicker	12d	01-Dec-15	14-Dec-15																										
	E0704-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	15-Dec-15	23-Dec-15																										
	E0704-140	Remove S3	2d	24-Dec-15	28-Dec-15																										
	E0704-150	Construct EWL Wall up to S2	10d	29-Dec-15	09-Jan-16																										
	E0704-160	Place infill concrete/compacted fill up to S2 (4m)	13d	11-Jan-16	25-Jan-16																										
E0704-170	Remove S2	2d	26-Jan-16	27-Jan-16																											
E0704-180	Construct EWL Roof (Travelling Form)	15d	11-Feb-16	27-Feb-16																											
E0704-190	Tunnel Walkway & Works for Degree 1 Completion	6d	29-Feb-16	05-Mar-16																											
E0704-200	Place compacted fill up to S1 (1.5m)	5d	29-Feb-16	04-Mar-16																											
E0704-210	Remove S1	2d	05-Mar-16	07-Mar-16																											
E0704-220	Place compacted fill to final formation level (0.5m)	2d	08-Mar-16	09-Mar-16																											
Bay E07-01																															
E0705-110	Place Blinding Layer (at approx -6mPD)	1d	23-Oct-15	23-Oct-15																											
E0705-120	Construct Tunnel Base with Kicker	12d	15-Dec-15	30-Dec-15																											
E0705-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	31-Dec-15	09-Jan-16																											
E0705-140	Remove S3	2d	11-Jan-16	12-Jan-16																											
E0705-150	Construct EWL Wall up to S2	10d	13-Jan-16	23-Jan-16																											
E0705-160	Place infill concrete/compacted fill up to S2 (4m)	13d	25-Jan-16	11-Feb-16																											
E0705-170	Remove S2	2d	12-Feb-16	13-Feb-16																											
E0705-180	Construct EWL Roof (Travelling Form)	15d	29-Feb-16	16-Mar-16																											
E0705-190	Tunnel Walkway & Works for Degree 1 Completion	6d	17-Mar-16	23-Mar-16																											
E0705-200	Place compacted fill up to S1 (1.5m)	5d	17-Mar-16	22-Mar-16																											
E0705-210	Remove S1	2d	23-Mar-16	24-Mar-16																											
E0705-220	Place compacted fill to final formation level (0.5m)	2d	29-Mar-16	30-Mar-16																											
(8) EWL Area 8 (62m)																															
Cofferdam																															
E08-1180	Implement TTA	60d	08-Jan-13	21-Mar-13																											
E08-1190	Site clearance	30d	22-Mar-13	30-Apr-13																											
E08-1200	Expose & Protect Utilities - Stage 1	36d	02-May-13	14-Jun-13																											

Activity ID	Activity Name	Dur	Start	Finish	2015							2016							2017							2018						
					D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
	E0802-120	Construct Tunnel Base with Kicker	6d	28-Oct-15	03-Nov-15																											
	E0802-130	Place Infill Concrete	1d	04-Nov-15	04-Nov-15																											
	E0802-140	Remove 4th Level Strut	3d	05-Nov-15	07-Nov-15																											
	E0802-150	Construct Tunnel Wall	6d	09-Nov-15	14-Nov-15																											
	E0802-160	Construct Tunnel Roof (Travelling Form)	12d	23-Nov-15	05-Dec-15																											
	E0802-170	Miscellaneous Works Required for Degree 1 Completion	6d	07-Dec-15	12-Dec-15																											
	E0802-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	07-Dec-15	14-Dec-15																											
	E0802-190	Remove 3rd Level Strut	3d	15-Dec-15	17-Dec-15																											
	E0802-200	Place General Fill to 2nd Level Strut	8d	18-Dec-15	29-Dec-15																											
	E0802-210	Remove 2nd Level Strut	3d	30-Dec-15	02-Jan-16																											
	E0802-220	Place General Fill to 1st Level Strut	7d	04-Jan-16	11-Jan-16																											
	Bay E08-04																															
	E0803-110	Place Blinding Layer	1d	22-Oct-15	22-Oct-15																											
	E0803-120	Construct Tunnel Base with Kicker	6d	04-Nov-15	10-Nov-15																											
	E0803-130	Place Infill Concrete	1d	11-Nov-15	11-Nov-15																											
	E0803-140	Remove 4th Level Strut	3d	12-Nov-15	14-Nov-15																											
	E0803-150	Construct Tunnel Wall	6d	16-Nov-15	21-Nov-15																											
	E0803-160	Construct Tunnel Roof (Travelling Form)	12d	07-Dec-15	19-Dec-15																											
	E0803-170	Miscellaneous Works Required for Degree 1 Completion	6d	21-Dec-15	29-Dec-15																											
	E0803-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	21-Dec-15	30-Dec-15																											
	E0803-190	Remove 3rd Level Strut	3d	31-Dec-15	04-Jan-16																											
	E0803-200	Place General Fill to 2nd Level Strut	8d	05-Jan-16	13-Jan-16																											
	E0803-210	Remove 2nd Level Strut	3d	14-Jan-16	16-Jan-16																											
	E0803-220	Place General Fill to 1st Level Strut	7d	18-Jan-16	25-Jan-16																											
	Bay E08-03																															
	E0804-110	Place Blinding Layer	1d	23-Oct-15	23-Oct-15																											
	E0804-120	Construct Tunnel Base with Kicker	6d	11-Nov-15	17-Nov-15																											
	E0804-130	Place Infill Concrete	1d	18-Nov-15	18-Nov-15																											
	E0804-140	Remove 4th Level Strut	3d	19-Nov-15	21-Nov-15																											
	E0804-150	Construct Tunnel Wall	6d	23-Nov-15	28-Nov-15																											
	E0804-160	Construct Tunnel Roof (Travelling Form)	12d	21-Dec-15	06-Jan-16																											
	E0804-170	Miscellaneous Works Required for Degree 1 Completion	6d	07-Jan-16	13-Jan-16																											
	E0804-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	07-Jan-16	14-Jan-16																											
	E0804-190	Remove 3rd Level Strut	3d	15-Jan-16	18-Jan-16																											
	E0804-200	Place General Fill to 2nd Level Strut	8d	19-Jan-16	27-Jan-16																											
	E0804-210	Remove 2nd Level Strut	3d	28-Jan-16	30-Jan-16																											
	E0804-220	Place General Fill to 1st Level Strut	7d	01-Feb-16	11-Feb-16																											
	Bay E08-02																															
	E0805-110	Place Blinding Layer	1d	24-Oct-15	24-Oct-15																											
	E0805-120	Construct Tunnel Base with Kicker	6d	18-Nov-15	24-Nov-15																											
	E0805-130	Place Infill Concrete	1d	25-Nov-15	25-Nov-15																											
	E0805-140	Remove 4th Level Strut	3d	26-Nov-15	28-Nov-15																											
	E0805-150	Construct Tunnel Wall	6d	30-Nov-15	05-Dec-15																											
	E0805-160	Construct Tunnel Roof (Travelling Form)	12d	07-Jan-16	20-Jan-16																											
	E0805-170	Miscellaneous Works Required for Degree 1 Completion	6d	21-Jan-16	27-Jan-16																						</					



Activity ID	Activity Name	Dur	Start	Finish	2015												2016												2017												2018			
					D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A											
Tunnel Structure (3 Bays)	E09-1430	Excavation to below +11.50 mPD	5d	11-Aug-15	15-Aug-15																																							
	E09-1440	Tie back soil nails (5 no.s) at +11.50 mPD, 1 rig	3d	17-Aug-15	19-Aug-15																																							
	E09-1450	Shotcrete to excavated surface	1d	20-Aug-15	20-Aug-15																																							
	E09-1460	Excavation to below +8.00 mPD	5d	21-Aug-15	26-Aug-15																																							
	E09-1470	Tie back soil nails (10 no.s) at +8.00 mPD, 1 rig	4d	27-Aug-15	31-Aug-15																																							
	E09-1480	Shotcrete to excavated surface	1d	01-Sep-15	01-Sep-15																																							
	E09-1490	Excavation to below +6.00 mPD	5d	02-Sep-15	07-Sep-15																																							
	E09-1500	Tie back soil nails (17 no.s) at +6.00 mPD, 2 rigs	4d	08-Sep-15	11-Sep-15																																							
	E09-1510	Shotcrete to excavated surface	1d	12-Sep-15	12-Sep-15																																							
	E09-1520	Excavation to below +4.00 mPD	5d	14-Sep-15	18-Sep-15																																							
	E09-1530	Tie back soil nails (30 no.s) at +4.00 mPD, 2 rigs	6d	19-Sep-15	25-Sep-15																																							
	E09-1540	Shotcrete to excavated surface	1d	26-Sep-15	26-Sep-15																																							
	E09-1550	Excavation to below +2.00 mPD	5d	29-Sep-15	05-Oct-15																																							
	E09-1560	Tie back soil nails (34 no.s) at +2.00 mPD, 2 rigs	6d	06-Oct-15	12-Oct-15																																							
	E09-1570	Shotcrete to excavated surface	1d	13-Oct-15	13-Oct-15																																							
	E09-1580	Excavation to below +0.00 mPD	5d	14-Oct-15	19-Oct-15																																							
	E09-1590	Tie back soil nails (35 no.s) at +0.00 mPD, 2 rigs	6d	20-Oct-15	27-Oct-15																																							
	E09-1600	Shotcrete to excavated surface	1d	28-Oct-15	28-Oct-15																																							
	E09-1610	Excavation to below -2.00 mPD	5d	29-Oct-15	03-Nov-15																																							
	E09-1620	Tie back soil nails (33 no.s) at -2.00 mPD, 2 rigs	6d	04-Nov-15	10-Nov-15																																							
	E09-1630	Shotcrete to excavated surface	1d	11-Nov-15	11-Nov-15																																							
	E09-1640	Excavation to below -4.00 mPD (rock expected)	10d	12-Nov-15	23-Nov-15																																							
	E09-1650	Tie back soil nails (18 no.s) at -4.00 mPD, 2 rigs	4d	24-Nov-15	27-Nov-15																																							
	E09-1660	Shotcrete to excavated surface	1d	28-Nov-15	28-Nov-15																																							
	E09-1670	Excavation to below -6.00 mPD (rock expected)	10d	30-Nov-15	10-Dec-15																																							
	E09-1680	Tie back soil nails (14 no.s) at -6.00 mPD, 2 rigs	4d	11-Dec-15	15-Dec-15																																							
	E09-1690	Excavation to below -8.00 mPD (rock expected)	10d	16-Dec-15	29-Dec-15																																							
	E09-1700	Shotcrete to excavated surface	1d	30-Dec-15	30-Dec-15																																							
	E09-1710	Tie back soil nails (10 no.s) at -8.00 mPD, 1 rig	4d	31-Dec-15	05-Jan-16																																							
	E09-1720	Excavation to tunnel formation (rock expected)	10d	06-Jan-16	16-Jan-16																																							
	E09-1730	Shotcrete to excavated surface	1d	18-Jan-16	18-Jan-16																																							
	Tunnel Structure (3 Bays)																																											
	Bay E09-01																																											
		E0901-110	Place blinding layer	1d	19-Jan-16	19-Jan-16																																						
		E0901-120	Tunnel base	6d	20-Jan-16	26-Jan-16																																						
	E0901-130	Lower Wall	6d	27-Jan-16	02-Feb-16																																							
	E0901-140	Upper wall & roof	10d	04-Feb-16	18-Feb-16																																							
Bay E09-02																																												
	E0902-110	Place blinding layer	1d	20-Jan-16	20-Jan-16																																							
	E0902-120	Tunnel base	6d	27-Jan-16	02-Feb-16																																							
	E0902-130	Lower Wall	6d	03-Feb-16	12-Feb-16																																							
	E0902-140	Upper wall & roof	10d	19-Feb-16	01-Mar-16																																							
Bay E09-03																																												
	E0903-110	Place blinding layer	1d	21-Jan-16	21-Jan-16																																							
	E0903-120	Tunnel base	6d	03-Feb-16	12-Feb-16																																							
	E0903-130	Lower Wall	6d	13-Feb-16	19-Feb-16																																							
	E0903-140	Upper wall & roof	10d	02-Mar-16	12-Mar-16																																							
Backfill & Remove 900mm Watermain Support																																												
	E09-1740	Backfilling to bottom of 900 dia watermain	24d	19-Feb-16	17-Mar-16																																							
	E09-1750	Remove support to 900 dia watermain	5d	18-Mar-16	23-Mar-16																																							
	E09-1760	Backfill to formation	6d	24-Mar-16	02-Apr-16																																							
Hoarding Removal and Reinstatement Works																																												
	RW-000	NSL Tunnel Substantially Completed	0d		03-Jul-17*																																							
	RW-010	NSL 3A Hoarding Removal (NTH)	10d	04-Jul-17	25-Jul-17																																							
	RW-10	NSL 3B-5 Hoarding Removal (NTH)	20d	27-Jul-17	09-Sep-17																																							
	RW-20	NSL 6 Hoarding Removal (NTH)	16d	12-Sep-17	17-Oct-17																																							
	RW-30	NSL 7 Hoarding Removal (NTH)	16d	19-Oct-17	23-Nov-17																																							
	RW-40	NSL 8 Hoarding Removal (NTH)	16d	25-Nov-17	30-Dec-17																																							
	RW-50	NSL 9-OSP Hoarding Removal (NTH)	45d	02-Jan-18	14-Apr-18																																							
	RW-60	Reinstatement works at Winslow St, Chatham Rd, OSP	180d	03-Jul-17	03-Feb-18																											</												

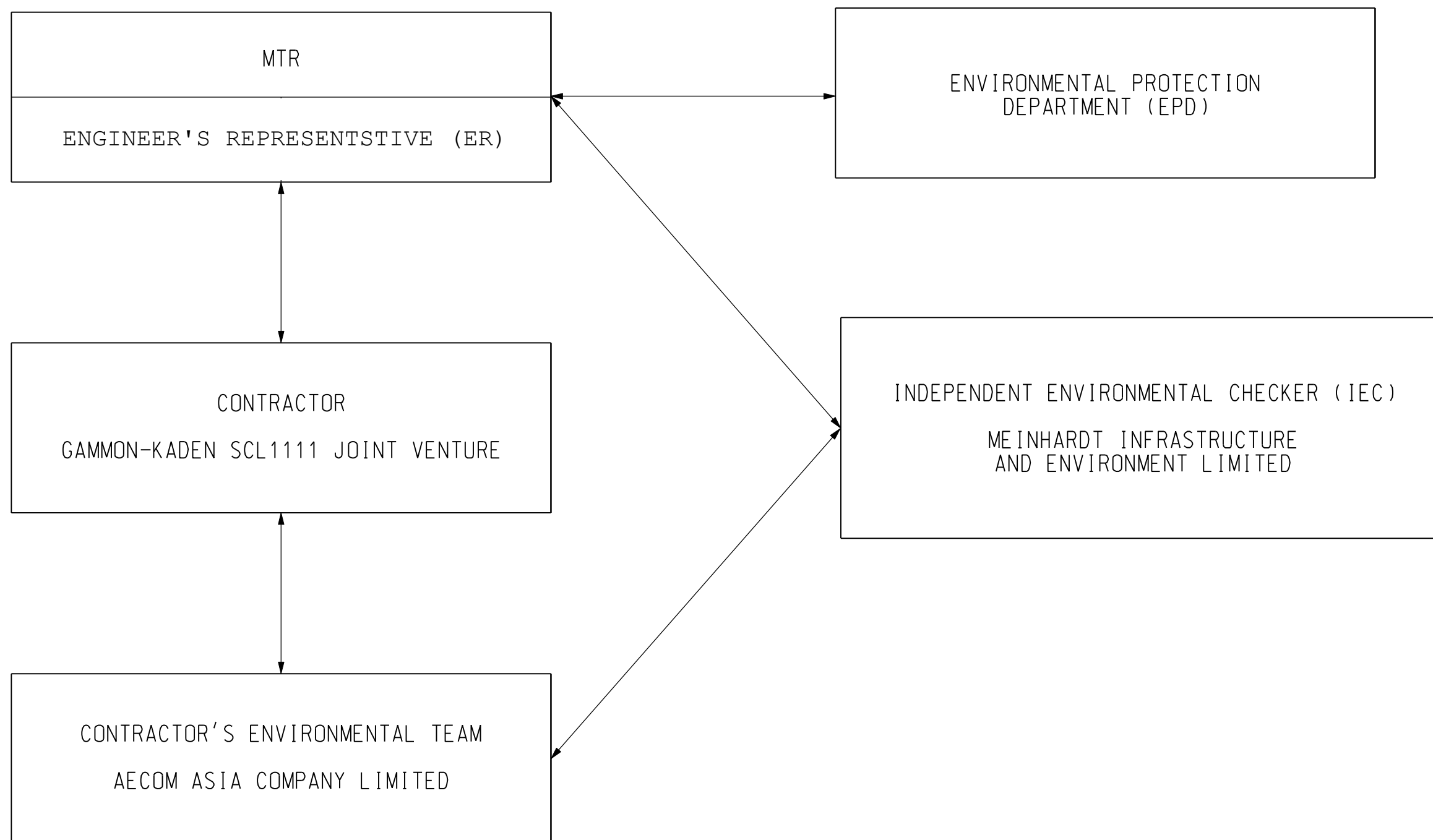
---

## **APPENDIX B**

### **Project Organization Structure**

---





										<div>DRAWN</div> <div>DESIGNED</div> <div>CHECKED</div> <div>APPROVED</div> <div>DATE</div>		<div>HD</div> <div>LCLL</div> <div>LCLL</div> <div>IMW</div> <div>08/JAN/2013</div>		<div><div><div><div><div></div><div>MTR</div></div></div><div>SHATIN TO CENTRAL LINK</div><div><div>CONTRACTOR</div><div><div><div><div></div><div>Gammon</div></div><div><div><div>Kaden</div><div>SCL</div><div>111</div><div>008</div></div></div></div><div>Gammon – Kaden SCL 1111 Joint Venture</div></div><div>ORIGINATOR</div><div><div>AECOM</div></div></div></div></div>										<div>TITLE</div> <div>CONTRACT 1111</div> <div>HUNG HOM NORTH APPROACH TUNNELS</div> <div>PROJECT ORGANISATION</div>																																																																	
										<div>DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.</div>																																																																															
REV										DESCRIPTION										BY										DATE										APPROVED										CADD REF.										SCALE										FIGURE NO.										REV.									
																																																		Appendix B										N.T.S.										Appendix B																			

---

## **APPENDIX C**

### **Implementation Schedule of Environmental Mitigation Measures**

---

**Appendix C - Implementation Schedule of Environmental Mitigation Measures**

EIA Ref.	Environmental Mitigation Measures		Location	Implementation Status
Landscape and Visual Impact				
S6.9.3 (TAW-HUH) , S6.12 (HHS), S6.12 (TAW-HUH), Table 6.9 (HHS) & Table 4.9 (MKK-HUH)	Minimize visual & landscape impact	<ul style="list-style-type: none"><li>Existing topsoil shall be re-used where possible for new planting areas within the Project.</li></ul>	All construction sites	N/A
		<ul style="list-style-type: none"><li>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.</li></ul>	All construction sites	N/A
		<ul style="list-style-type: none"><li>All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period.</li></ul>	All construction sites	@
		<ul style="list-style-type: none"><li>Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas.</li></ul>	All construction sites	V
		<ul style="list-style-type: none"><li>Giving control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.</li></ul>	All construction sites	V
		<ul style="list-style-type: none"><li>Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable.</li></ul>	All construction sites	N/A
		<ul style="list-style-type: none"><li>Compensatory tree &amp; shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.</li></ul>	All construction sites	N/A
		<ul style="list-style-type: none"><li>Control of night-time lighting glare.</li></ul>	All construction sites	N/A
		<ul style="list-style-type: none"><li>All hard and soft landscape areas disturbed temporarily during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government Departments.</li></ul>	All construction sites	N/A

Construction Noise Impact				
8.3.6 (TAW-HUH) , S8.5.6 (HHS) & S6 (MKK-HUH)	To control construction airborne noise	<ul style="list-style-type: none"> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Mobile plant should be sited as far away from NSRs as possible and practicable.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	All construction sites	V
		<p>The following quiet PME should be used:</p> <ul style="list-style-type: none"> <li>Asphalt Paver (SWL=101dB(A))</li> <li>Backhoe (SWL=106dB(A))</li> <li>Backhoe with Hydraulic Breaker (SWL=110dB(A))</li> <li>Concrete lorry mixer (SWL=96dB(A))</li> <li>Concrete mixer truck (SWL=96dB(A))</li> <li>Concrete Pump (SWL=106dB(A))</li> <li>Concrete Pump Truck (SWL=106dB(A))</li> <li>Crane, mobile (SWL=94dB(A))</li> <li>Crawler Crane (SWL=102dB(A))</li> <li>Drill, hand-held (SWL=98dB(A))</li> <li>Dump truck (SWL=104dB(A))</li> <li>Excavator (SWL=106dB(A))</li> <li>Flat Bed Lorry (SWL=102dB(A))</li> <li>Generator (SWL=95dB(A))</li> <li>Giken Piler and Power-pack (SWL=94dB(A))</li> <li>Hydraulic breaker (SWL=110dB(A))</li> </ul>	Works areas where required	N/A

Construction Noise Impact				
		<ul style="list-style-type: none"> <li>Hydraulic excavator (SWL=106dB(A))</li> <li>Lorry (SWL=102dB(A))</li> <li>Lorry with crane/ grab (SWL=94dB(A))</li> <li>Mini Piling Rig (SWL=112dB(A))</li> <li>Piling Rig (SWL=112dB(A))</li> <li>Poker, vibrator, hand-held (SWL=98dB(A))</li> <li>Road Roller (SWL=101dB(A))</li> <li>Rock Drill (SWL = 108dB(A))</li> <li>Roller (SWL = 101dB(A))</li> <li>Truck (SWL=103dB(A))</li> <li>Vibratory Hammer (SWL=118dB(A))</li> </ul>		
		<ul style="list-style-type: none"> <li>Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs.</li> </ul>	All construction sites	v
		<ul style="list-style-type: none"> <li>Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants</li> </ul>	All construction sites	v
		<ul style="list-style-type: none"> <li>Sequencing operation of construction plants where practicable.</li> </ul>	All construction sites	v
		<ul style="list-style-type: none"> <li>Particularly noisy construction activities will be scheduled to avoid school examination period as far as practicable.</li> </ul>	Works areas near the Carmel Secondary School	v
/	To control construction airborne noise	<ul style="list-style-type: none"> <li>Hand held breakers having a mass of above 10 kg and air compressor capable of supplying compressed air at 500 kPa or above for carrying out construction work shall be fitted with valid noise emission labels during operation</li> </ul>	All construction sites	v

Construction Air Quality Impact				
S7.6.5 (TAW-HUH) , S7.6.6 (HHS), S5.50, 5.51 &5.57 (MKK-HUH)	Minimize dust impact at nearby sensitive receivers	<ul style="list-style-type: none"> <li>Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%.</li> </ul>	All construction sites	@
		<ul style="list-style-type: none"> <li>Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet.</li> </ul>	All construction sites	@
		<ul style="list-style-type: none"> <li>Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>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.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>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.</li> </ul>	All construction sites	N/A

Construction Air Quality Impact				
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting.	All construction sites	N/A
		• Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	All construction sites	N/A
/	Minimize dust impact at nearby sensitive receivers	• Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	All construction sites	V
		• 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.	All construction sites	N/A
		• 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.	All construction sites	V
		• 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.	All construction sites	N/A
		• Imposition of speed controls for vehicles on site haul roads.	All construction sites	N/A
		• Open burning shall be prohibited.	All construction sites	V
/	Emission from Vehicles and Plants	• All vehicles shall be shut down in intermittent use.	All construction sites	V
		• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.	All construction sites	V
		• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD).	All construction sites	V

Construction Water Quality Impact				
S10.7.1 (TAW-HUH) , S10.7.1 (HHS) & S8 (MKK-HUH)	To minimize construction water quality impact	<ul style="list-style-type: none"> <li>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.</li> </ul>	Site drainage system	V
		<ul style="list-style-type: none"> <li>Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins.</li> </ul>	Site drainage system	V
		<ul style="list-style-type: none"> <li>Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities.</li> </ul>	All works area	V
		<ul style="list-style-type: none"> <li>Perimeter channels at site boundaries should be provided on site boundaries where necessary to intercept storm run-off from outside the site so that it will not wash across the site.</li> </ul>	All works area	V
		<ul style="list-style-type: none"> <li>Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Construction works should be programmed to minimize soil excavation works in rainy seasons.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.</li> </ul>	All construction sites	V



Construction Water Quality Impact				
		<ul style="list-style-type: none"> <li>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>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.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>A cofferdam wall should be built as necessary to limit groundwater inflow to the excavation works areas.</li> </ul>	Excavation works areas	N/A
		<ul style="list-style-type: none"> <li>Wastewater generated should not be discharged into the stormwater drainage system.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>The Contractor should apply for a discharge license under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.</li> </ul>	All construction sites where practicable	N/A
		<ul style="list-style-type: none"> <li>Appropriate measures will be deployed to minimize the intrusion of groundwater into excavation works areas.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Measures should be put in place in order to mitigate any drawdown effects to the groundwater table during the operation of the temporary dewatering works.</li> </ul>	All construction sites	N/A

<b>Waste Management</b>				
S11.5.1 (TAW-HUH), S11.5.1(HHS) & S9 (MKK-HUH)	Good site practice to minimize the generation and impact of the waste.	<ul style="list-style-type: none"> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Proper storage and site practices to minimize the potential for damage or contamination of construction materials.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Maintain and clean storage areas routinely.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Waste should be removed in timely manner.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Waste collectors should only collect wastes prescribed by their permits.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Waste should be disposed of at licensed waste disposal facilities.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>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.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>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.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>The Contractor should register as a chemical waste producer if chemical wastes would be generated.</li> </ul>	All construction sites	V
		<ul style="list-style-type: none"> <li>Disposal of chemical waste should be via a licensed waste collector.</li> </ul>	All construction sites	V

Waste Management				
		<ul style="list-style-type: none"> <li>Stockpiling of contaminated sediments should be avoided as far as possible.</li> </ul>	All construction sites	N/A
		<ul style="list-style-type: none"> <li>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.</li> <li>The storage area should bear warning panels to alert people of the presence of asbestos waste. Collection, transportation and disposal of asbestos waste should follow the trip-ticket system.</li> <li>Licensed asbestos waste collectors should be appointed to collect the asbestos waste and deliver to the designated landfill for disposal.</li> </ul>	All construction sites	N/A

Contaminated Land				
S10.24– 10.34 (MKK-HUH)	To act as a general precautionary measure to screen soils for the presence contamination during construction.	<ul style="list-style-type: none"> <li>Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil.</li> </ul>	Within Project Boundary where signs of contamination is identified	N/A
		<ul style="list-style-type: none"> <li>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.</li> </ul>		N/A
	To remediate contaminated soil	<ul style="list-style-type: none"> <li>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.</li> </ul>		N/A

Legend: V = implemented;  
x = not implemented;  
@ = partially implemented;  
N/A = not applicable

---

## **APPENDIX D**

### **Summary of Action and Limit Levels**

---

**Appendix D – Summary of Action and Limit Levels****Table 1 Action and Limit Levels for 24-hour TSP**

ID	Location	Action Level	Limit Level
AM1	No. 234 – 238 Chatham Road North	183.9 $\mu\text{g}/\text{m}^3$	260.0 $\mu\text{g}/\text{m}^3$

**Table 2 Action and Limit Levels for Regular Construction Noise (0700 – 1900 hrs of normal weekdays)**

ID	Location	Action Level	Limit Level
NM1	Carmel Secondary School (South Block)	When one documented complaint, related to 0700 – 1900 hours on normal weekdays, is received from any one of the sensitive receivers.	65 / 70 dB(A) <sup>(1)</sup>
NM2	No. 234 – 238 Chatham Road North		75 dB(A)

Note:

(1) Daytime noise Limit Level of 70dB(A) applies to education institutions while 65dB(A) applies during school examination period.

**Table 3 Action and Limit Levels for Continuous Noise**

ID	Location	Action/Limit Level
NM1	Carmel Secondary School (South Block)	68 dB(A) <sup>(1)</sup>
NM2	No. 234-238 Chatham Road North	77 dB(A)

Note:

(1) Action/Limit level will only be applicable during the examination period.

---

## **APPENDIX E**

### **Calibration Certificates of Equipments**

---

## Certificate of Calibration

### Calibration Certification Information

Cal. Date: May 22, 2018      Rootmeter S/N: 438320      Ta: 296 °K  
 Operator: Jim Tisch      Pa: 749.3 mm Hg  
 Calibration Model #: TE-5025A      Calibrator S/N: 0988

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3840	3.2	2.00
2	3	4	1	0.9840	6.4	4.00
3	5	6	1	0.8790	7.9	5.00
4	7	8	1	0.8420	8.7	5.50
5	9	10	1	0.6900	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)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
0.9883	0.7141	1.4090	0.9957	0.7195	0.8889
0.9841	1.0001	1.9926	0.9915	1.0076	1.2570
0.9821	1.1173	2.2278	0.9895	1.1257	1.4054
0.9811	1.1652	2.3365	0.9884	1.1739	1.4740
0.9758	1.4141	2.8179	0.9831	1.4247	1.7777
QSTD	m=	2.01748	QA	m=	1.26331
	b=	-0.02651		b=	-0.01673
	r=	0.99988		r=	0.99988

### Calculations

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

### Standard Conditions

Tstd: 298.15 °K

Pstd: 760 mm Hg

### Key

ΔH: calibrator manometer reading (in H2O)

ΔP: rootmeter 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

# AECOM Asia Company Limited

## TSP High Volume Sampler

### Field Calibration Report

Station 234 - 238 Chatham Road North; SCL - DMS - 11 Operator: Shum Kam Yuen  
 Cal. Date: 7-Dec-18 Next Due Date: 7-Feb-19  
 Equipment No.: --- Serial No. 8259

Ambient Condition			
Temperature, Ta (K)	293.2	Pressure, Pa (mmHg)	760.6

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	2.00314	Intercept, bc	-0.01725
Last Calibration Date:	26-Dec-17	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	26-Dec-18				

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m <sup>3</sup> /min) X-axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	6.6	2.59	1.30	44.0	44.38
13	5.4	2.34	1.18	36.0	36.31
10	4.6	2.16	1.09	31.0	31.27
7	3.9	1.99	1.00	26.0	26.22
5	2.8	1.69	0.85	18.0	18.15

#### By Linear Regression of Y on X

Slope, mw = 57.9388 Intercept, bw = -31.5774

Correlation Coefficient\* = 0.9981

\*If Correlation Coefficient < 0.990, check and recalibrate.

#### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m<sup>3</sup>/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]<sup>1/2</sup> = 43.37

Remarks: \_\_\_\_\_

QC Reviewer: WIS CHAN Signature: [Signature] Date: 07/12/18





## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0406 02-01

Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone
Manufacturer:	B & K	B & K
Type/Model No.:	2238	4188
Serial/Equipment No.:	2285692	2250455
Adaptors used:	-	-

### Item submitted by

Customer Name: AECOM ASIA CO., LTD.  
Address of Customer: -  
Request No.: -  
Date of receipt: 06-Apr-2018

Date of test: 10-Apr-2018

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	08-Sep-2018	CIGISMEC
Signal generator	DS 360	33873	25-Apr-2018	CEPREI

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

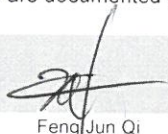
### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Feng Jun Qi

Date: 11-Apr-2017

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.:

18CA0406 02-01

Page 2 of 2

**1, Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	1.0	
	Lin	Pass	2.0	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Linearity range for SPL	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

**2, Acoustic tests**

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

**3, Response to associated sound calibrator**

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Fung Chi Yip

Date: 10-Apr-2018

Checked by:

Lam Tze Wai

Date: 11-Apr-2017

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.





## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0914 03

Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone
Manufacturer:	B & K	B & K
Type/Model No.:	2238	4188
Serial/Equipment No.:	2800927	2791211
Adaptors used:	-	-

### Item submitted by

Customer Name: AECOM ASIA CO., LTD.  
Address of Customer: -  
Request No.: -  
Date of receipt: 14-Sep-2018

Date of test: 17-Sep-2018

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2019	CIGISMEC
Signal generator	DS 360	33873	24-Apr-2019	CEPREI
Signal generator	DS 360	61227	23-Apr-2019	CEPREI

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

1. The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
2. The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
3. The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:



Feng Junqi

Date: 18-Sep-2018

Company Chop:



**Comments:** The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA0914 03

Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date:

Fung Chi Yip  
17-Sep-2018

Checked by:

Date:

Shek Kwong Tat  
18-Sep-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.





## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0321 01-02

Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366	2665582	17190
Adaptors used:	-	-	-

### Item submitted by

Customer Name: AECOM ASIA CO LTD  
Address of Customer: -  
Request No.: -  
Date of receipt: 21-Mar-2018

Date of test: 23-Mar-2018

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	08-Sep-2018	CIGISMEC
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Signal generator	DS 360	61227	01-Apr-2018	CEPREI

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1000 \pm 5$  hPa

### Test specifications

1. The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
2. The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
3. The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

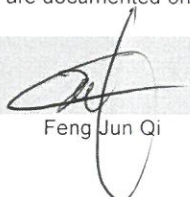
### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Feng Jun Qi

Date: 24-Mar-2018

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0321 01-02

Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL Frequency weightings	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date:

Fung Chi Yip  
23-Mar-2018

Checked by:

Date:

Lam Tze Wai  
24-Mar-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.





## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0406 02-02

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: B & K  
Type/Model No.: 4231  
Serial/Equipment No.: 3006428 / N004.03  
Adaptors used: -

### Item submitted by

Customer: AECOM ASIA CO LIMITED  
Address of Customer: -  
Request No.: -  
Date of receipt: 06-Apr-2018

Date of test: 09-Apr-2018

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2743150	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

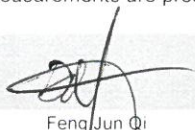
1. The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
2. The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
3. The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

  
Feng Jun Qi

Date: 11-Apr-2018

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0406 02-02

Page: 2 of 2

### 1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 $\mu$ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	94.20	0.10

### 2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.015 dB

Estimated expanded uncertainty 0.005 dB

### 3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 999.96 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

### 4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz TND = 0.4 %

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date:

Fung Chi Yip

09-Apr-2018

Checked by:

Date:

Lam Tze Wai

11-Apr-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



---

## **APPENDIX F**

### **EM&A Monitoring Schedules**

---

**Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels  
Tentative Impact Monitoring Schedule for January 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Jan	2-Jan	3-Jan	4-Jan	5-Jan
				24-hour TSP (AM1)	Noise (NM1, NM2)	
6-Jan	7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan
			24-hour TSP (AM1)	Noise (NM1, NM2)		
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
		24-hour TSP (AM1)	Noise (NM1, NM2)			
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
	24-hour TSP (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		
		Noise (NM1, NM2)		24-hour TSP (AM1)		

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

**Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels**  
**Tentative Impact Monitoring Schedule for February 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Feb	2-Feb
3-Feb	4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb
	24-hour TSP (AM1)				Noise (NM1, NM2)	24-hour TSP (AM1)
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
		Noise (NM1, NM2)			24-hour TSP (AM1)	
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
				24-hour TSP (AM1)	Noise (NM1, NM2)	
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
			24-hour TSP (AM1)	Noise (NM1, NM2)		

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

**Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels  
Tentative Impact Monitoring Schedule for March 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
		24-hour TSP (AM1)	Noise (NM1, NM2)			
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
	24-hour TSP (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar
		Noise (NM1, NM2)			24-hour TSP (AM1)	
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
				24-hour TSP (AM1)	Noise (NM1, NM2)	
31-Mar						

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

---

## **APPENDIX G**

### **Air Quality Monitoring Results and their Graphical Presentations**

---

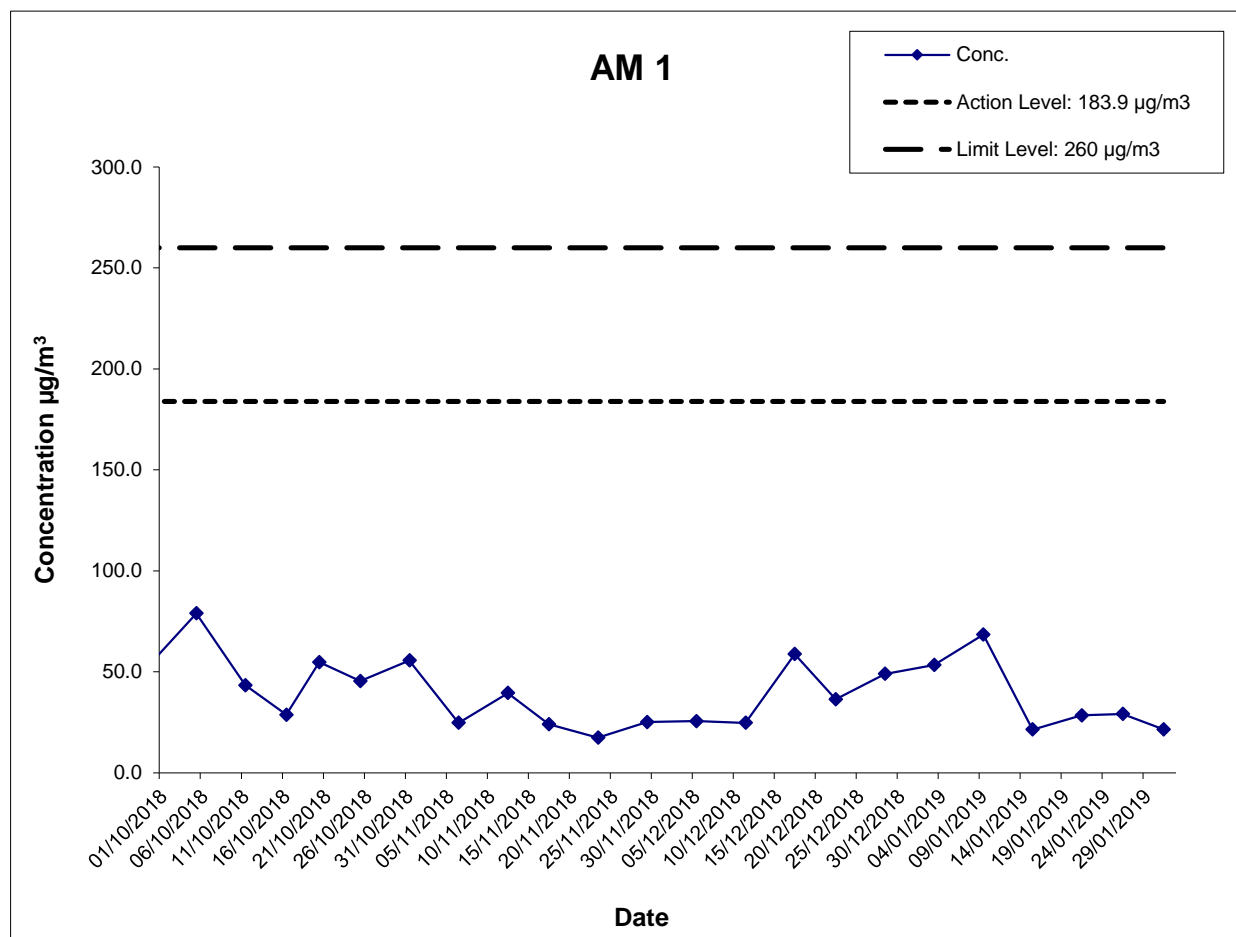
## Appendix G

### Air Quality Monitoring Results

### 24-hour TSP Monitoring Results at Station AM1 (No. 234 – 238 Chatham Road North)

Start		End		Weather	Air	Atmospheric	Flow Rate (m³/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (°C)	Pressure (hPa)	Initial	Final	(m³/min)	(m³)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	(µg/m³)
3-Jan-19	0:00	4-Jan-19	0:00	Sunny	16.2	1024.3	1.34	1.34	1.34	1932.5	2.6350	2.7381	0.1031	15933.00	15957.00	24.00	53.4
9-Jan-19	0:00	10-Jan-19	0:00	Sunny	17.8	1022.3	1.34	1.34	1.34	1932.5	2.6622	2.7944	0.1322	15957.00	15981.00	24.00	68.4
15-Jan-19	0:00	16-Jan-19	0:00	Rainy	19.0	1018.8	1.34	1.34	1.34	1932.5	2.6473	2.6886	0.0413	15981.00	16005.00	24.00	21.4
21-Jan-19	0:00	22-Jan-19	0:00	Sunny	17.8	1021.8	1.34	1.34	1.34	1932.5	2.6602	2.7151	0.0549	16005.00	16029.00	24.00	28.4
26-Jan-19	0:00	27-Jan-19	0:00	Cloudy	18.2	1023.1	1.34	1.34	1.34	1932.5	2.6847	2.7409	0.0562	16029.00	16053.00	24.00	29.1
31-Jan-19	0:00	1-Feb-19	0:00	Sunny	21.7	1018.9	1.34	1.34	1.34	1932.5	2.6753	2.7167	0.0414	16053.00	16077.00	24.00	21.4
																Average	37.0
																Minimum	21.4
																Maximum	68.4

## Appendix G Air Quality Monitoring Results



**Shatin to Central Link Works Contract 1111-  
Hung Hom North Approach Tunnels**

**Graphical Presentations of Impact 24-hour TSP  
Monitoring Results**

SCALE

CHECK

JOB NO.

N.T.S.

TYUT

60284101

DATE

DRAWN

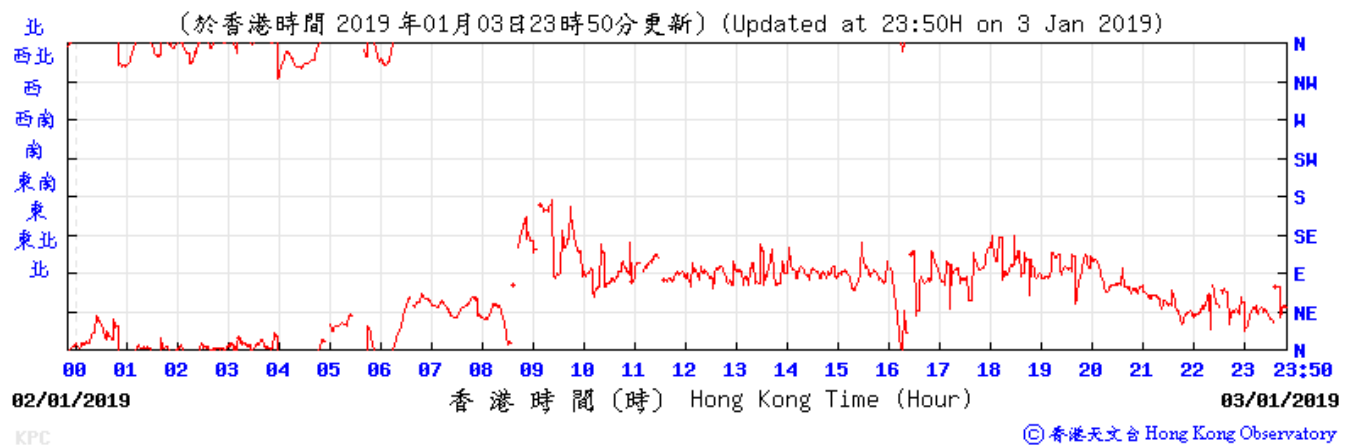
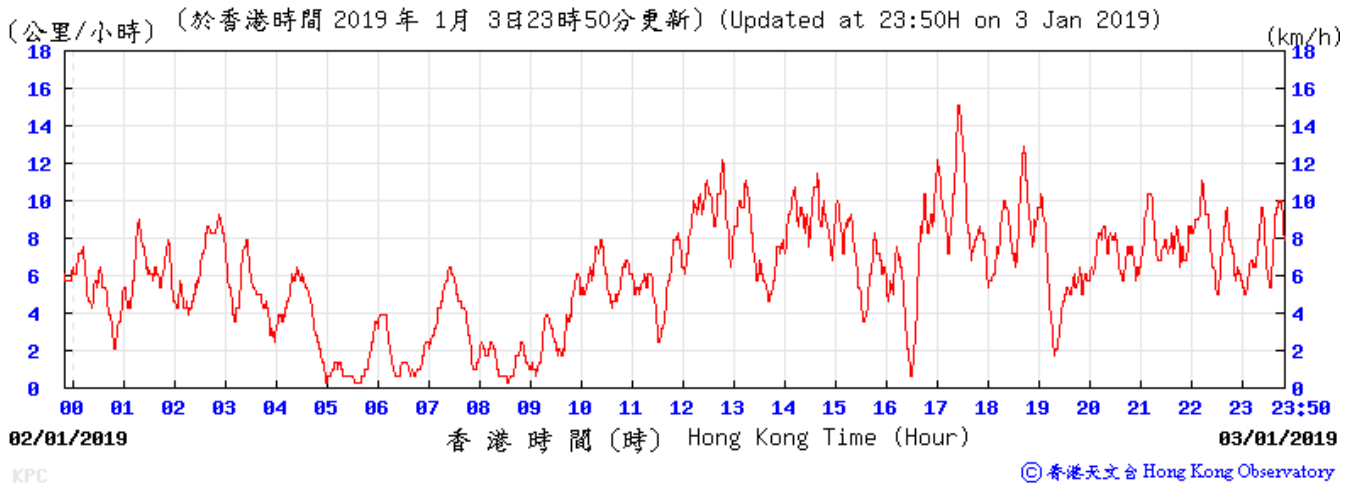
APPENDIX No.  
G

Feb-19

RCCP

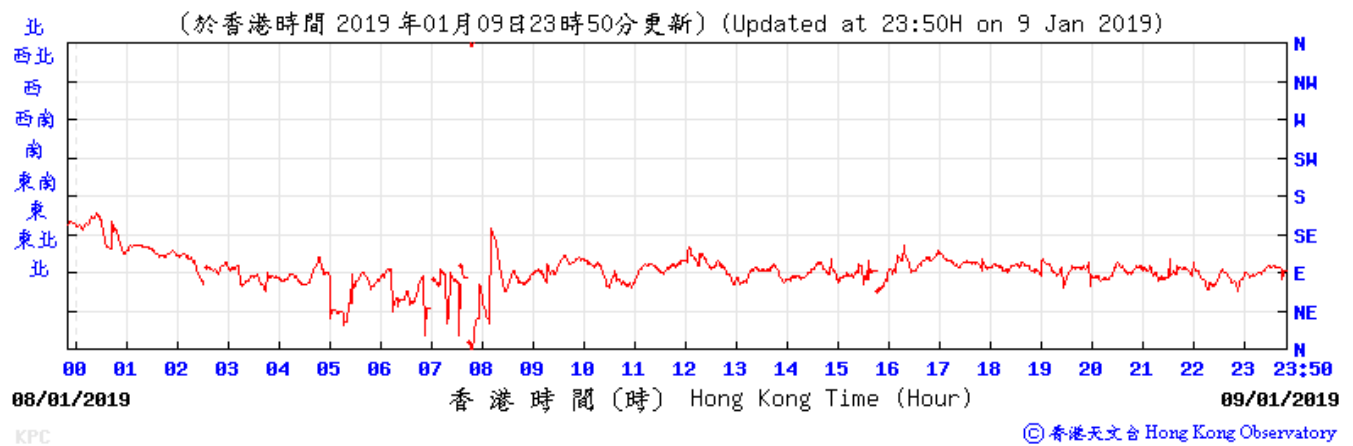
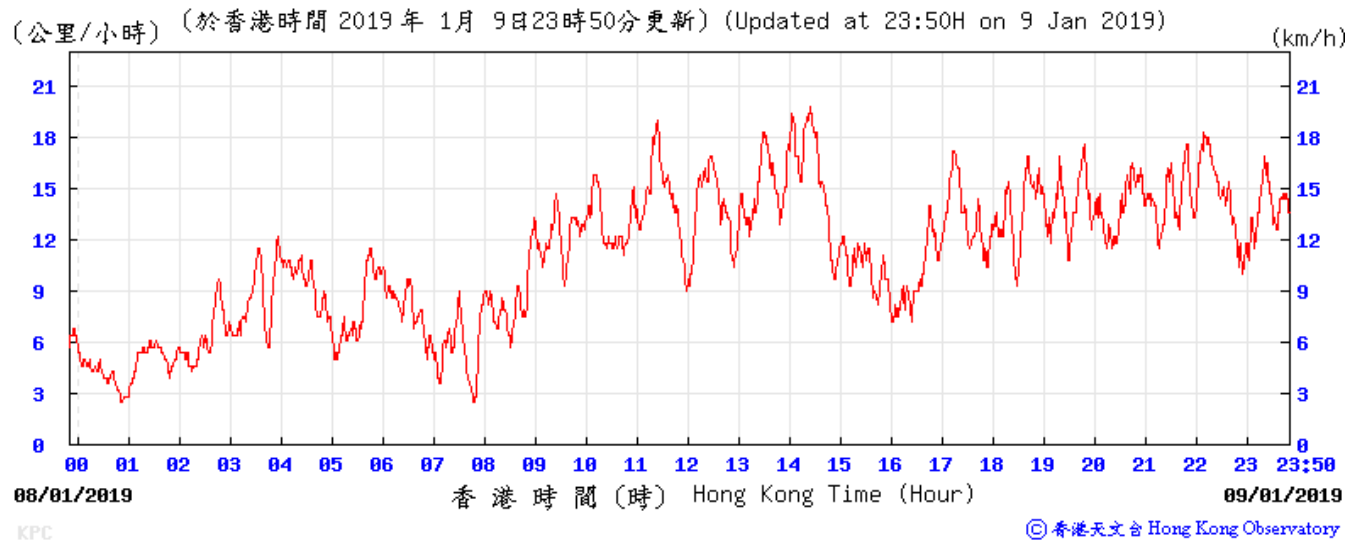
Rev.  
-

Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019

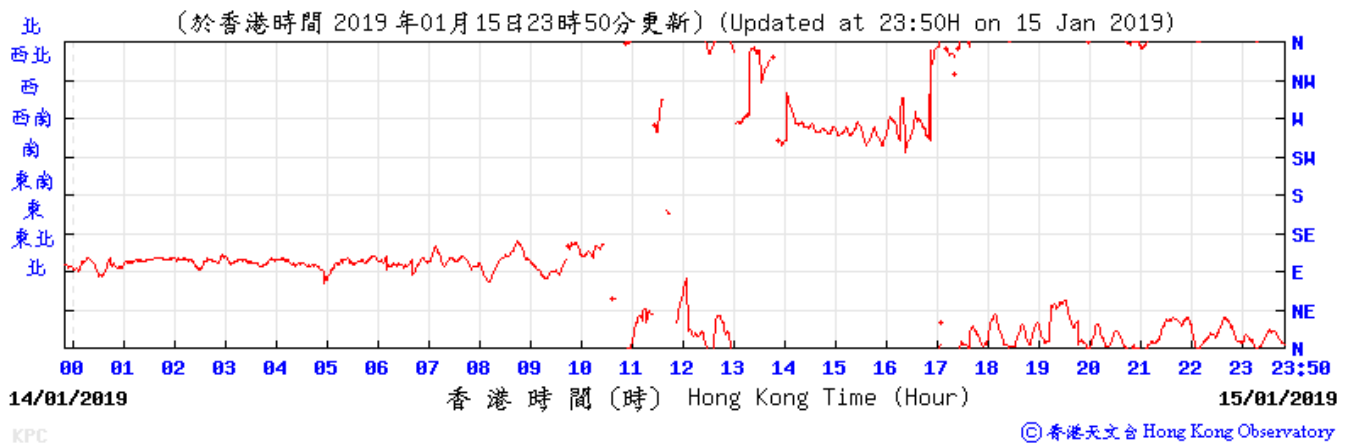
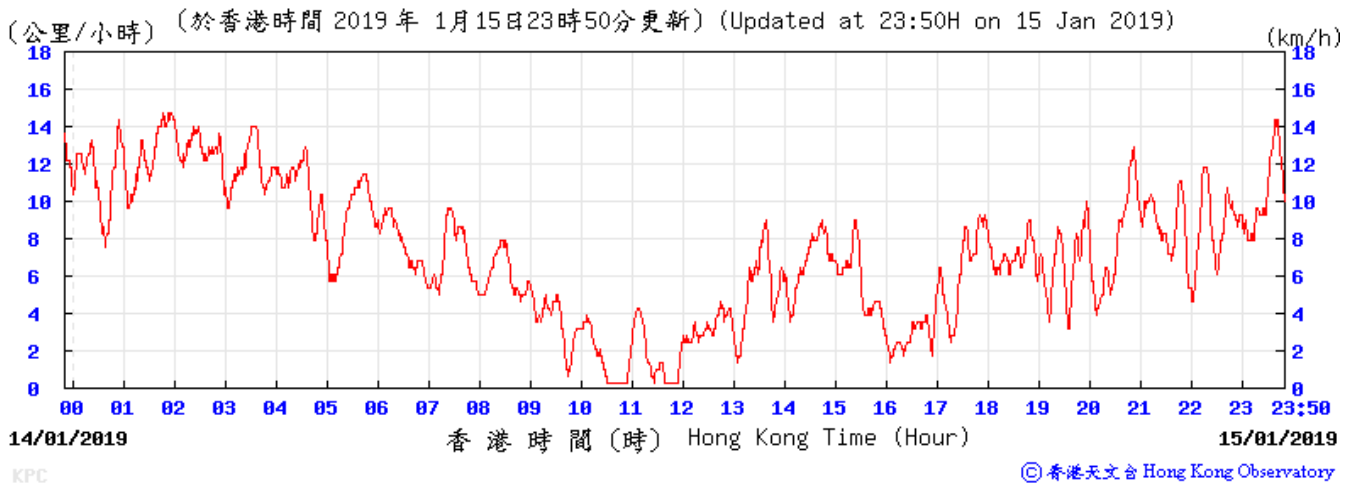




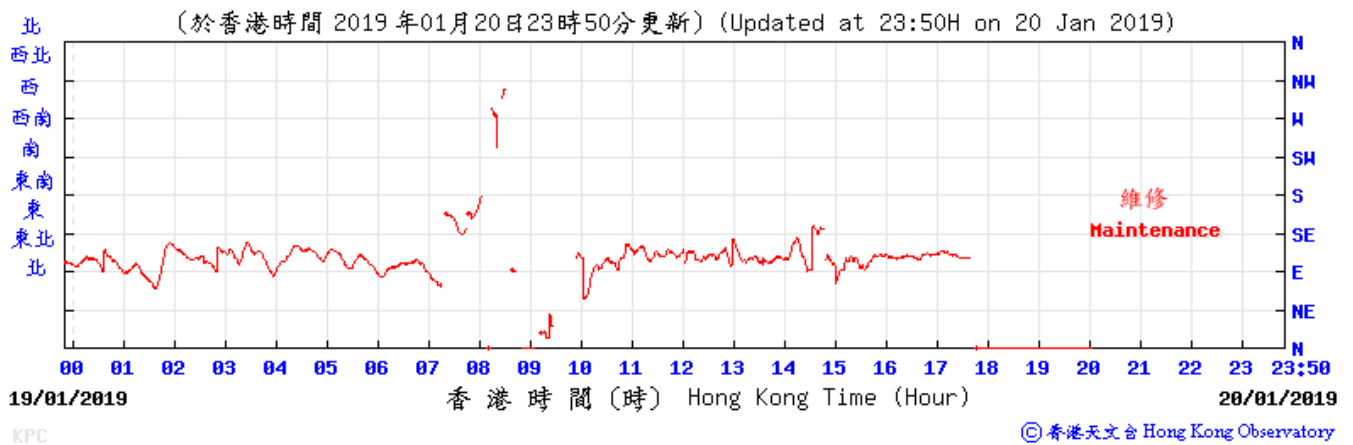
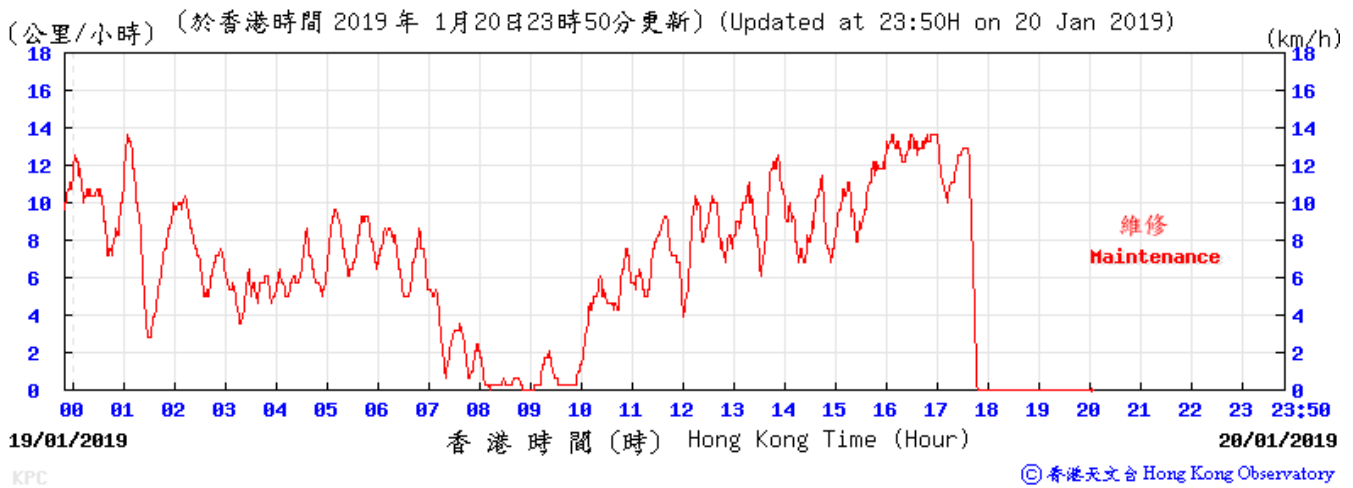
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



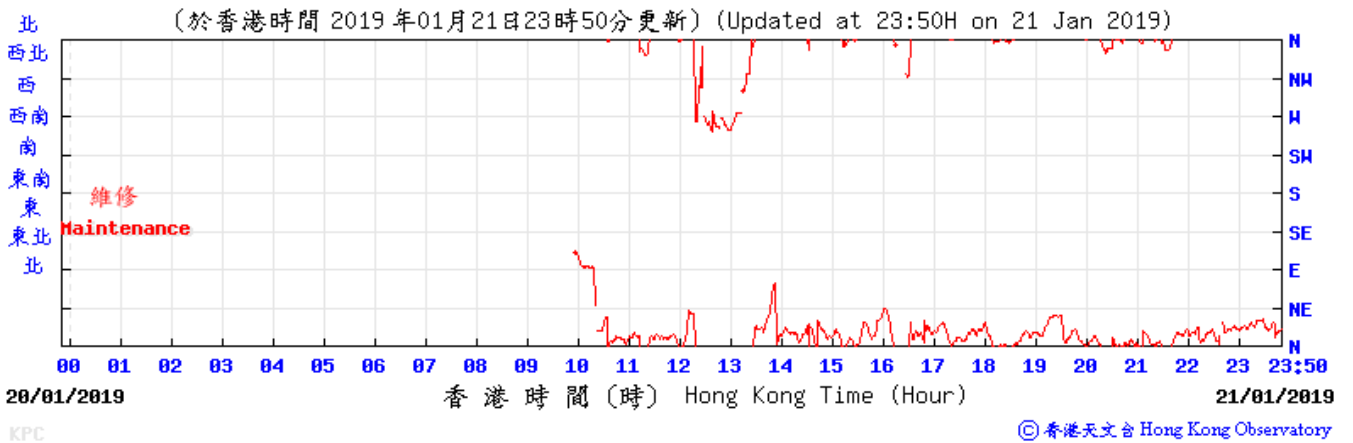
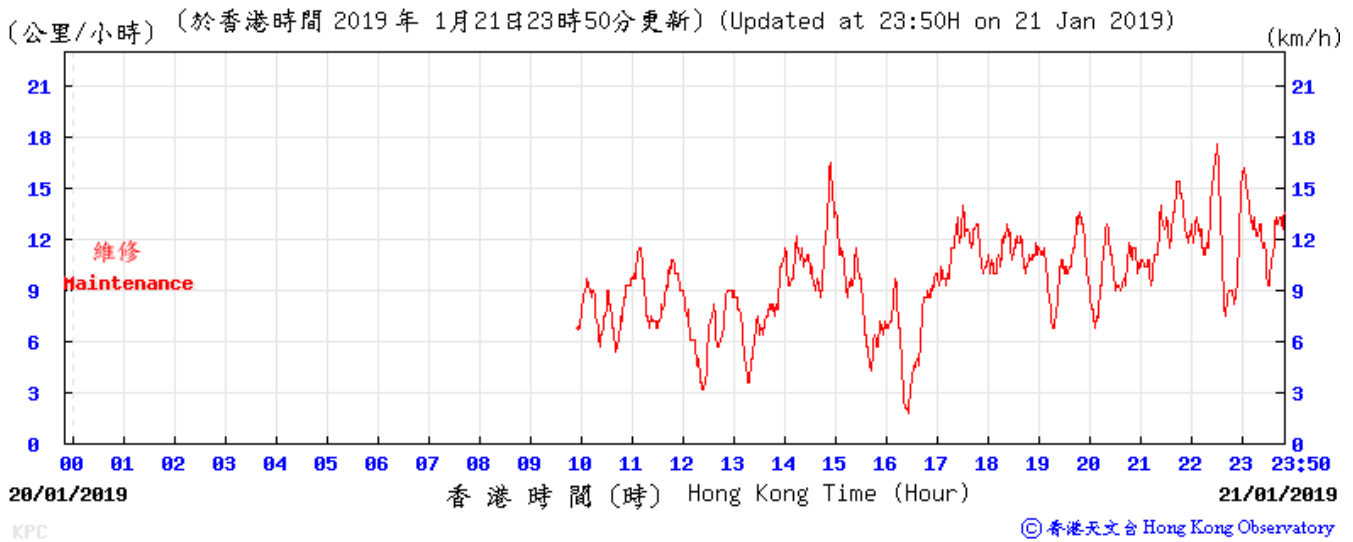
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



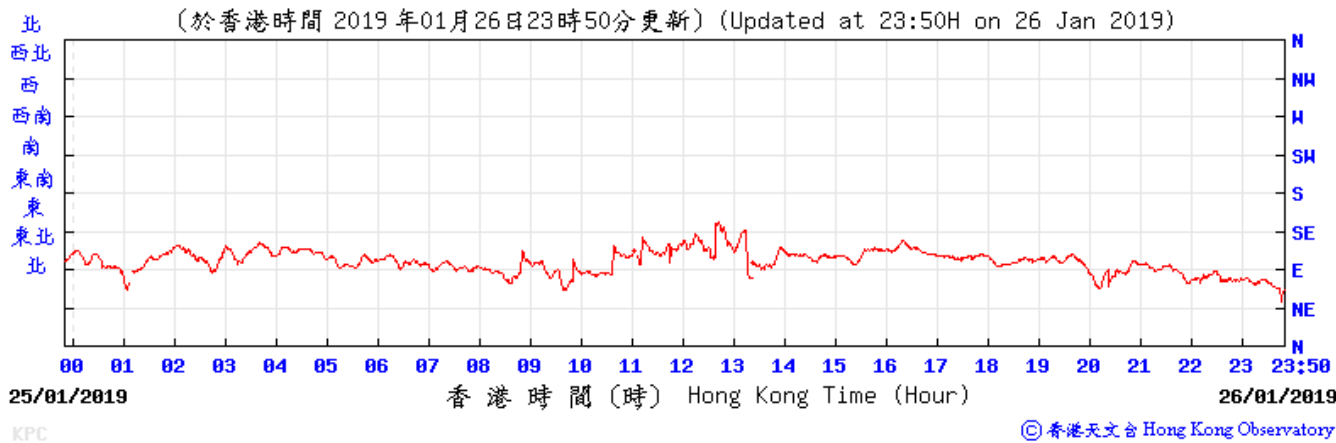
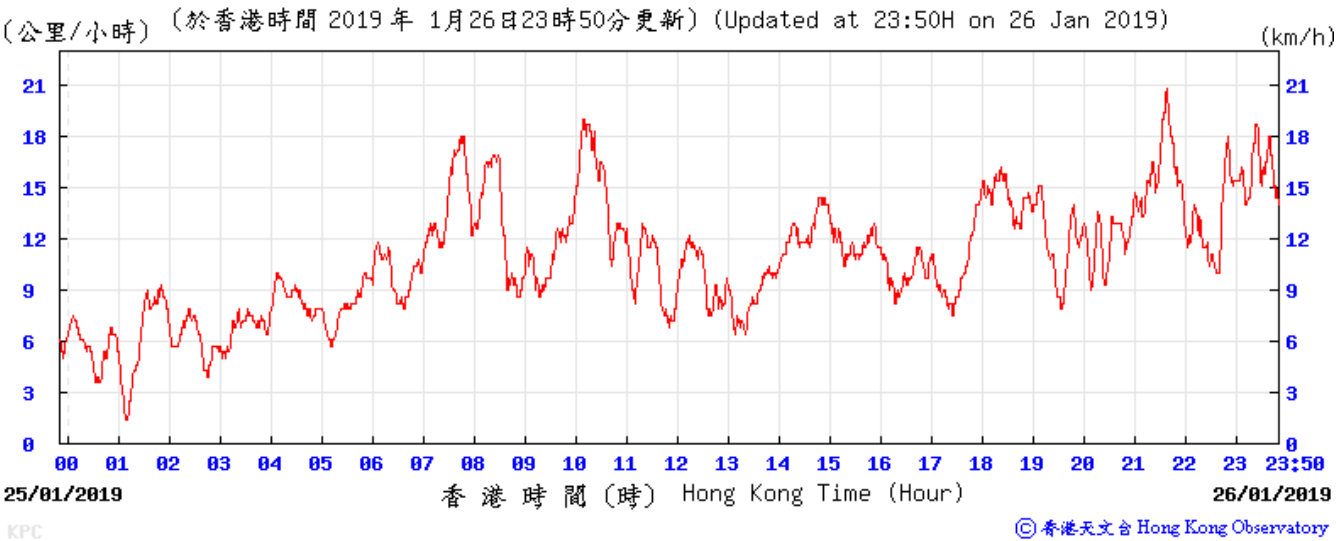
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



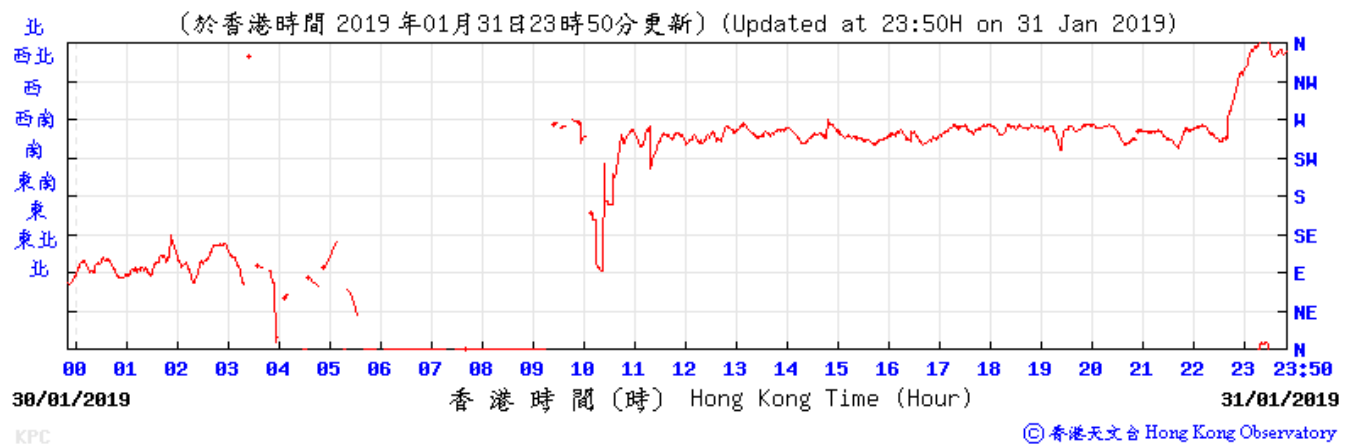
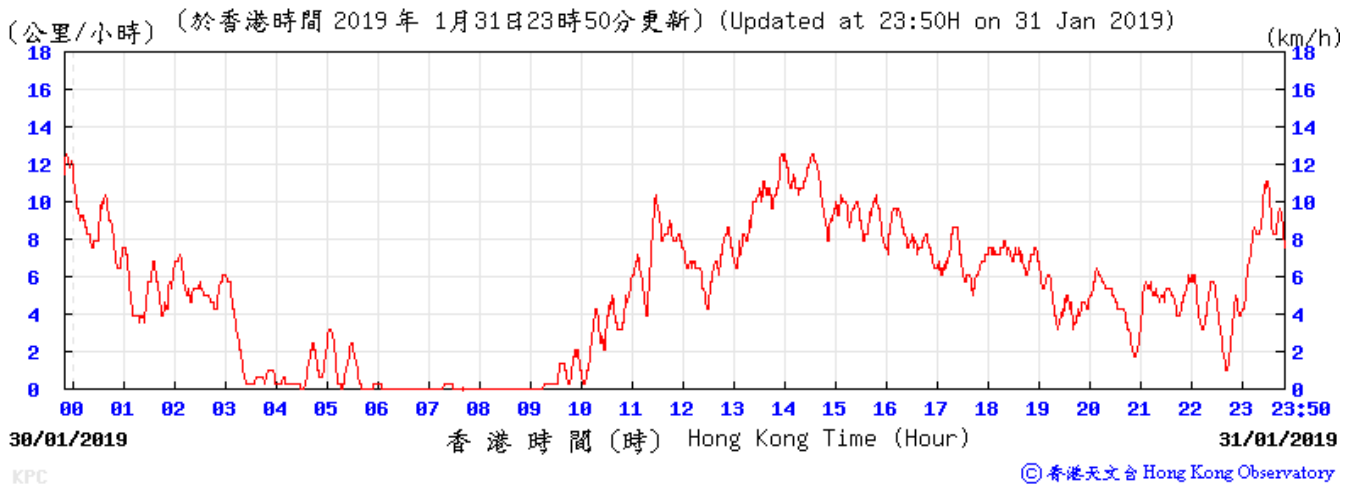
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, January 2019



---

## **APPENDIX H**

### **Noise Monitoring Results and their Graphical Presentations**

---

## Appendix H Regular Construction Noise Monitoring Results

Daytime Noise Monitoring Results at Station NM 1 (Carmel Secondary School (South Block))

Date	Weather Condition	Noise Level for 30-min, dB(A) <sup>+</sup>				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
4-Jan-19	Sunny	10:15	59.5	63.5	62.6	<Baseline	68.0	70	N
10-Jan-19	Sunny	9:25	56.8	61.9	59.8	<Baseline	68.0	70	N
16-Jan-19	Fine	10:10	57.2	62.3	60.4	<Baseline	68.0	70	N
22-Jan-19	Sunny	9:50	57.5	62.7	60.6	<Baseline	68.0	70	N
29-Jan-19	Sunny	9:50	57.5	62.4	60.6	<Baseline	68.0	70	N

Daytime Noise Monitoring Results at Station NM 2 (No. 234 – 238 Chatham Road North)

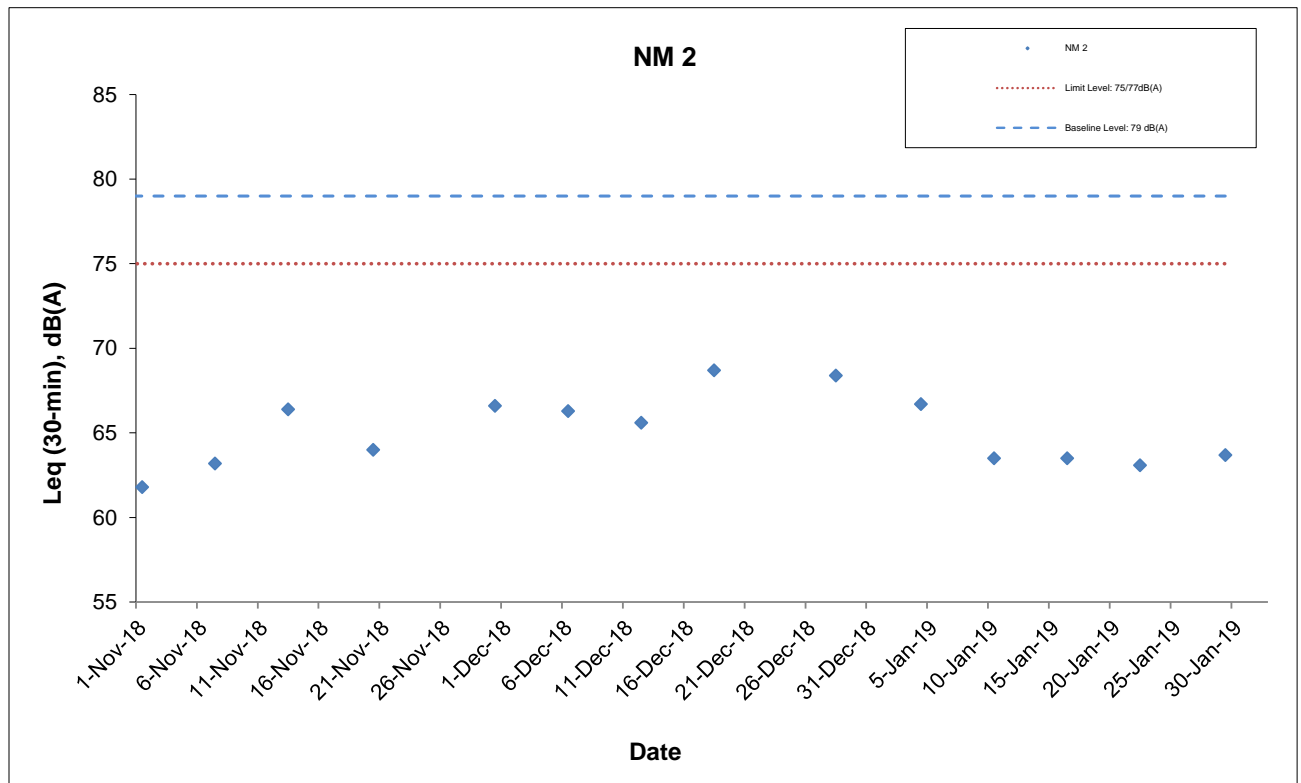
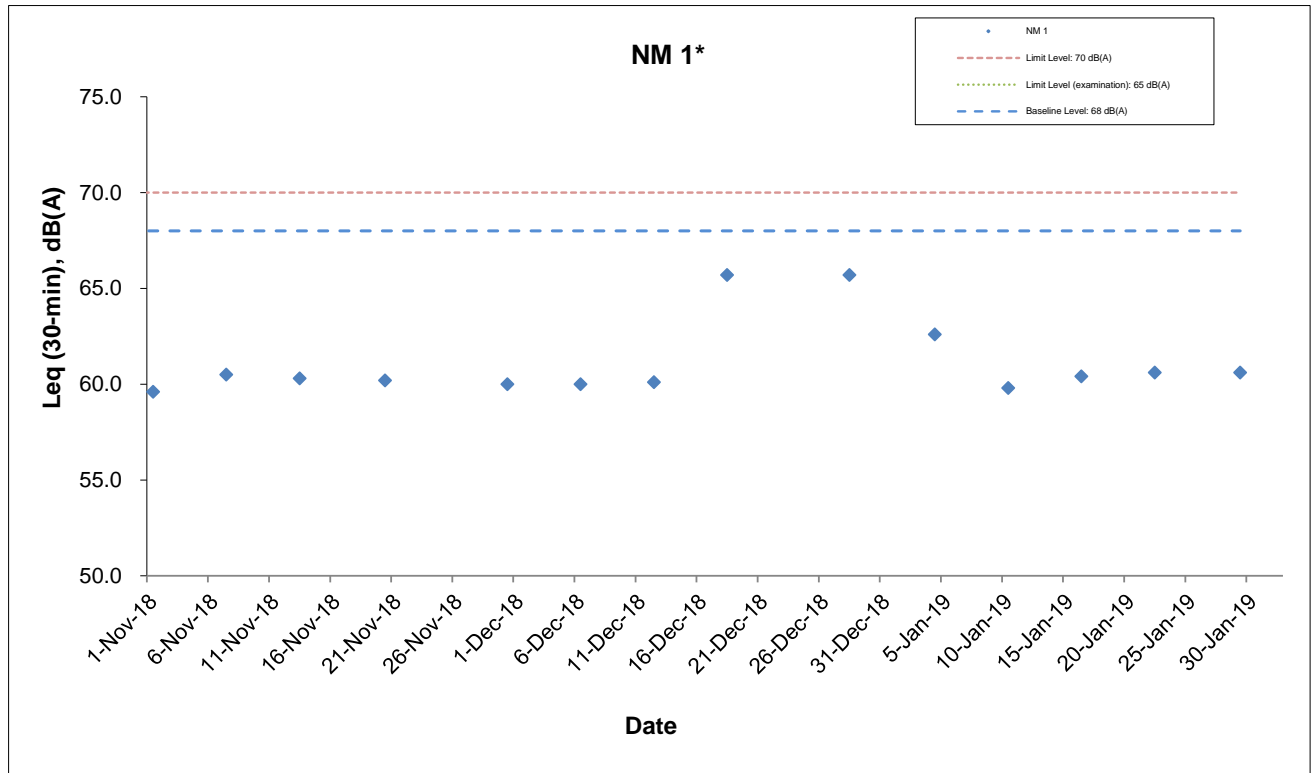
Date	Weather Condition	Noise Level for 30-min, dB(A) <sup>++</sup>				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
4-Jan-19	Sunny	11:15	63.0	67.5	66.7	<Baseline	79.0	75	N
10-Jan-19	Sunny	10:30	61.4	64.9	63.5	<Baseline	79.0	75	N
16-Jan-19	Fine	10:55	61.4	64.3	63.5	<Baseline	79.0	75	N
22-Jan-19	Sunny	10:35	61.1	64.2	63.1	<Baseline	79.0	75	N
29-Jan-19	Sunny	10:35	61.5	64.4	63.7	<Baseline	79.0	75	N

<sup>+</sup> - Façade measurement


<sup>++</sup> - Free field measurement



## Appendix H Regular Construction Noise Monitoring Results



\* - The noise monitoring results of the measurements are higher than the daytime construction noise criterion. However, the results are not considered as exceedance if they are either below the baseline level or below the limit level after deducting the baseline noise level.

	<b>Shatin to Central Link Works Contract 1111- Hung Hom North Approach Tunnels</b>	SCALE	N.T.S.	DATE	Jan-19
		CHECK	TYUT	DRAWN	OYLW
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60284101	APPENDIX H	Rev -

---

## **APPENDIX I**

### **Event Action Plan**

---

**Appendix I – Event and Action Plan**Event / Action Plan for Construction Dust

EVENT	ACTION			
	ET	IEC	ER	Contractor
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	1. Inform the Contractor, IEC and ER; 2. Discuss with the Contractor and IEC on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.

EVENT	ACTION			
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Inform the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

EVENT	ACTION			
	ET	IEC	ER	Contractor
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	1. Inform the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ET, ER and Contractor on possible remedial measures; 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; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise implementation of remedial measures.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Notify Contractor, IEC, EPD and ER ; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with ET, ER, and Contractor on the potential remedial measures; 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; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; 4. 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; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Regular Construction Noise

EVENT	ACTION			
	ET	IEC	ER	Contractor
Exceedance of Action Level	1. Notify the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the contractor; and 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; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise implementation of remedial measures.	1. Investigate the complaint and propose remedial measures; 2. Report the results of investigation to the IEC, ET and ER; 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification; and 4. Implement noise mitigation proposals.

EVENT	ACTION			
	ET	IEC	ER	Contractor
Exceedance of Limit Level	1. Notify the Contractor, IEC, EPD and ER ; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Review the effectiveness of Contractor's remedial measures and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures; and 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 failure in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. 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 and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.



Event / Action Plan for Continuous Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action/Limit Level	1. Identify source ; 2. Repeat measurement. If two consecutive measurements exceed Action/Limit Level, the exceedance is then confirmed; 3. If exceedance is confirmed, notify IEC, ER and Contractor; 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented; 5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures; and 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 1111 ET; 2. Check the Contractor's working method; 3. Discuss with the ER, Works Contract 1111 ET and Contractor on the potential remedial measures; and 4. Review and advise the Works Contract 1111 ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the Works Contract 1111 ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Ensure the proper implementation of remedial measures; and 4. 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 the Works Contract 1111 ET; 2. If exceedance is confirmed, investigation the cause of exceedance and take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification; 4. Implement the agreed proposals; 5. Liaise with ER to optimize the effectiveness of the agreed mitigation; 6. Revise and resubmit proposals if problem still not under control; and 7. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

## Event / Action Plan for Landscape and Visual during Construction Stage

EVENT	ET	IEC	ER	Contractor
<b>ACTION LEVEL</b>				
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Inform the Contractor, the IEC and the ER</li> <li>2. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>3. Monitor remedial actions until rectification has been completed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET, ER and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-conformity in writing</li> <li>2. Review and agree on the remedial measures proposed by the Contractor</li> <li>3. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify source</li> <li>2. Inform the Contractor, the IEC and the ER</li> <li>3. Increase inspection frequency</li> <li>4. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>5. Monitor remedial actions until rectification has been completed</li> <li>6. If non-conformity stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.</li> </ol>

---

## **APPENDIX J**

### **Cumulative Statistics of Complaints, Notification of Summons and Successful Prosecutions**

---

**Appendix J****Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions**

	<b>Date Received</b>	<b>Subject</b>	<b>Status</b>	<b>Total no. received in this month</b>	<b>Total no. received since project commencement</b>
<b>Environmental complaints</b>	-	-	-	0	2
<b>Notification of summons</b>	-	-	-	0	0
<b>Successful Prosecutions</b>	-	-	-	0	0

---

**APPENDIX K**

**Waste Flow Table**

---

## Appendix K Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly (Note 1)														Actual Quantities of Non-inert C&D Materials (i.e. C&D Wastes) Generated Monthly					Actual Quantities of Marine Dumping Monthly	
	Generated					Disposed				Reused					Recycled			Disposed		Disposed	
	Fill Material	Artificial Material			Total Quantity Generated	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Disposed as Public Fills at CWPFBP	Total Quantity Disposal	Reused in the Contract	Reused in other Projects		Delivered to HH Barging Point (Note 5)	Total Quantity Reused	Metals	Paper/ cardboard packaging (Note 3)	Plastics	Chemical Waste	General Refuse (Note 2)	Disposed as MD at HH Barging Point	
		Soil and Rock	Broken Concrete	Asphalt							Tolo	WIL 705								Type 1	Type 2
Unit	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m <sup>3</sup> )	('000m <sup>3</sup> )
Jan	0.527	0.000	0.000	0.000	0.527	0.000	0.527	0.000	0.527	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.970	0.000	0.000
Feb																					
Mar																					
Apr																					
May																					
Jun																					
SUB-TOTAL	0.527	0.000	0.000	0.000	0.527	0.000	0.527	0.000	0.527	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.970	0.000	0.000
Jul																					
Aug																					
Sep																					
Oct																					
Nov																					
Dec																					
2019 TOTAL	0.527	0.000	0.000	0.000	0.527	0.000	0.527	0.000	0.527	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.970	0.000	0.000

Note:

1. Assume the density of fill is 2 ton/m<sup>3</sup>.
2. Refuses disposed of at North East New Territories (NENT) Landfill.
3. Assume the weight of recycled papers is 7 kg/bag.

4. Public fills disposed of at Tseung Kwan O Area 137 Fill Bank (TKO137), Tuen Mun Area 38 Fill Bank (TM38) and Chai Wan Public Fill Barging Point (CWPFBP).

5. Public fills was delivered to Hung Hom Barging Point and handled by the Contractor of SCL1112 in the period of 1 January 2015 to 1 August 2015 and handled by the Contractor of SCL1121 started from 3 August 2015.

---

**Appendix C**

**72<sup>nd</sup> Monthly EM&A Report for Works Contract 1103 –  
Hin Keng to Diamond Hill Tunnels**

---

MTR Corporation Limited

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

Monthly EM&A Report No. 72

[Period from 1 to 31 January 2019]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(February 2019)

Certified by: Jacky Chan 

Position: Environmental Team Leader

Date: 12 February 2019



MTR Corporation Limited

**SCL1103 Hin Keng to Diamond  
Hill Tunnels Construction Stage -  
Environmental Services**

**Monthly Environmental Monitoring  
and Audit Report – January 2019**

228105-27

February 2019

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 228105-27

**Ove Arup & Partners Hong Kong Ltd**  
Level 5 Festival Walk  
80 Tat Chee Avenue  
Kowloon Tong  
Kowloon  
Hong Kong  
[www.arup.com](http://www.arup.com)

**ARUP**

# Contents

---

	Page
<b>1 Environmental Status</b>	<b>6</b>
1.1 Project Background	6
1.2 Construction Programme	6
1.3 Work Undertaken During the Reporting Month	6
1.4 Project Organization	7
1.5 Project Area and Environmental Monitoring locations	7
1.6 Impact Monitoring Schedule	7
1.7 Status of Environmental Licensing and Permitting	8
1.8 Purpose of the Report	8
<b>2 Implementation Status</b>	<b>9</b>
2.1 Implementation Status of Mitigation Measures	9
2.2 Updated Implementation Schedule	9
<b>3 Air Quality Monitoring</b>	<b>10</b>
3.1 Air Quality Monitoring Requirements	10
3.2 Air Quality Monitoring Methodology	11
3.3 Monitoring Results and Observations	13
<b>4 Noise Monitoring</b>	<b>14</b>
4.1 Noise Monitoring Requirements	14
4.2 Noise Monitoring Methodology	15
4.3 Monitoring Results and Observations	16
<b>5 Landscape and Visual Monitoring</b>	<b>18</b>
5.1 Introduction	18
5.2 Mitigation Measures	18
<b>6 Waste Disposal</b>	<b>19</b>
<b>7 Cultural Heritage</b>	<b>20</b>
<b>8 Hazard</b>	<b>21</b>
<b>9 Environmental Performance</b>	<b>22</b>
9.1 Environmental Site Inspection	22
9.2 Summary of Environmental Complaint	23
9.3 Summary of Environmental Non-Compliance	23
9.4 Summary of Environmental Summon and Successful Prosecution	23

<b>10</b>	<b>Future Key Issues</b>	<b>24</b>
10.1	Key Issues for the Coming Month	24
10.2	Environmental Monitoring Program for the Coming Month	24
10.3	Construction Program for the Coming Month	24
<b>11</b>	<b>Conclusions and Recommendations</b>	<b>25</b>
11.1	Conclusions	25
11.2	Recommendations	25
<b>12</b>	<b>Reference</b>	<b>27</b>

## Figures

- Figure 1.1: Locations of Project Works Areas – General Site Layout of Hing Keng Works Area (Sheet 1 of 6)
- Figure 1.2: Locations of Project Works Areas – General Site Layout of Diamond Hill Works Area (Sheet 2 of 6)
- Figure 1.3: Locations of Project Works Areas – Site layout Plan of Fung Tak EAP/EEP (Sheet 3 of 6)
- Figure 1.4: Locations of Project Works Areas – Site Layout Plan of Ma Chai Hang Shaft (Sheet 4 of 6)
- Figure 1.5: Locations of Project Works Areas – General Site Layout of Shui Chuen O Works Area (Sheet 5 of 6)
- Figure 1.6: Locations of Project Works Areas – General Alignment of Contract 1103 (Sheet 6 of 6)
- Figure 1.7: Project Organisation – Environmental Management
- Figure 1.8: Location of Dust Monitoring Stations (Sheet 1 of 3)
- Figure 1.9: Location of Dust Monitoring Stations (Sheet 2 of 3)
- Figure 1.10: Location of Dust Monitoring Stations (Sheet 3 of 3)
- Figure 1.11: Location of Noise Sensitive Receiver (Construction Airborne Noise) (Sheet 1 of 3)
- Figure 1.12: Location of Noise Sensitive Receiver (Construction Airborne Noise) (Sheet 2 of 3)
- Figure 1.13: Location of Noise Sensitive Receiver (Construction Airborne Noise) (Sheet 3 of 3)

## Appendices

- Appendix A: Construction programme
- Appendix B: Environmental Monitoring Programme in the Reporting Month
- Appendix C: Environmental Mitigation Implementation Schedule (EMIS)
- Appendix D: Calibration Certificates for Air Monitoring Equipment
- Appendix E: Dust Results
- Appendix F: Wind Data
- Appendix G: Calibration Certificates of Noise Monitoring Equipment
- Appendix H: Noise Results
- Appendix I: Event/Action Plan for Air Quality, Airborne Noise and Landscape and Visual
- Appendix J: Monthly Waste Flow Table
- Appendix K: Environmental Monitoring Programme for Coming Month
- Appendix L: Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

## Executive Summary

---

This is the seventy second Environmental Monitoring and Audit (EM&A) report prepared by Ove Arup & Partners Hong Kong Limited (Arup), the designated Environmental Team (ET), for the Project “SCL1103 Hin Keng to Diamond Hill Tunnels”. Construction works of this works contract commenced on 14 February 2013 and this report presents the results of EM&A works conducted in the month of January 2019 (1 to 31 January 2019).

In the reporting month, the following activities took place for the Project:

- Site Clearance & Backfilling Works at Fung Tak;
- Civil & Structural (C&S) Works, Site Clearance, Architectural Builders Works and Finishes (ABWF) and Reprovisioning, Remedial and Improvement Works (RRIW) at Ma Chai Hang; and
- Storage Area at Shui Chuen O.

Air Quality and noise monitoring were performed and the results were checked and reviewed. Site audits were conducted on a weekly basis. The implementation of the environmental mitigation measures, Event and Action Plans and environmental complaint handling procedures were checked.

Impact monitoring was carried out at 1 air quality and 1 noise monitoring station during the reporting month.

### **Environmental Monitoring Works – Breaches of Action and Limit Levels**

#### ***Air Quality***

All measured 24-hour TSP concentrations in the reporting month were below the Action and Limit Levels.

#### ***Noise***

No exceedence of Limit Level of regular construction noise was recorded during the reporting month.

#### ***Landscape and Visual Audit***

Bi-weekly inspection for landscape and visual mitigation measures have been stopped since the completion of landscape works at HIK on 16 Nov 2018. No inspection were conducted during the reporting month.

#### ***Waste Disposal***

Inert C&D materials with an actual amount of 112 m<sup>3</sup> were generated and disposed of at public fill in TKO137FB/TM38FB. In addition, 12 m<sup>3</sup> of general refuse was generated and disposed of at NENT/SENT/WENT landfill.

#### ***Hazard***

No blasting activity was carried out during the reporting month.

## **Environmental Auditing**

A total of 5 environmental site audits were conducted on a weekly basis in the reporting month. The first site inspection was on 4 January 2019 and the final was undertaken on 31 January 2019. An IEC joint site audit was undertaken on 24 January 2019. No non-conformance to the environmental requirements was identified during the reporting period.

## **Complaint Log**

No complaints were received during the reporting period.

## **Notifications of Summons and Successful Prosecutions**

No summons or prosecution related to the environmental issues were made against the Project in the reporting period.

## **Reporting Changes**

There were no reporting changes during the reporting month.

## **Future Key Issues**

Waste management is a key environmental issue. The waste management plan should be strictly followed in accordance with the requirements described in the EIA report.

Water Quality impact is also a key environmental issue. The drainage system should be well maintained. All wastewater generated within the site shall be collected and treated prior to discharge.

Construction noise is also a key environmental issue. The implemented construction noise mitigation measures should also be maintained and improved as necessary. Especially in restricted hours, the conditions stipulated in the CNPs should be strictly followed when the construction works were carried out during restricted hours.

Construction dust is also key environmental issue. The implemented construction dust mitigation measures including covering of exposed slope / soil with tarpaulin sheet etc., should be maintained and improved as necessary. Adequate water spraying should be provided for the unpaved area to minimize dust disturbance.

# 1 Environmental Status

## 1.1 Project 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 1103 covers the construction of the tunnels between Diamond Hill (DIH) and Hin Keng (HIK).

## 1.2 Construction Programme

An up-to-date rolling construction programme is attached in **Appendix A**.

## 1.3 Work Undertaken During the Reporting Month

The major construction activities carried out by the Contractor in the reporting month are summarized in **Table 1.1**. Location of the works area is indicated in **Figures 1.1** to **1.6**. The structure of the project organisation in relation to the environmental management is shown in **Figure 1.7**. Contacts of key environmental staff of the Project are shown in **Table 1.2**.

**Table 1.1** Construction Activities in the Reporting Month

Locations <sup>[1]</sup>	Major Works Undertaken
Fung Tak	Site Clearance & Backfilling Works
Ma Chai Hang	C&S Works, Site Clearance, ABWF & RRIW
Shiu Chuen O	Storage Area

## 1.4 Project Organization

Contacts of key environmental staff of the Project and are shown in **Table 1.2**.

**Table 1.2** Contacts of Key Environmental Staff

Organisation	Name	Telephone
<b>Project Proponent: MTRC</b> Engineer's Representative SCL Project-wide Environmental Team Leader	Sammi Wong Lisa Poon	3767 0268 2688 1283
<b>Independent Environmental Checker: Meinhardt Infrastructure &amp; Environment Ltd.</b> Independent Environmental Checker	Fredrick Leong	2859 1739
<b>Contractor: VINCI Construction Grands Projets</b> Project Director IMS Manager	Francois Dudouit Keith Lee	3765 5610 3765 5657
<b>Contractor's Environmental Team: Ove Arup &amp; Partners Hong Kong Ltd.</b> Designated Environmental Team Leader for Works Contract 1103	Jacky Chan	2268 5292

## 1.5 Project Area and Environmental Monitoring locations

The Project area is shown in **Figures 1.1 to 1.6**, while **Table 1.3** and **Figures 1.8 to 1.13** show the names and locations of the monitoring stations.

**Table 1.3** Summary of Air Quality and Noise Monitoring Stations

ID	Premise
<b>Air Quality</b>	
DMS-1	C.U.H.K.A.A. Thomas Cheung School
DMS-2	Price Memorial Catholic Primary School
DMS-3 <sup>(Note 2)</sup> / DMS-4 <sup>(Note 3)</sup>	Hong Kong Sheng Kung Hui Nursing Home <sup>(Note 1)</sup>
<b>Noise</b>	
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School
NMS-CA-2	Price Memorial Catholic Primary School
NMS-CA-3 <sup>(Note 2)</sup> / NMS-CA-4 <sup>(Note 3)</sup>	Hong Kong Sheng Kung Hui Nursing Home

Notes:

Note 1: Hong Kong Sheng Kung Hui Nursing Home was selected as an alternative monitoring location to Shek On House.

Note 2: Station ID as identified in approved EM&A Manual / EIA Report for SCL (TAW - HUH).

Note 3: Station ID as identified in approved EM&A Manual / EIA Report for SCL (HHS).

## 1.6 Impact Monitoring Schedule

Environmental monitoring and audit was carried out in accordance with the requirements stipulated in the EM&A Manual. Air quality and noise monitoring as well as weekly site audit schedule for the reporting month with respect to the construction programme is shown in **Appendix B**.



## 1.7 Status of Environmental Licensing and Permitting

All permits/licences for the reporting month are summarised in **Table 1.4**. They are all properly kept by the contactor at their site office.

**Table 1.4** Summary of Environmental Licensing Status

Types of Permits / Licenses	Reference No.	Site	Valid from	Valid to
Environmental Permit	EP-438/2012/K	All	10 Sep 2014	Throughout the Contract
Discharge License under WPCO	WT00029963-2017	Hin Keng	1 March 2018	31 Dec 2022
	WT00029952-2017	Hin Keng	1 March 2018	31 Dec 2022
	WT00031561-2018	Fung Tak	18 Sep 2018	31 Mar 2023
	WT00031189-2018	Ma Chai Hang	29 Jun 2018	30 Apr 2023
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	351345	All	22 Oct 2012	NA
Chemical Waste Producer Registration	5213-759-V2179-01	Hin Keng	13 Dec 2012	Throughout the Contract
	5213-281-V2179-03	Fung Tak	2 Feb 2015	Throughout the Contract
	5213-282-V2180-02	Ma Chai Hang	18 Mar 2013	Throughout the Contract
Billing Account for Disposal of Construction Waste	7016250	All	6 Nov 2012	Throughout the Contract

## 1.8 Purpose of the Report

The purpose of this monthly EM&A report is to provide the information on monitoring methodology, monitoring results, environmental permit status, site audit findings, recommendations and conclusions during the construction of this works contract for the EM&A conducted during the construction period. This is the seventy second monthly EM&A report summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the air quality, noise, ecology, waste management, landscape and visual monitoring and environmental site audit from 1 to 31 January 2019.

## 2 Implementation Status

### 2.1 Implementation Status of Mitigation Measures

During weekly site inspections, the environmental protection, and pollution control/mitigation measures in accordance with the requirements stipulated in the EIA were observed. The key observations and ET's corresponding recommendations while the Contractor's response and follow-up status are described in **Section 7.1**.

### 2.2 Updated Implementation Schedule

According to the Environmental Permit, the mitigation measures detailed in the permits are required to be implemented. The Implementation Schedule of Mitigation Measures was inspected during the weekly site inspections in reporting month. The details of the findings/observations are described in **Section 7.1**. An updated summary of the Implementation Schedule of Mitigation Measures is presented in **Appendix C**. The status of the required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 2.1**.

**Table 2.1** Status of Required Submissions under the EP

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (December 2018)	14 January 2019

## 3 Air Quality Monitoring

### 3.1 Air Quality Monitoring Requirements

#### Monitoring Parameters

Regular 24-hour TSP levels shall be monitored during the construction stage while 1-hour TSP levels shall be required to monitor in case of complaints received.

#### Monitoring Frequency

The monitoring frequency is summarised in **Table 3.1**.

**Table 3.1** Air quality monitoring parameters and frequency

Parameters	Monitoring Frequency
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days (as required in case of complaints)

#### Monitoring Locations

In accordance with the EM&A Manual and the subsequent Baseline Monitoring Report, three air quality monitoring locations during construction stage are required. The locations of the three air quality monitoring stations are shown below in **Table 3.2**:

**Table 3.2** Air Quality Monitoring Locations

ID	Premise
DMS -1	C.U.H.K.A.A. Thomas Cheung School <sup>(Note 5)</sup>
DMS -2	Price Memorial Catholic Primary School
DMS-3 <sup>(Note 2)</sup> / DMS-4 <sup>(Note 3)</sup>	Hong Kong Sheng Kung Hui Nursing Home <sup>(Note 1)</sup> <sup>(Note 4)</sup>

Notes:

- Note 1: Hong Kong Sheng Kung Hui Nursing Home was selected as an alternative monitoring location to Shek On House.
- Note 2: Station ID as identified in approved EM&A Manual / EIA Report for SCL (TAW - HUH).
- Note 3: Station ID as identified in approved EM&A Manual / EIA Report for SCL (HHS).
- Note 4: The associated monitoring was carried out under Works Contract SCL1106 since October 2016.
- Note 5: The cessation of monitoring works at DMS-1 was approved by EPD in Mid-July. The last monitoring date was 16 July 2018.

#### Wind Monitoring

Wind monitoring data including wind speed and wind directions shall be collected from Hong Kong Observatory – Kai Tak and Sha Tin Meteorological Stations and shown in **Appendix F**.

#### Environmental /Quality Performance Limits

The monitoring results will be checked against the Action and Limit levels described in the Baseline Monitoring Report, of which they are excerpted and summarised in **Tables 3.3** and **3.4**.

**Table 3.3** Action and Limit Level for Air Quality Monitoring of 24-hour TSP level

Level	Air Monitoring Stations		
	DMS-1	DMS-2	DMS-3 / DMS-4
Action Level, $\mu\text{g}/\text{m}^3$	148.7	167.4	159.1
Limit Level, $\mu\text{g}/\text{m}^3$	260		

**Table 3.4** Action and Limit Level for Air Quality Monitoring of 1-hour TSP level

Level	Air Monitoring Stations		
	DMS-1	DMS-2	DMS-3 / DMS-4
Action Level, $\mu\text{g}/\text{m}^3$	283.9	276.2	278.4
Limit Level, $\mu\text{g}/\text{m}^3$	500		

Note:

Note 1: 1-hr TSP monitoring would be required in case of receiving complaints.

## 3.2 Air Quality Monitoring Methodology

### 3.2.1 Monitoring Equipment

High Volume Sampler (HVS) was used to monitor the 24-hour TSP. **Table 3.5** shows the equipment used for the air quality monitoring.

**Table 3.5** Air Quality Equipment List for Impact Air Quality Monitoring

Equipment	Manufacturer & Model No	Measurement Parameter	Serial No.
High Volume Sampler	TE-5170	24-hour TSP	3761
Fibreglass Filter	G810		-
HVS Calibration Kit	TE-5025A		2421

### 3.2.2 Maintenance and Calibration

#### High Volume Sampler

The HVSs and their accessories were frequently checked and maintained in accordance with the manufacturer's operation and maintenance manual. The maintenance included checking of supporting screen and gasket, as well as routine replacement of motor carbon brushes for the blower motor. The power cords and power supply were checked each time before sampling to ensure proper operation.

The HVSs were calibrated at 2-month intervals using TE-5025A calibration kit which is re-calibrated by the manufacturer after one year of use. The calibration spreadsheets of the HVSs and calibration certificate of the calibration kit are provided in **Appendix D**.

### 3.2.3 Monitoring Procedures

#### High Volume Sampler

Specifications of the HVS are as follows:

- 0.6 – 1.7  $\text{m}^3/\text{min}$  (20 – 60SCFM);

- Equipped with a timing/control device with +/- 5 minutes accuracy for 24 hour operation;
- Installed with elapsed time meter with +/- 2 minutes accuracy for 24 hour operation;
- Capable of providing a minimum exposed area of 406 cm<sup>2</sup> (63in<sup>2</sup>);
- Flow control accuracy: +/-2.5% deviation over 24-hour sampling period;
- Equipped with a shelter to protect the filter and sampler;
- Incorporated with an electronic mass flow rate controller or other equivalent devices;
- Equipped with a flow recorder for continuous monitoring;
- Provided with a peaked roof inlet;
- Incorporated with a manometer;
- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- Easy to change the filter; and
- Capable of operating continuously for 24-hour period.

The HVSs were equipped with an electronic mass flow controller and calibrated against a traceable standard at regular intervals. All equipment, calibration kit and filter papers were clearly labelled.

The relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and other special phenomena observed and work progress of the concerned site were recorded.

A HOKLAS accredited laboratory (ALS Technichem (HK) Pty Ltd (HOKLAS no.: 066)), in accordance with their standard QA/QC procedures, with constant temperature and humidity control as well as equipped with necessary measuring and conditioning instruments to handle the 24-hour TSP samples was employed for sample analysis, and equipment calibration and maintenance. Filter papers of size 8"x10" were labelled before sampling. They were inspected clean with no pin holes and conditioned in a humidity controlled chamber for over 24-hour and be pre-weighed before use for the sampling.

The 24-hour TSP levels were measured by following the standard High Volume Method for Total Suspended Particulates as set out in the Title 40 of the United States Code of Federal Regulations, Chapter 1 (Part 50), Appendix B. TSP was sampled by drawing air through a conditioned, pre-weighted filter paper inside the HVS at a controlled air flow rate. After 24-hour sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag, and then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg. All the collected samples shall be kept in a good condition for 6 months before disposal.

### 3.3 Monitoring Results and Observations

#### 3.3.1 Weather Condition

The intense winter monsoon that started to affect Hong Kong in late December 2018 continued its dominance and brought cold weather to Hong Kong in the beginning of January 2019. Hong Kong was occasionally influenced by the northeast monsoon for the rest of January 2019 which caused the local weather to become cloudy with a few rain patches.

#### 3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 4, 10, 16, 22 and 28 January 2019 at DMS-2. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix E** and are summarised in **Table 3.6**. The graphical presentations of the monitoring results are provided in **Appendix E**. Wind data obtained from the Hong Kong Observatory – Kai Tak station during the reporting period are presented in **Appendix F**.

**Table 3.6** Summary of Impact Air Quality Monitoring Results

Monitoring Station	24- hour TSP Monitoring Results ( $\mu\text{g}/\text{m}^3$ )		Action Level	Limit Level
	Average	Range <sup>(Note 1)</sup>		
DMS-2	57.8	47.8 – 91.4	167.4	260

Note:

Note 1: Range = Minimum TSP Value – Maximum TSP Value.

All 24-hour TSP measurements during the reporting month were below the Action/Limit Level. No exceedance of action and limit level was found.

The event and action plan is provided in **Appendix I**.

#### 3.3.3 General Observations

Major construction works including site clearance & backfilling works at Fung Tak, C&S works, site clearance, ABWF and RRIW at Ma Chai Hang and storage at Shui Chuen O.

## 4 Noise Monitoring

### 4.1 Noise Monitoring Requirements

#### 4.1.1 Impact Monitoring

##### Monitoring Parameters

Construction noise shall be measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{10}$  and  $L_{90}$  shall also be recorded as supplementary reference information for data auditing.

##### Monitoring Frequency

Noise measurements shall be conducted on a weekly basis. The monitoring time periods, monitoring parameters and frequency are summarised in **Table 4.1**.

**Table 4.1** Construction Noise Monitoring Parameters and Frequency

Time Period (when construction activity is found)	Parameters	Monitoring Frequency
Between 0700-1900 hours on normal weekdays	$L_{eq}(30 \text{ min})$	Once per week

##### Monitoring Location

In accordance with the EM&A Manual and the subsequent Baseline Monitoring Report, three noise monitoring locations during the construction stage are required, namely:

**Table 4.2** Noise Monitoring Locations

ID	Premise
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School (Note 5)
NMS-CA-2	Price Memorial Catholic Primary School
NMS-CA-3 <sup>(Note 2)</sup> / NMS-CA-4 <sup>(Note 3)</sup>	Hong Kong Sheng Kung Hui Nursing Home (Note 1)(Note 4)

Notes:

- Note 1: Hong Kong Sheng Kung Hui Nursing Home was selected as an alternative monitoring location to Shek On house.
- Note 2: Station ID as identified in approved EM&A Manual / EIA Report for SCL (TAW - HUH).
- Note 3: Station ID as identified in approved EM&A Manual / EIA Report for SCL (HHS).
- Note 4: The associated monitoring was carried out under Works Contract SCL1106 since October 2016.
- Note 5: The cessation of monitoring works at NMS-CA-1 was approved by EPD in Mid-July. The last monitoring date was 17 July 2018.

##### Environmental /Quality Performance Limits

The monitoring results will be checked against the Action and Limit levels described in the Baseline Monitoring Report, of which they are excerpted and summarised in **Tables 4.3**.

**Table 4.3** Action and Limit Levels of construction noise

Location <sup>(Note 1)</sup>	Time Period <sup>(note 3)</sup>	Action Level	Limit Level dB(A)
NMS-CA-1 & NMS-CA-2	0700 - 1900 hours on normal weekdays	When one documented complaint is received	70/65 <sup>(Note 2)</sup>
NMS-CA-3 / NMS-CA-4			70

Notes:

1. The detail of monitoring locations was presented in Table 1.3.
2. For normal day-time working hours, the noise criteria is 70 dB(A) and 65 dB(A) for normal teaching periods and examination periods respectively.
3. If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

### 4.1.2 Continuous Noise Monitoring

With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared and submitted under EP Condition 2.10, continuous noise monitoring was conducted in April 2013 at C.U.H.K.A.A. Thomas Cheung School only due to the prediction of residual airborne construction noise impacts exceeding the relevant noise criteria. No continuous noise monitoring is required during the reporting month as per the CNMP.

## 4.2 Noise Monitoring Methodology

### 4.2.1 Monitoring Equipment

Noise level was measured by a Sound Level Meter (SLM) in terms of A-weighted equivalent continuous sound pressure level.  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded as supplementary information for data auditing. **Table 4.4** shows the equipment list of the noise monitoring.

**Table 4.4** Noise Equipment List for Impact Noise Monitoring

Equipment	Manufacturer & Model No.	Serial No.	Precision Grade
SLM	Rion NA-28	00511639	IEC 61672 Class 1
Sound level calibrator	Rion NC-74	34304660	IEC 60942 Class 1

### 4.2.2 Maintenance and Calibration

The SLM is in compliance with the standard International Electrotechnical Commission (IEC) 61672 Class 1 which is the most recent SLM standard and the one that modern measurement regulations require, while the Sound Level Calibrator is in compliance with the standard IEC 60942 Class 1. All equipment are calibrated externally. The calibration certificates for the noise equipment are given in **Appendix G**.



### 4.2.3 Monitoring Procedures

- The SLM and battery were checked to ensure that they are in proper condition. The SLM was set on a tripod at 1.2m above ground and at least 1m from the exterior of the building façade;
- Before conducting the measurement, the SLM was calibrated by an acoustical calibrator;
- Measurement parameter was set to A-weighted sound pressure level. The time weighting was set in fast response and the time period of measurement at 30 minutes;
- Wind speed was checked during noise monitoring to ensure the steady wind speed does not exceed 5m/s, or wind with gusts does not exceed 10m/s;
- Any abnormal conditions that generated intrusive noise during the measurement was recorded on the field record sheet;
- After each measurement, the equivalent continuous sound pressure level ( $L_{eq}$ ),  $L_{10}$  and  $L_{90}$  were recorded on the field record sheet;
- After conducting the measurement, the SLM was calibrated by a sound level calibrator; and
- The SLM was re-calibrated by the sound level calibrator to confirm that there is no significant drift of reading. Measurements shall be accepted as valid only if the calibration levels before and after the noise measurement agrees to within 1.0 dB.

## 4.3 Monitoring Results and Observations

### 4.3.1 Weather Condition

The intense winter monsoon that started to affect Hong Kong in late December 2018 continued its dominance and brought cold weather to Hong Kong in the beginning of January 2019. Hong Kong was occasionally influenced by the northeast monsoon for the rest of January 2019 which caused the local weather to become cloudy with a few rain patches.

### 4.3.2 Noise Monitoring Results

#### Impact Monitoring

Monitoring of the construction noise level was conducted on 2, 11, 19, 23 and 29 January 2019 at NMS-CA-2. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix H** and are summarised in **Table 4.5**. The graphical presentations of the monitoring results are provided in **Appendix H**.

**Table 4.5** Summary of Impact Noise Monitoring at Location NMS-CA-2

Date	Time	Measured Noise Level, dB(A)	Baseline Noise Level, dB(A)	Construction Noise Level(Note1), dB(A)	Limit Level (Note 2)
		Leq (30min)	Leq (30min)	Leq (30min)	dB(A)
2-Jan-19	10:00-10:30	61.3	66.0	< Baseline Level	70.0
11-Jan-19	15:50-16:20	61.7		< Baseline Level	
19-Jan-19	10:30-11:00	61.6		< Baseline Level	
23-Jan-19	11:00-11:30	61.1		< Baseline Level	
29-Jan-19	10:30-11:00	62.5		< Baseline Level	

Notes:

1. Construction Noise Level = Measured Noise Level – Baseline Noise Level.
2. For normal day-time working hours, the noise criteria is 70 dB(A) and 65 dB(A) for normal teaching periods and examination periods respectively.

### 4.3.3 Exceedance of Limit and Action Levels for Construction Noise

No exceedance of Limit Level of regular construction noise was recorded during the reporting month.

The event and action plan is provided in **Appendix I**.

### 4.3.4 General Observations

The construction site has been under normal operation during the noise monitoring period and no unusual operation was observed.

## 5 Landscape and Visual Monitoring

---

### 5.1 Introduction

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 event and action plan is provided in **Appendix I**.

### 5.2 Mitigation Measures

Bi-weekly inspection for landscape and visual mitigation measures have been stopped since the completion of landscape works at HIK on 16 Nov 2018. No inspection were conducted during the reporting month.

## 6 Waste Disposal

The actual amounts of different types of waste generated by the activities of the Project during the reporting month are shown in **Table 6.1**. The monthly waste summary flow table is provided in **Appendix J**.

**Table 6.1** Amount of Waste Generated

Waste Type	Amount	Disposal Locations
Inert C&D Materials	112 m <sup>3</sup>	TKO137FB/TM38FB
Inert C&D Materials	0 m <sup>3</sup>	Reused in the Contract
Chemical Waste	0 kg	Disposed of by a licensed collector
Paper / cardboard packaging	0 kg	-
Plastic	0 kg	
Metal	0 kg	
General Refuse	12 m <sup>3</sup>	NENT/SENT/WENT Landfill

## 7 Cultural Heritage

---

In accordance with the EM&A Manual, appropriate vibration monitoring on the identified built heritage has been agreed with the Building Department (BD)/Geotechnical Engineering Office (GEO) under the requirement of Buildings Ordinance and/or Blasting Permit as appropriate. Vibration monitoring was not conducted at Wong Tai Sin Temple since no TBM was in operation during the reporting month.

## 8 Hazard

---

No blasting activity was carried out during the reporting month.

## 9 Environmental Performance

### 9.1 Environmental Site Inspection

Environmental site inspections were carried out on a weekly basis, with the IEC joint site inspection being carried out on 24 January 2019 to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly. A summary of the site inspections in the reporting month is presented in **Table 9.1**.

**Table 9.1** Key Findings of Weekly Environmental Site Audit

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
<b>Air</b>				
27 December 2018	Ma Chai Hang	The contractor was reminded to cover the stockpile properly.	Agreed with ET's Advice	The contractor rectified the issue and ensured that the stockpiles were covered properly. Closed 4 January 2019.
4 January 2019	Fung Tak	The contractor was reminded to spray water regularly at unpaved areas of the site to avoid dust disturbance.	Agreed with ET's Advice	The contractor rectified the issue and ensured that dust suppression measures were implemented. Closed 10 January 2019.
10, 17, 24 and 31 January 2019	Ma Chai Hang	The contractor was reminded to spray water regularly at unpaved areas of the site to avoid dust disturbance.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.
17 January 2019	Ma Chai Hang	The contractor was reminded to cover the stockpile when not in use.	Agreed with ET's Advice	The contractor rectified the issue and ensured that the stockpiles were covered when not in use. Closed 24 January 2019.
<b>Waste</b>				
31 January 2019	Ma Chai Hang	The contractor was reminded to store the chemicals at appropriate location and to provide drip tray for them.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.

## 9.2 Summary of Environmental Complaint

No environmental complaint was recorded in the reporting month. The updated statistical summary of complaint is presented in **Table 9.2**. The updated complaint logs are shown in **Appendix L**.

**Table 9.2** Summary of Complaints

Reporting Period	Complaint Statistics	
	Number	Cumulative
01/01/19 – 31/01/19	0	24

## 9.3 Summary of Environmental Non-Compliance

There was no non-compliance identified during the reporting month so review of the non-compliance was not required.

## 9.4 Summary of Environmental Summon and Successful Prosecution

No summons of prosecutions related to environmental issues were received or made against the project in the reporting month. Please refer to **Appendix L** for a Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions.



## 10 Future Key Issues

### 10.1 Key Issues for the Coming Month

Works to be undertaken in the coming reporting month are summarised in **Table 10.1** below.

**Table 10.1** Tentative Programme of Construction Works for the Coming Month

Locations <sup>[1]</sup>	Major Works Undertaken
Ma Chai Hang	C&S Works, Site Clearance, ABWF & RRIW
Shiu Chuen O	Storage Area

### 10.2 Environmental Monitoring Program for the Coming Month

Environmental monitoring and audit will be carried out in accordance with the requirements stipulated in the EM&A manual. Tentative air and noise monitoring as well as weekly site audit schedule for the coming month with respect to the construction programme is shown in **Appendix K**.

### 10.3 Construction Program for the Coming Month

The construction programme for the coming month is shown in **Appendix A**.

## 11 Conclusions and Recommendations

---

### 11.1 Conclusions

The construction phase of the project commenced on 14 February 2013. The EM&A programme has since been implemented, including air quality, noise and environmental site audits. Five environmental site audits were conducted in the reporting month.

No exceedance of the Limit Level of regular construction noise was recorded during the reporting month.

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 non-compliance event was recorded during the reporting period.

No complaint was received during the reporting period. No summons/prosecution was received during the reporting period.

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

### 11.2 Recommendations

Impact monitoring will continue to be carried out in the following month and will follow the requirements stipulated in the EM&A manual. Attention will be paid to the environmental issues identified in the EIA report and weekly site audit. Mitigation measures recommended in EIA report and Implementation Schedule of Mitigation Measure will be fully implemented.

Waste management is a key environmental issue. The waste management plan should be strictly followed in accordance with the requirements described in the EIA report.

Water Quality impact is also a key environmental issue. The drainage system should be well maintained. All wastewater generated within the site shall be collected and treated prior to discharge.

Construction noise is also a key environmental issue. The implemented construction noise mitigation measures should also be maintained and improved as necessary. Especially in restricted hours, the conditions stipulated in the CNPs should be strictly followed when the construction works were carried out during restricted hours.

Construction dust is also key environmental issue. The implemented construction dust mitigation measures including covering of exposed slope / soil with tarpaulin

sheet etc., should be maintained and improved as necessary. Adequate water spraying should be provided for the unpaved area to minimize dust disturbance.

## 12 Reference

---

- (1) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Final Environmental Impact Assessment Report. October 2011.
- (2) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Environmental Monitoring and Audit Manual. October 2011.
- (3) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Stabling Sidings at Hung Hom Freight Yard. Final Environmental Impact Assessment Report. October 2011.
- (4) MTR Corporation Limited. SCL - NEX/2206 EIA Study for Stabling Sidings at Hung Hom Freight Yard. Environmental Monitoring and Audit Manual. October 2011.

## Figures

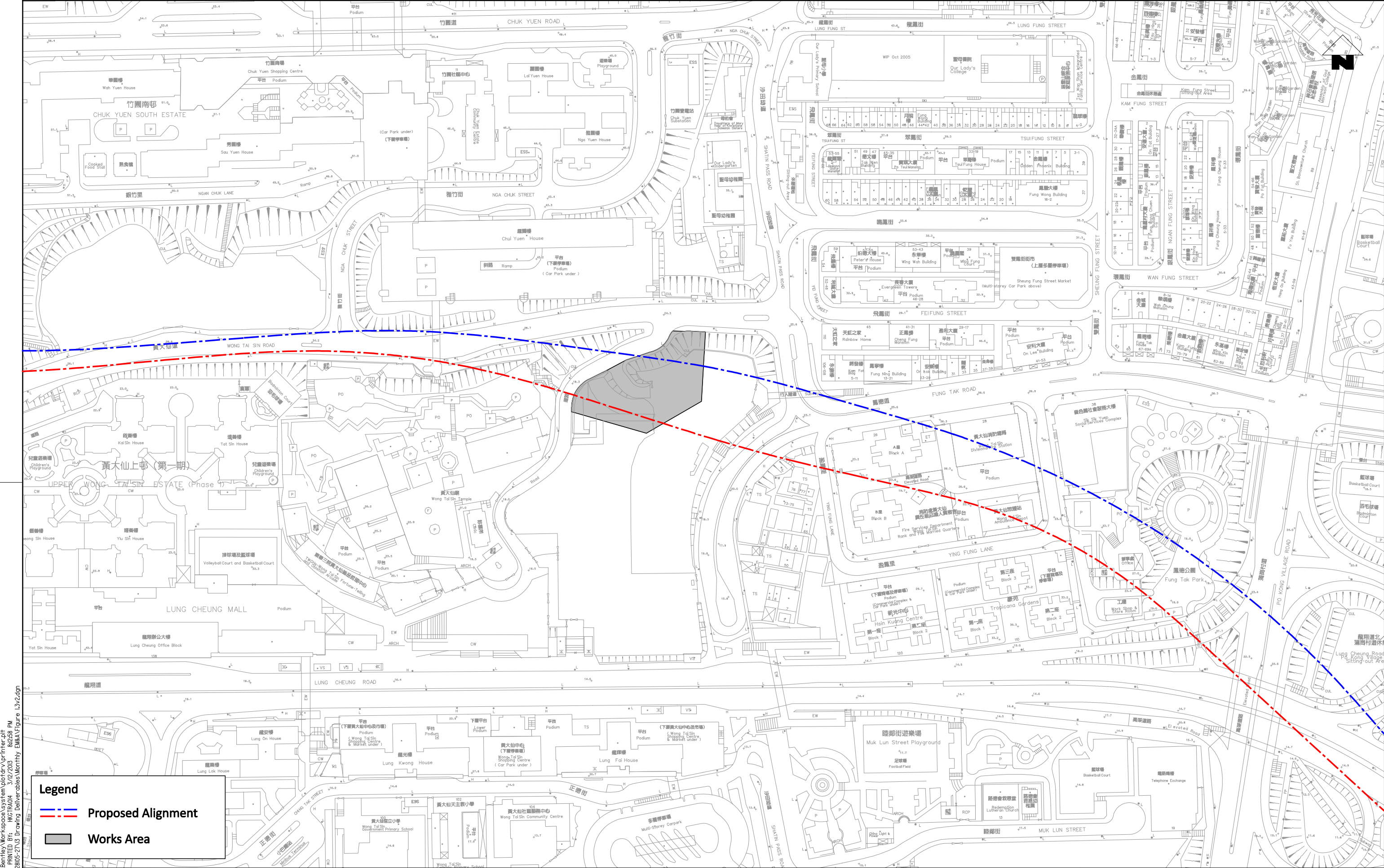
---











PLOT DRW: d:\Program Files\Bentley\Workspace\system\plotdrv\prnter.plt  
MODEL\$ H:\R04\4 3/27/2015  
GENV\project\22805-21\3 Drawing Deliverables\Wong\Wong EAP/EEP Figure 1.3.dgn

Legend

Proposed Alignment

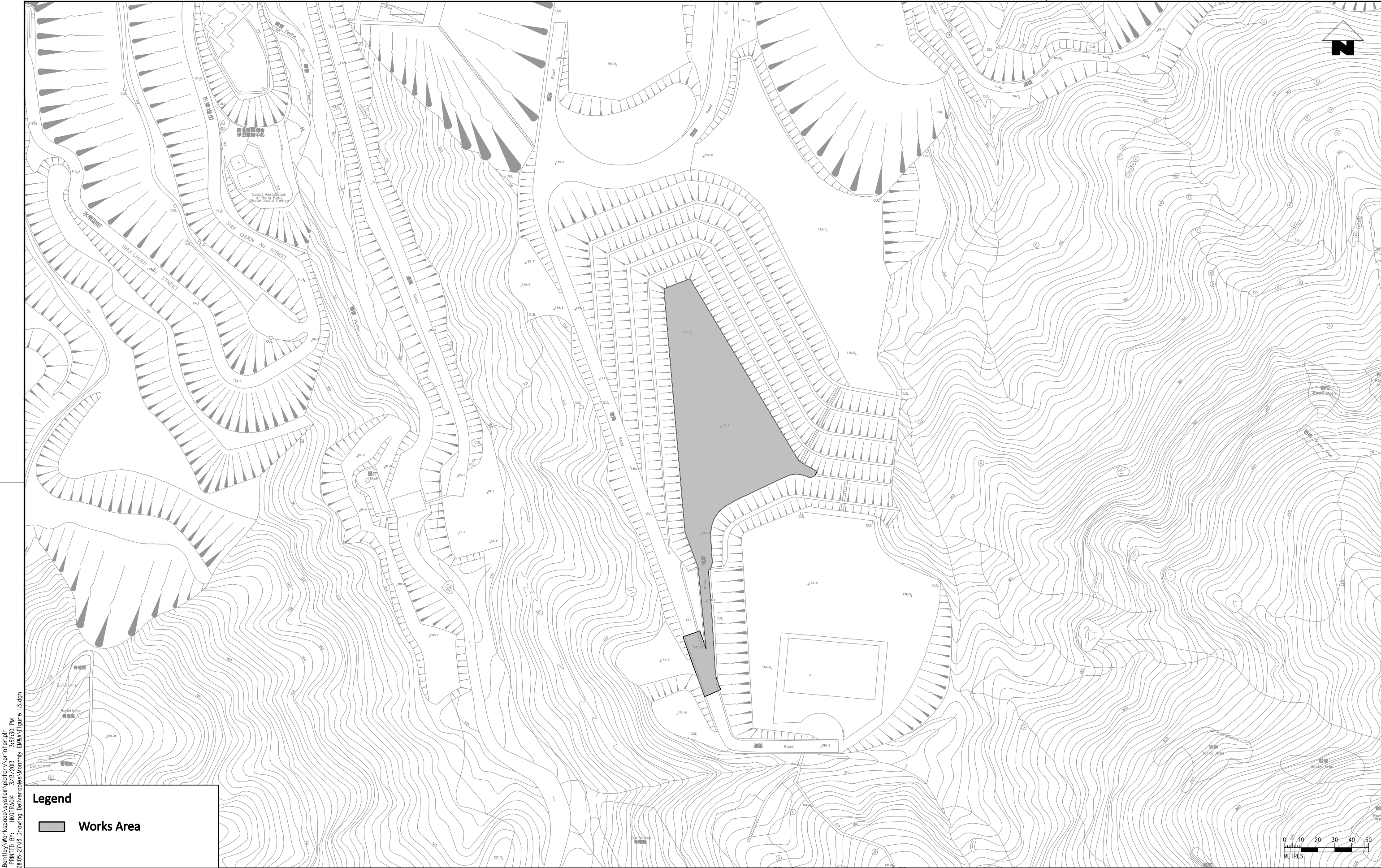
Works Area

FILENAME: G:\env\project\																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
---------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--










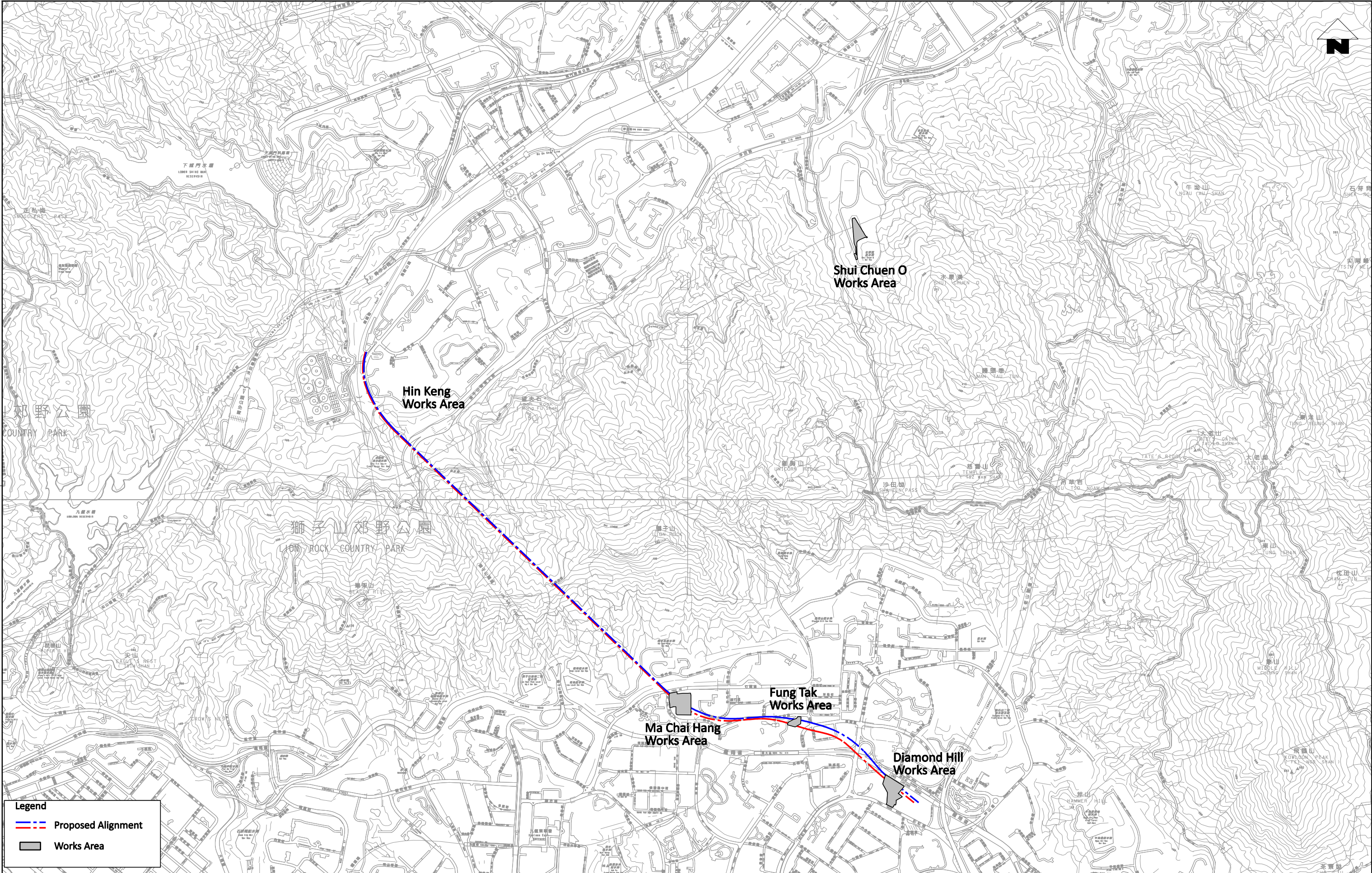
**Legend**

 **Works Area**

d:\Program Files\Bentley\Workspoe\system\plotdrv\printer.plt  
MODELS\$  
FILENAME: G:\env\project\22805-27\3 Drawing Deliverables\Monthly EN&AT\figure 1.5.dgn  
PRINTED BY: H6GTR04 3/13/2003 3:52:30 PM

												<div><div>DRAWNGL</div><div>DESIGNEDEL</div><div>CHECKEDFC</div><div>APPROVEDST</div><div>DATE02/13</div><div>DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008. COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.</div></div>				<div><div></div><div>SHATIN TO CENTRAL LINK</div><div>ORIGINATOR</div><div><div>ARUP</div><div>Ove Arup &amp; Partners Hong Kong Limited</div></div><div>CADD REF.</div></div>				TITLE CONTRACT 1103 HIK KENG TO DIAMOND HILL TUNNELS Locations of Project Works Area General Site Layout of Shui Chuen O Works Area (Sheet 5 of 6)			
REV	DESCRIPTION			BY	DATE	APPROVED	REV	DESCRIPTION			BY	DATE	APPROVED	SCALE 1 : 2000 (A3)	DRAWING NO. Figure 1.5	REV. A							
				A	FIRST ISSUE			GL	02/13	ST													




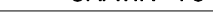


Legend

Proposed Alignment

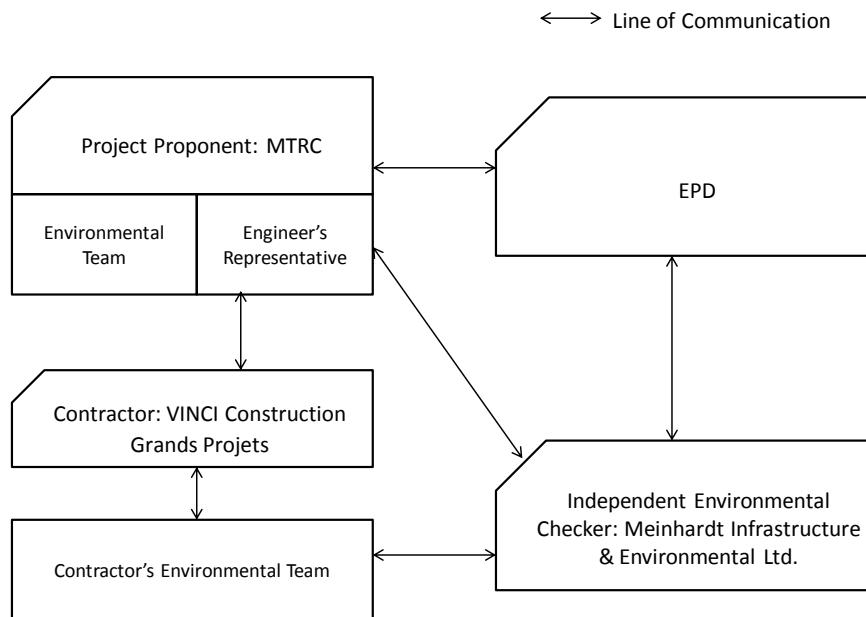
Works Area

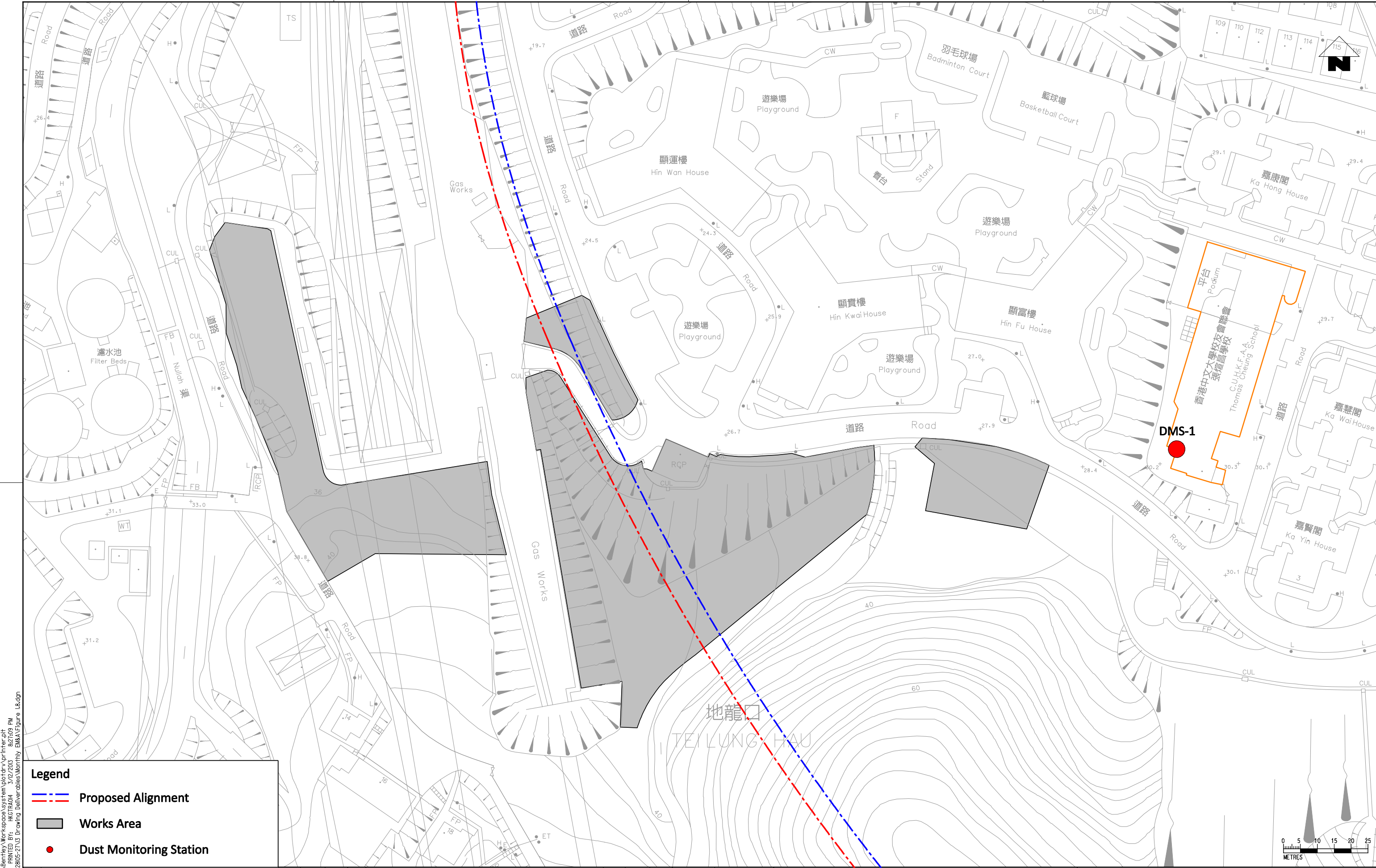
d:\Program Files\Bentley\Workspace\system\plotdrv\Printer.plt  
\$MODEL\$ PRINTED BY: HKGTRA04 3/13/2013 3:55:13 PM  
G:\env\Temp\David\Figure 1.6.dgn

												<div>DRAWNGL DESIGNEDGL CHECKEDCN APPROVEDST DATE03/13</div>				<div>MTR</div> <div>SHATIN TO CENTRAL LINK</div> <div>ORIGINATOR</div> <div>Ove Arup &amp; Partners Hong Kong Limited</div> <div>CADD REF.</div>				<div>TITLE</div> <div>CONTRACT 1103 HIN KENG TO DIAMOND HILL TUNNELS Locations of Project Works Areas - General Alignment of Contract 1103 (Sheet 6 of 6)</div> <div>SCALE 1:20000 (A3)</div> <div>DRAWING NO. Figure 1.6</div> <div>REV. B</div>			
								DO NOT SCALE DRAWINGS- ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008. COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.															
				B SECOND ISSUE		GL	03/13	ST															
				A FIRST ISSUE		GL	12/12	ST															
REV	DESCRIPTION			BY	DATE	APPROVED	REV	DESCRIPTION			BY	DATE	APPROVED										



**Figure 1.7 - Project Organisation for Environmental Works**





- Legend**
- Proposed Alignment
  - Works Area
  - Dust Monitoring Station

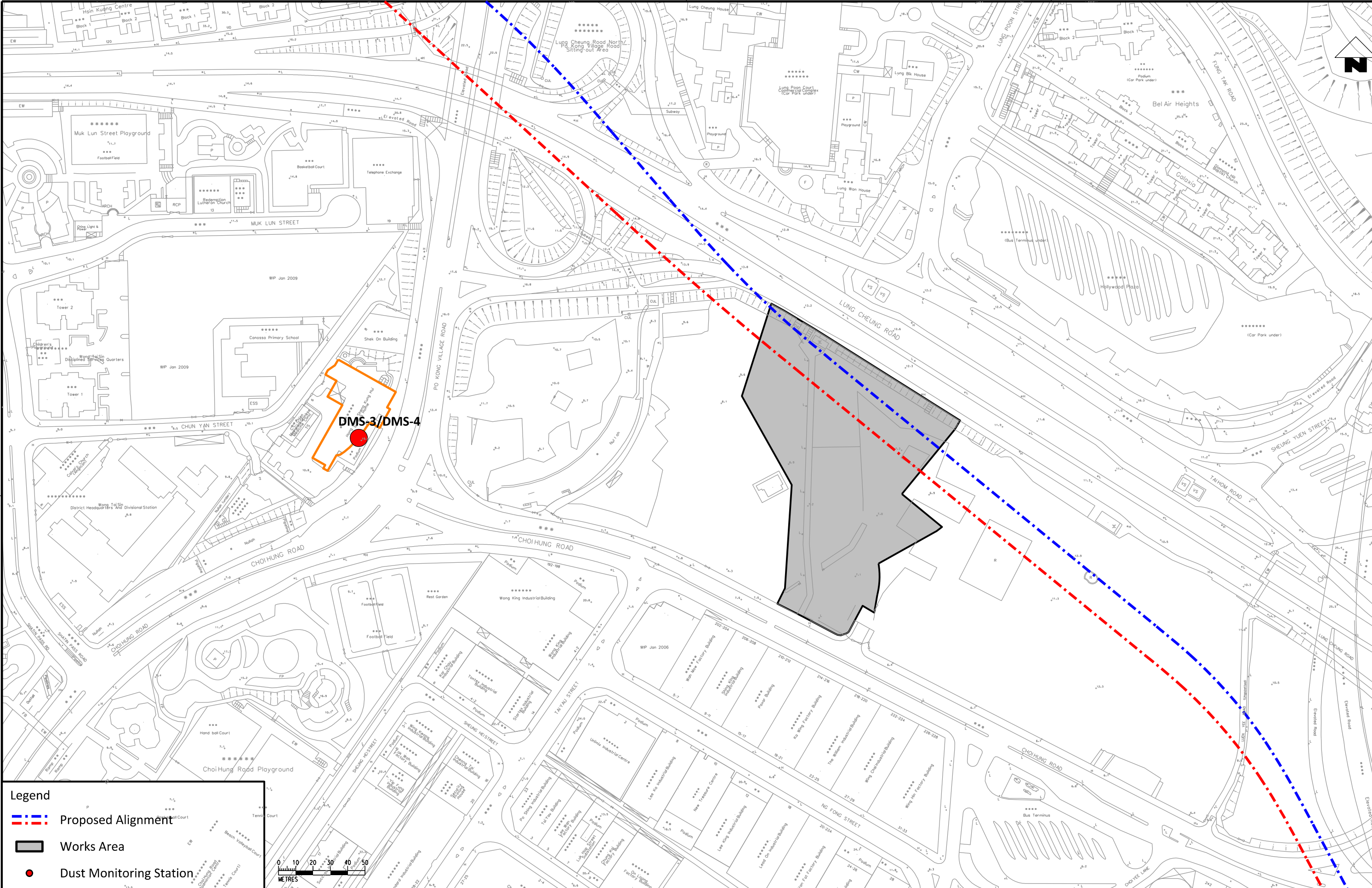
PLOT DRW: d:\Program Files\Bentley\Workspace\system\plotdrv\prntrn.ph  
\$MODELS: HKGTRADH  
FILENAME: g:\env\project\2205-21\3 Drawing Deliverables\Monthly EMA\Figure 1.8.dgn  
8/2/2013 8:21:03 PM

FILENAME:	G:\env\project																																																																																																																																																																																																																																																																																																																																																																																															
-----------	----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



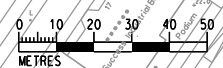






**Legend**

- Proposed Alignment
- Works Area
- Dust Monitoring Station



REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
					A	FIRST ISSUE	GL	12/12	ST

DRAWN	GL
DESIGNED	GL
CHECKED	CN
APPROVED	ST
DATE	12/12

**MTR**

SHATIN TO CENTRAL LINK

**ARUP** Ove Arup & Partners  
Hong Kong Limited

ORIGINATOR

CADD REF.

**CONTRACT 1103**  
**HIN KENG TO DIAMOND HILL TUNNELS**  
Locations of Proposed Dust Monitoring Stations  
(Sheet 3 of 3)

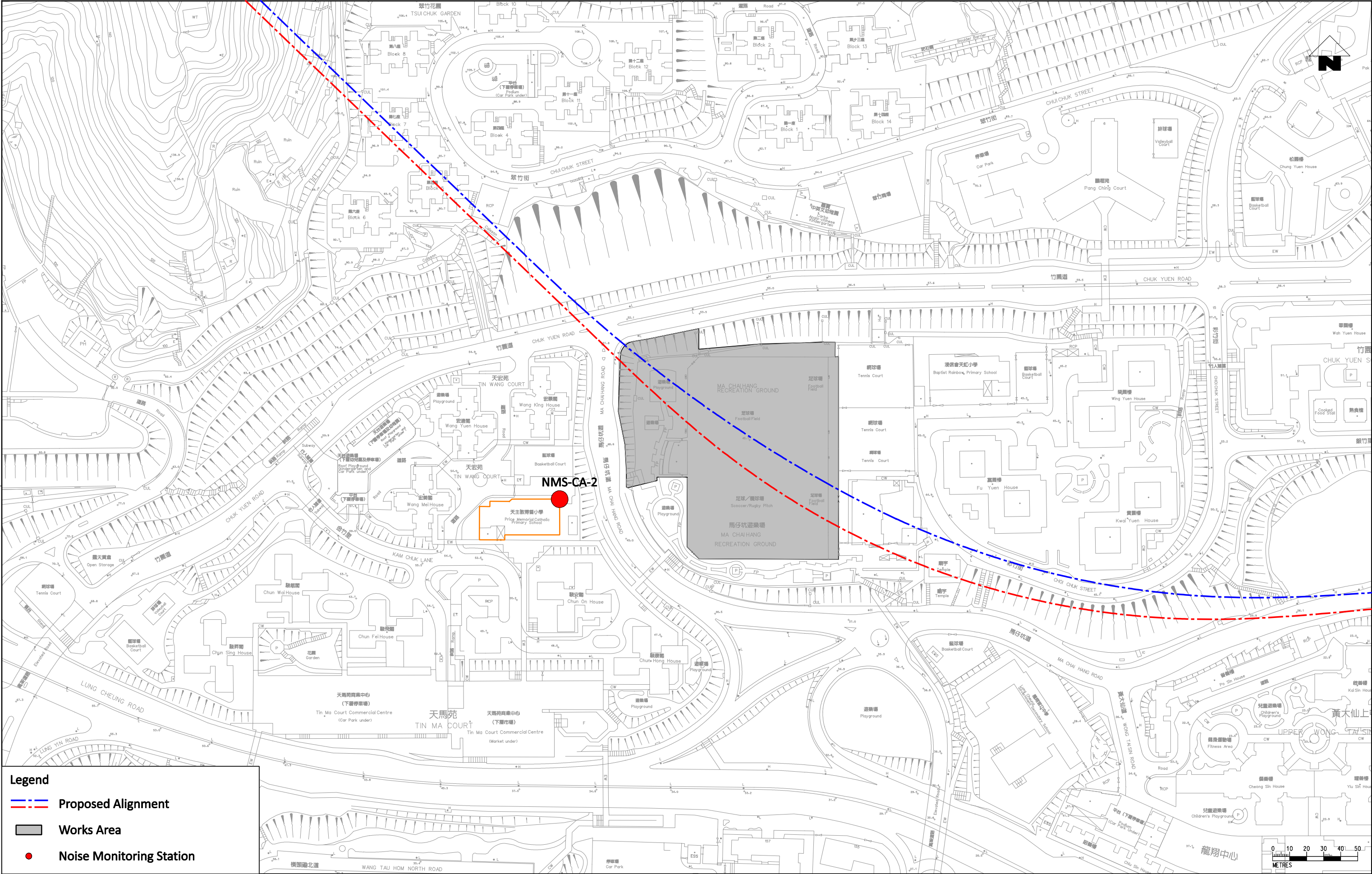
**SCALE** 1:2000 (A3)  
**DRAWING NO.** Figure 1.10  
**REV.** A







d:\Program Files\Bentley\Workspace\system\plotdrv\printer.plt  
PLOT DRW: 82323 PM  
MODELNAME: HKGRA04 3/12/2013  
FILENAME: G:\env\project\22805-2713 Drawing Deliverables\Worthy EM&A\Figure 1.12.dgn

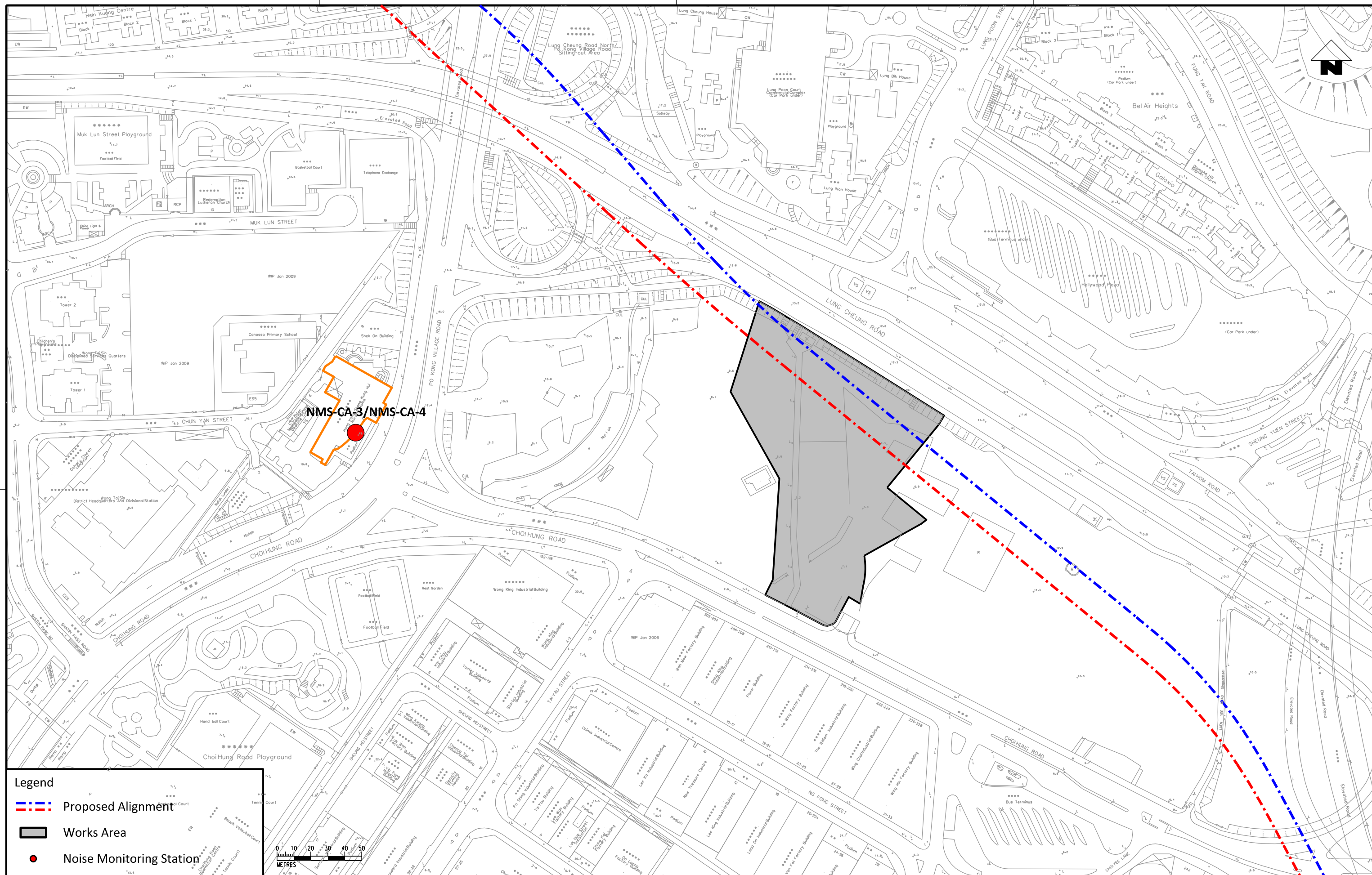




**Legend**

- Proposed Alignment
- Works Area
- Noise Monitoring Station

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--





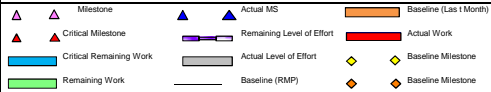
										DRAWN GL				SHATIN TO CENTRAL LINK		ORIGINATOR  Ove Arup & Partners Hong Kong Limited		TITLE CONTRACT 1103 HIN KENG TO DIAMOND HILL TUNNELS Locations of Noise Monitoring Stations (Construction Airborne Noise) (Sheet 3 of 3)	
										DESIGNED GL									
										CHECKED CN									
										APPROVED ST									
										DATE 12/12									
										DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.									
A FIRST ISSUE										GL 12/12 ST									
REV	DESCRIPTION				BY	DATE	APPROVED	REV	DESCRIPTION				BY	DATE	APPROVED	CADD REF.	SCALE 1:2000 (A3)	DRAWING NO. Figure 1.13	REV. A

## Appendix A

---

### Construction Programme

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Total Float	2019																											
							January				February				March				April				May											
							6	13	20	27	03	10	17	24	27	03	10	17	24	31	07	14	21	28	7	14	21	28						
CONTRACT 1103:- HIN KENG TO DIAMOND HILL TUNNELS																																		
PROJECT DATES																																		
Specific Limits (FOT A2)																																		
Schedule of Critical Dates (FOT A3)																																		
Schedule of Access Dates for Works Areas (PS A F3)																																		
COST CENTER F - MA CHAI HANG VENTILATION BUILDING (MCV)																																		
MCV - C&S Works																																		
MCV - Site clearance																																		
MCV - ABWF																																		
COST CENTER G - FUNG TAK EAP/EEP BUILDING (FTA)																																		
FTA - Site clearance																																		
FTA - Back filling																																		
COST CENTER M - RRIW																																		
RRIW - at Ma Chai Hang																																		



**Three Month Rolling Programme As of 31-Jan-2019**

Date	Revision	Checked	Approved
31-01-2019	NA	KAR	NA

## Appendix B

---

Environmental  
Monitoring  
Programme in  
Reporting Month

**SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels  
Impact Monitoring Schedule - January 2019**

Date		Air Quality	Noise	Site Inspection
		24-hours TSP	L <sub>Aeq</sub> , 30 min	
1-Jan-19	Tue			
2-Jan-19	Wed			
3-Jan-19	Thu			
4-Jan-19	Fri			
5-Jan-19	Sat			
6-Jan-19	Sun			
7-Jan-19	Mon			
8-Jan-19	Tue			
9-Jan-19	Wed			
10-Jan-19	Thu			
11-Jan-19	Fri			
12-Jan-19	Sat			
13-Jan-19	Sun			
14-Jan-19	Mon			
15-Jan-19	Tue			
16-Jan-19	Wed			
17-Jan-19	Thu			
18-Jan-19	Fri			
19-Jan-19	Sat			
20-Jan-19	Sun			
21-Jan-19	Mon			
22-Jan-19	Tue			
23-Jan-19	Wed			
24-Jan-19	Thu			
25-Jan-19	Fri			
26-Jan-19	Sat			
27-Jan-19	Sun			
28-Jan-19	Mon			
29-Jan-19	Tue			
30-Jan-19	Wed			
31-Jan-19	Thu			

	Public Holiday
	Monitoring Day

**Monitoring Details**

Monitoring	Locations	Parameters
Air Quality	DMS-2 - Price Memorial Catholic Primary School	24-hour TSP
Noise	NMS-CA-2 - Price Memorial Catholic Primary School	L <sub>Aeq</sub> (30 min), L <sub>10</sub> , L <sub>90</sub>

**Note:**

No bi-weekly site inspection for Landscape & Visual Impact will be conducted at HIK following the cessation of EM&A programme in the respective area.

## Appendix C

---

Environmental  
Mitigation  
Implementation  
Schedule (EMIS)

## Environmental Mitigation Implementation Schedule – Works Contract 1103

Note: Chapters 1 to 3 of the EIA report present the background information of the Project, identified concurrent projects, objectives and scope for various environmental aspects, and description on alternative options and construction description. Chapters 4 to 14 of the EIA report present the EIA findings and mitigation measures are described below with cross-reference to the EIA report for the reporting month. Chapters 15 & 16 describe the environmental monitoring requirements and conclusion.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Ecology (Pre-Construction Phase)</b>							
S5.4	E1	Engineering works should not encroach into country park boundary, Tei Lung Hau Stream and secondary woodland near the portal at Hin Keng	Minimize ecological impacts	Lion Rock Country Park, Tei Lung Hau Stream	Detailed design and construction stage	<ul style="list-style-type: none"> <li>•AFCD's requirements</li> <li>•EIAO</li> <li>•Country Parks Ordinance</li> </ul>	✓
	E2	<u>Habitat Loss</u> A detailed vegetation survey should be conducted in the Hin Keng Portal area to locate and enumerate individuals of <i>Aquilaria sinensis</i> which will potentially be affected by construction and operation of the Portal.  A suitable site for transplanting all affected individuals within the footprint area should be identified and assessed for its suitability. A transplantation plan should then be drawn up and details of the transplantation methodologies and programme along with post-transplantation monitoring should be included.	Minimize ecological impacts on important species	Hin Keng Portal areas	Prior to site clearance	<ul style="list-style-type: none"> <li>•AFCD's requirements</li> </ul>	✓
S5.7	E3	<u>Tree felling and vegetation removal</u> Precautionary checks of the vegetation for the presence of nesting bird species of conservation interest should be carried out before vegetation clearance by an ecologist.	Minimize ecological impacts to breeding bird species of conservation interest	Works sites for DIH	Prior to site clearance	<ul style="list-style-type: none"> <li>•AFCD's requirements</li> </ul>	N/A



### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Ecology (Construction Phase)</b>							
S5.7	E5	<p><u>Good Site Practices</u></p> <p>Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the 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.</p> <p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> <li>• Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses in particular the Tei Lung Hau stream;</li> <li>• Avoidance of soil storage against trees or close to waterbodies in particular the Tei Lung Hau stream;</li> <li>• Delineation of works site by erecting hoardings to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value e.g. Tei Lung Hau Stream and the adjoining secondary woodland, tunnel on hill at top of slope stabilisation works;</li> <li>• No on-site burning of waste;</li> <li>• Waste and refuse in appropriate receptacles.</li> </ul>	Minimize ecological impacts	All construction sites	Construction stage		<div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div>

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.7	E7	<u>Water Quality and Hydrology</u> <ul style="list-style-type: none"> <li>Implement water control measures (ETWB TCW No. 5/2005, Protection of natural streams/ rivers from adverse impacts arising from construction works to avoid direct or indirect impacts on the Tei Lung Hau Stream) and good site practices.</li> <li>Canopy tubes should be installed from the shaft structure and extend the full width of the stream. These canopy tubes with sieves along its length should be grouted and form a stable and low permeable 'umbrella' for further mining works to be carried out in stages. The canopy tubes beneath the stream area are within Completely Decomposed Granite (CDG) stratum.</li> </ul>	<ul style="list-style-type: none"> <li>Avoid indirect water impact to any wetland habitats or wetland fauna</li> <li>Minimize the drawdown of water table</li> </ul>	Works area in Hin Keng	Construction stage	<ul style="list-style-type: none"> <li>TCW No. 5/2005</li> </ul>	<div style="text-align: center;">✓</div> <div style="text-align: center;">✓</div>

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Landscape and Visual (Construction Phase)</b>							
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> <li>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 ground may be set up on-site as necessary.</li> </ul> <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> <li>To maximize 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 should closely monitor and restrict the site working staff from entering the “no-intrusion zone”, even for indirect construction activities and storage of equipment.</li> </ul> <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> <li>All retained trees should be recorded photographically 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 specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</li> <li>The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees</li> </ul>	Minimize visual & landscape impact	Within Project Site	Construction stage	TM-EIAO	<div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.					
S6.12	LV2	<ul style="list-style-type: none"> <li><u>Decorative Hoarding</u> Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context.</li> <li><u>Management of facilities on work sites</u> To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.</li> <li><u>Tree Transplanting</u> Trees of high to medium survival rate would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.</li> </ul>	Minimize visual & landscape impact	Within Project Site	Detailed design and construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	<div>✓</div> <div>✓</div> <div>✓</div>

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Air Quality (Construction Phase)</b>							
-	A1	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>All vehicles shall be shut down in intermittent use.</li> <li>Only well-maintained plant should be operated on-site and</li> <li>plant should be serviced regularly to avoid emission of</li> <li>black smoke.</li> <li>All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)</li> </ul>	Reduce air pollution emission from construction vehicles and plants	All construction sites	Construction stage	• APCO	✓
		Open burning shall be prohibited	Reduce air pollution emission from work site	All construction sites	Construction stage	• APCO	✓
<b>Construction Dust Impact</b>							
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	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	✓
S7.6.5	D2	<ul style="list-style-type: none"> <li>Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area and once per 1.5 hour at those in the Tai Wai 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</li> </ul>	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	Rdr

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		maintain an equivalent intensity of no less than 1.8 L/m2 to achieve the dust removal efficiency					
S7.6.5	D3	<ul style="list-style-type: none"> <li>• Proper watering of exposed spoil should be undertaken throughout the construction phase;</li> <li>• Any excavated or stockpile of dusty material should 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>• 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;</li> <li>• 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</li> </ul>	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>• APCO</li> <li>• To control the dust impact to meet HKAQO and TM-EIA criteria</li> </ul>	<div>✓</div> <div>Rdr</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<p>period;</p> <ul style="list-style-type: none"> <li>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;</li> <li>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</li> <li>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;</li> <li>• 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, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;</li> </ul>					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>



### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<ul style="list-style-type: none"> <li>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;</li> <li>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; and</li> <li>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.</li> </ul>					<div>✓</div> <div>✓</div> <div>N/A</div>
S7.6.5	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Selected representative dust monitoring station	Construction stage	• TM-EIA	✓

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Construction Noise (Airborne)</b>							
S8.3.6	N1	Implement the following good site practices: <ul style="list-style-type: none"> <li>only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	Control construction airborne noise	All construction sites	Construction stage	• Annex 5, TM-EIA	✓  ✓  ✓  ✓  ✓  ✓
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.	All construction sites	Construction stage	• Annex 5, TM-EIA	✓
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	Screen the noisy plant items to be used at all construction sites	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	✓

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		saw.					
S8.3.6	N4	Use “Quiet plants”	Reduce the noise levels of plant items	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	✓
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	✓
S8.3.6	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Selected representative noise monitoring station	Construction stage	• TM-EIA	✓

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Water Quality (Construction Phase)</b>							
S10.7.1	W1	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> <li>At the start of site establishment (including the barging facilities), 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.</li> <li>The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to 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.</li> <li>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<sup>3</sup>/s a sedimentation basin of 30m<sup>3</sup> would be required and for a flow rate of 0.5 m<sup>3</sup>/s the basin would be 150 m<sup>3</sup>. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the</li> </ul>	To minimize water quality impact from construction site runoff and general construction activities	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN1/94</li> <li>TM-EIAO</li> <li>TM-Water</li> </ul>	<div>✓</div> <div>✓</div> <div>✓</div>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<p>commencement of construction.</p> <ul style="list-style-type: none"> <li>All exposed earth areas should 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 should be covered by tarpaulin or other means.</li> <li>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 coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.</li> <li>All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</li> <li>Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they 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.</li> <li>Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> 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.</li> <li>Manholes (including newly constructed ones) should always be</li> </ul>					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<p>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.</p> <ul style="list-style-type: none"> <li>• 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 should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</li> <li>• All vehicles and plant should 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 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 silty water to public roads and drains.</li> <li>• 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.</li> <li>• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>• All fuel tanks and storage areas should be provided with locks</li> </ul>					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<p>and sited on 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 water sensitive receivers nearby.</p> <ul style="list-style-type: none"> <li>All the earth works involving should 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.</li> <li>Adopt best management practices</li> </ul>					<p>✓</p> <p>✓</p>
S10.7.1	W2	<p><u>Tunnelling Works</u></p> <ul style="list-style-type: none"> <li>Cut-&amp;-cover/ open cut tunnelling work should 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.</li> <li>Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge</li> <li>The wastewater with a high concentration of SS should be treated (e.g. 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.</li> <li>Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It 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 are completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.</li> </ul>	To minimize construction water quality impact from tunneling works	All tunneling portion	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN 1/94</li> <li>TM-water</li> <li>TM-EIAO</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
S10.7.1	W3	<u>Sewage Effluent</u>	To minimize water quality	All construction sites	Construction	<ul style="list-style-type: none"> <li>Water Pollution</li> </ul>	

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<ul style="list-style-type: none"> <li>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 appropriate disposal and maintenance.</li> </ul>	from sewage effluent	where practicable	stage	Control Ordinance <ul style="list-style-type: none"> <li>TM-water</li> </ul>	✓
S10.7.1	W4	<u>Groundwater from Contaminated Area:</u> <ul style="list-style-type: none"> <li>No direct discharge of groundwater from contaminated areas should be adopted. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed with reference to the site investigation data in this EIA report for compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-Water) and the existence of prohibited substance should be confirmed. The review results should be submitted to EPD for examination. If the review results indicated 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.</li> <li>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. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-Water and should be discharged into the foul sewers.</li> <li>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</li> </ul>	To minimize groundwater quality impact from contaminated area	Excavation areas where contamination is found.	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>TM-water</li> <li>TM-EIAO</li> </ul>	N/A
							N/A
							N/A

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance



### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		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, and 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 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 WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.					
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.</li> </ul>	To minimize water quality impact from accidental spillage	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN1/94</li> <li>TM-EIAO</li> <li>TM-Water</li> </ul>	<div>✓</div> <div>✓</div> <div>✓</div>

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<b>Waste Management (Construction Phase)</b>							
S11.4.1.1	WM1	<u>On-site sorting of C&amp;D material</u> <ul style="list-style-type: none"> <li>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 at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should 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 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 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) 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.</li> </ul>	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>DEVB TC(W) No. 6/2010</li> </ul>	✓
S11.5.1	WM2	<u>Construction and Demolition Material</u> <ul style="list-style-type: none"> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and</li> </ul>	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> </ul>	✓  ✓

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<p>promote the use of recycled aggregates where appropriate;</p> <ul style="list-style-type: none"> <li>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>• 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&amp;D materials and to minimize their generation during the course of construction.</li> <li>• In addition, disposal of the C&amp;D materials onto 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 its approval before implementation</li> </ul>				<ul style="list-style-type: none"> <li>• ETWB TCW No. 19/2005</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
S11.5.1	WM3	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>• Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;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, as in other projects. Metal hoarding should 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.</li> <li>• The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;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</li> </ul>	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>• Land (Miscellaneous Provisions) Ordinance</li> <li>• Waste Disposal Ordinance</li> <li>• ETWB TCW No. 19/2005</li> </ul>	<p>✓</p> <p>✓</p>

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		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> <ul style="list-style-type: none"> <li>General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>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.</li> <li>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.</li> <li>Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	All construction sites	Construction stage	• Waste Disposal Ordinance	<p>Rdr</p> <p>✓</p> <p>✓</p> <p>✓</p>
S11.5.1	WM5	<u>Excavated Contaminated Soils</u> Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.	To remediate contaminated soil	Site L4 (Former Tai Hom Village)	Site remediation	• Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boat yards and Car Repair/Dismantling Workshop.	

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>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; have a capacity of less than 450 liters 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.</li> <li>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; 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; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.</li> <li>Disposal of chemical waste should be via a licensed waste collector; 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.</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>Waste Disposal (Chemical Waste) (General) Regulation</li> <li>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>	<div>✓</div> <div>Rdr</div> <div>✓</div> <div>✓</div>

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S14.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>• EIAO Guidance Note No.4/2010</li> <li>• TM-EIAO</li> </ul>	✓
S14.2 – 14.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual.	Perform environmental monitoring & auditing	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>• EIAO Guidance Note No.4/2010</li> <li>• TM-EIAO</li> </ul>	✓
		2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.					✓
		3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.					✓

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.1 0.2.1 and A13A.1 0.2.4	The truck design should comply with the Requirements for Approval of an Explosives Delivery Vehicle (CEDD 2) and limit the amount of combustibles in the cabin. This should be combined with monthly vehicle inspection	To meet the ALARP requirement.	Explosive Magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.2	Blasting activities including storage, transport and use of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage, transport and use would not be unacceptable	Works areas at which explosives would be stored and/or used.	Construction phase	•Dangerous Goods Ordinance	✓
Chapter 13.13	A13A.1 0.2.1 and A13A.1 0.2.5	Only the required quantity of explosives for a particular blast should be transported to avoid the return of unused explosives to the temporary magazines. The number of return trips to the magazine should be minimized.  If disposal is required for small quantities, disposal should be made in a controlled and safe manner by a Registered Shotfirer.	To reduce the risk during explosives transport.	Works areas at which explosives would be stored and/ or used.	Construction phase		✓
Chapter 13.13	A13A.1 0.2.1	A minimum headway between two consecutive truck conveys of at least 10 min is recommended.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase.		✓
Chapter 13.13	A13A.1 0.2.1	The explosive truck accident frequency should be minimized by implementing a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude. In addition, drivers should be selected based on good safety record, and medical checks.	To meet the ALARP requirement.	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.1	The explosive truck fire involvement frequency should be minimized by implementing a better emergency response and training to make	To meet the ALARP requirement.	-	Construction phase		

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible. All explosive vehicles should also be equipped with the required amount and type of fire extinguishers and shall be agreed with Mines Division.					✓
Chapter 13.13	A13A.1 0.2.1	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement.	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.1	The Contractor should as far as practicable use the preferred transport route.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.1 0.2.1	The Contractor should coordinate explosives deliveries with the delivery of chlorine to Shatin Water Treatment Works in order to avoid overlapping.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.1 0.2.4	Use only experienced driver(s) with good safety record for explosive vehicle(s). Training should be provided to ensure it covers all major safety subjects.	To ensure safe transport of explosives	At suitable location	Construction phase		✓
Chapter 13.13	A13A.1 0.2.4	Develop procedure to ensure that parking space on the site is available for the explosive truck. Confirmation of parking space should be communicated to truck drivers before delivery.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Explosive magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.3	Delivery vehicles shall not be permitted to remain unattended within the magazine site (or appropriately wheel-locked).	To reduce the risk of fire within the magazine	Explosive Magazine	Construction phase		✓



### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.1 0.2.3	Good house-keeping within and outside of the magazine to ensure that combustible materials (including vegetation) are removed and not allowed to accumulate.	To reduce the risk of fire within the magazine	Explosive Magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.4	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridged emulsion	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.2	Emergency plan (ie magazine operational manual) shall be developed to address uncontrolled fire in magazine area. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.	To reduce the risk of fire	Explosive Magazine and along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.1 0.2.2	The magazine storage quantities need to be reported on a monthly basis to ensure that the two day storage capacity is not exceeded.	To reduce the risk within the magazine	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.2	Adverse weather working guideline should be developed to clearly define procedure for transport explosives during thunderstorm.	To ensure safe transport of explosives	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.1 0.2.4	During transport of the explosives within the tunnel, hot work should not be permitted	To ensure safe transport of explosives	Along explosives transport route.	Construction phase		✓

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.1 0.2.4	Ensure that packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the transport of detonator	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.4	Steel vehicle tray welded to a steel vertical fire screen should be mounted at least 150 mm behind the drivers cab and 100 mm from the steel cargo compartment, the vertical screen shall protrude 150 mm in excess of all three (3) sides of the steel cargo compartment	To reduce the risk during explosives transport.	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.5	Ensure cartridge emulsion with high water content should be preferred. Also, the emulsion with perchlorate formulation should be avoided.	To ensure safe explosives to be used	-	Construction phase		✓
Chapter 13.13	A13A.1 0.2.3	Traffic Management should be implemented within the temporary magazine site, to ensure that no more than 1 vehicle will be loaded at any time, in order to avoid accidents involving multiple vehicles within the site boundary. Based on the construction programme, considering that 6 trucks could be loaded over a peak 2 hour period, this is considered feasible.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.3	The design of the fill slope close to the temporary magazine site should consider potential washout failures and incorporate engineering measures to prevent a washout causing damage to the temporary magazine stores	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.2	The security plan should address different alert security level to reduce opportunity for arson / deliberate initiation of explosives. The corresponding security procedure should be implemented with respect to prevailing security alert status announced by the	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		Government.					
Chapter 13.13	A13A.1 0.2.3	A suitable work control system should be introduced, such as an operational manual including Permit-to-Work system.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.1 0.2.3	The magazine building shall be regularly checked for water seepage through the roof, walls or floor.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13B.7 .2	Blast charge weight (MIC) should be within the maximum MIC as specified for the given section.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7 .2	Temporary mitigation measures such as blast doors or heavy duty blast curtains should be installed at the access adits, shafts/ portals and at suitable locations underground to prevent flyrock and control the air overpressure.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7 .2	Blasting from multiple faces as well as different locations will be carried out for this project. Good communication and control will need to be adopted in ensuring that the works are carried out safely.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7 .2	It is intended that complete evacuation of the underground tunnels need not be carried out and secure refuge areas should be identified to workers in the area.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7 .2	A Chief Shotfirer and a Blasting Coordinator shall be employed in addition to the normal blasting personnel to ensure that the works are safe and coordinated between blasting areas and between	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓

Notes (\*): ✓ - Compliance; N/A – Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C – Non Compliance

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		adjacent contracts.					
Chapter 13.13	A13B.7.2	Shotfirer to be provided with a lightning detector, and appropriate control measures should be in place.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	A speed limit for the diesel vehicle truck and bulk emulsion truck in the tunnel should be enforced. The truck may be escorted while underground to ensure route is clear from hazards and obstructions.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	Hot work should be suspended during passage of the diesel vehicle truck and bulk emulsion truck in the tunnel.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	For any construction works related to use of explosives near gas facilities and gas pipes, the requirements of the Code of Practice on Avoiding Danger from Gas Pipes must be respected, in particular, to ensure liaison/coordination with HKCG with sufficient notice of planned works and to follow prescribed emergency procedures in case of leaks.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	A detailed liaison between the contractor and HKCG should be established. HKCG should be notified about the blasting schedule in written format within a reasonable period of time prior to blasting in order to ensure the gas safety during the construction period. Also, liaison should be made with HKCG to develop an emergency plan.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13C.8	Installation of on-site gas monitors in all relevant SCL construction/operation areas;	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		N/A

### Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13C.8	Establishment of emergency response and evacuation plans (co-operation of various parties/departments required. For the operational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping of the SCL train traffic in order to prevent the trains moving into the affected areas.)	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		✓
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		✓

## Appendix D

---

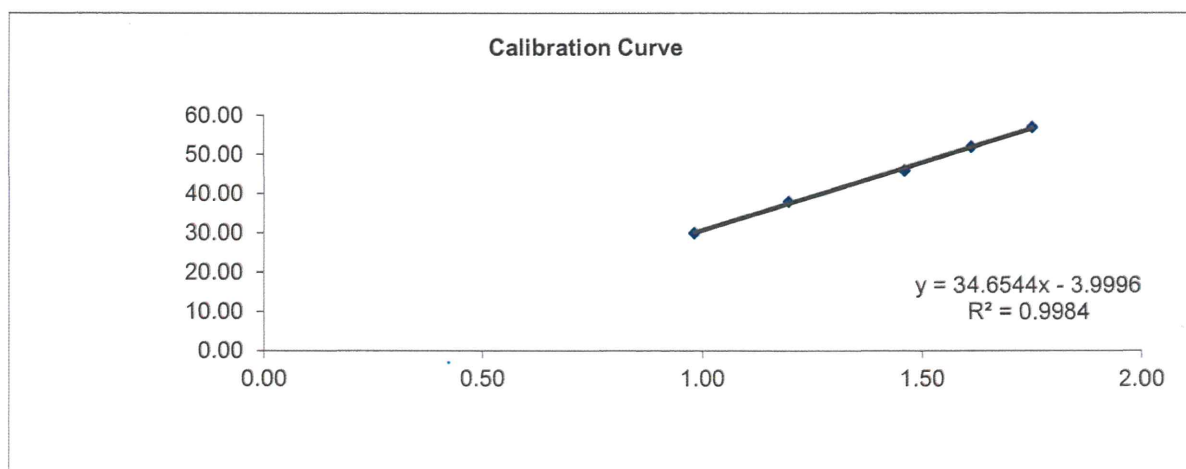
Calibration  
Certificates for Air  
Monitoring  
Equipment

# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	9-Nov-18	Barometric pressure	761.70 mm Hg
Next Calibration date	8-Jan-19	Temperature (°C)	26 °C
Sampler location	DMS2 - Price Memorial Catholic Primary School	Temperature (K)	299 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	3761	T <sub>std</sub>	298 K
Calibrator model	TE-5025A		
Calibrator serial number	2421		
Slope of the standard curve, m <sub>s</sub>	2.08658		
Intercept of the standard curve, b <sub>s</sub>	-0.05201		

Resistance Plate No.	Manometer Reading (inch H <sub>2</sub> O)	Flow Recorder Reading (CFM)	Calculated Q <sub>std</sub> (m <sup>3</sup> /min)	Continuous Flow Recorder Reading IC (CFM)
5	4.00	30.00	0.98	29.98
7	6.00	38.00	1.20	37.98
10	9.00	46.00	1.46	45.97
13	11.00	52.00	1.61	51.97
18	13.00	57.00	1.75	56.97



### Linear Regression

Sampler slope (m) : 34.6544  
 Sampler intercept (b) : -3.9996  
 Correlation coefficient (R<sup>2</sup>) : 0.9984

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: Martin Yu  
 Checked by: [Signature]

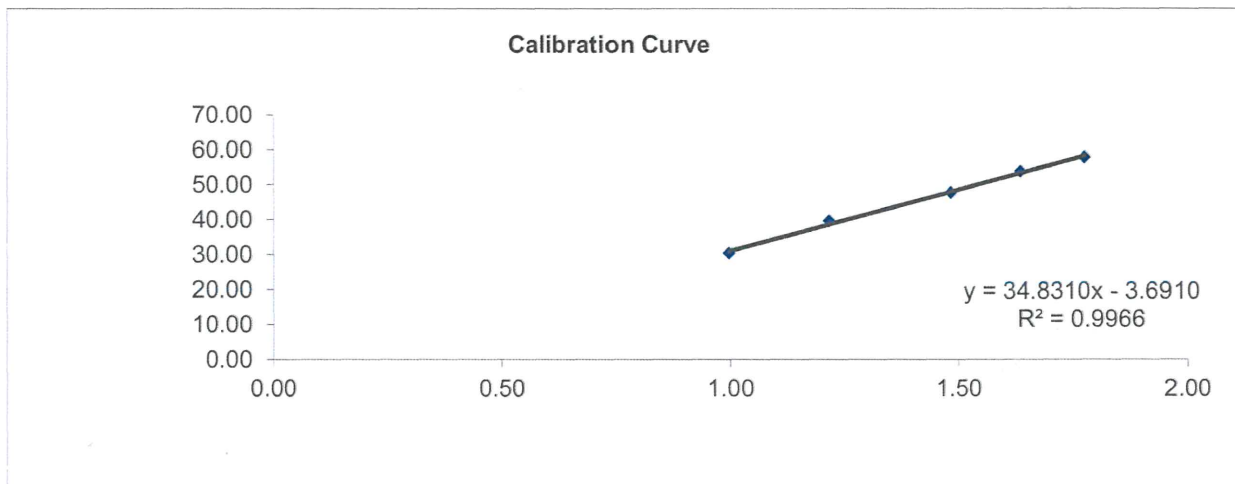
Date: 9 Nov 2018  
 Date: 9 Nov 2018

# Ove Arup Partners (Hong Kong) Limited

## High Volume Air Sampler Calibration Worksheet

Calibration date	7-Jan-19	Barometric pressure	766.05 mm Hg
Next Calibration date	8-Mar-19	Temperature (°C)	18.5 °C
Sampler location	DMS2 - Price Memorial Catholic Primary School	Temperature (K)	291.5 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	3761	T <sub>std</sub>	298 K
Calibrator model	TE-5025A		
Calibrator serial number	2421		
Slope of the standard curve, m <sub>s</sub>	2.08658		
Intercept of the standard curve, b <sub>s</sub>	-0.05201		

Resistance Plate No.	Manometer Reading (inch H <sub>2</sub> O)	Flow Recorder Reading (CFM)	Calculated Q <sub>std</sub> (m <sup>3</sup> /min)	Continuous Flow Recorder Reading IC (CFM)
5	4.00	30.00	1.00	30.45
7	6.00	39.00	1.22	39.59
10	9.00	47.00	1.48	47.71
13	11.00	53.00	1.64	53.80
18	13.00	57.00	1.78	57.86



### Linear Regression

Sampler slope (m) : 34.8310  
Sampler intercept (b) : -3.6910  
Correlation coefficient (R<sup>2</sup>) : 0.9966

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by:

*Martin Yu*

Date:

7 Jan 2019

Checked by:

*[Signature]*

Date:

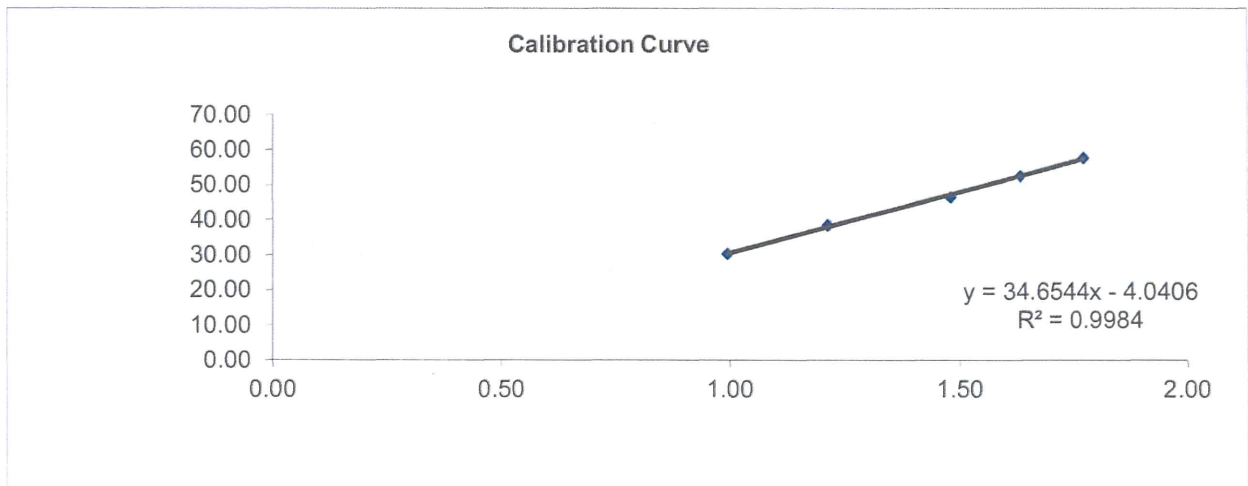
7 Jan 2019



**Ove Arup Partners (Hong Kong) Limited**  
**High Volume Air Sampler Calibration Worksheet**

Calibration date	24-Jan-19	Barometric pressure	766.05 mm Hg
Next Calibration date	25-Mar-19	Temperature (°C)	20 °C
Sampler location	DMS2 - Price Memorial Catholic Primary School	Temperature (K)	293 K
Sampler model	TE-5170	P <sub>std</sub>	760 mm Hg
Sampler serial number	3761	T <sub>std</sub>	298 K
Calibrator model	TE-5025A		
Calibrator serial number	2421		
Slope of the standard curve, m <sub>s</sub>	2.08658		
Intercept of the standard curve, b <sub>s</sub>	-0.05201		

Resistance Plate No.	Manometer Reading (inch H <sub>2</sub> O)	Flow Recorder Reading (CFM)	Calculated Q <sub>std</sub> (m <sup>3</sup> /min)	Continuous Flow Recorder Reading IC (CFM)
5	4.00	30.00	1.00	30.38
7	6.00	38.00	1.21	38.48
10	9.00	46.00	1.48	46.58
13	11.00	52.00	1.63	52.65
18	13.00	57.00	1.77	57.71



**Linear Regression**

Sampler slope (m) : 34.6544  
 Sampler intercept (b) : -4.0406  
 Correlation coefficient (R<sup>2</sup>) : 0.9984

Correlation coefficient is greater than 0.9900 and the calibration result is accepted.

Performed by: Martin Yu

Date: 24/1/2019

Checked by: [Signature]

Date: 24 Jan 2019



# Certificate of Calibration

## Calibration Certification Information

Cal. Date: January 24, 2018      Rootsmeter S/N: 438320      Ta: 293 °K  
Operator: Jim Tisch      Pa: 756.9 mm Hg  
Calibration Model #: TE-5025A      Calibrator S/N: 2421

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4300	3.2	2.00
2	3	4	1	1.0130	6.4	4.00
3	5	6	1	0.9080	7.9	5.00
4	7	8	1	0.8650	8.8	5.50
5	9	10	1	0.7180	12.6	8.00

## Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
1.0087	0.7054	1.4233	0.9958	0.6963	0.8799
1.0044	0.9915	2.0129	0.9915	0.9788	1.2443
1.0024	1.1039	2.2505	0.9896	1.0898	1.3912
1.0012	1.1574	2.3603	0.9884	1.1426	1.4591
0.9961	1.3873	2.8467	0.9834	1.3696	1.7598
QSTD	m=	2.08658	QA	m=	1.30658
	b=	-0.05201		b=	-0.03215
	r=	0.99998		r=	0.99998

## Calculations

Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
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=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

## Standard Conditions

Tstd: 298.15 °K  
Pstd: 760 mm Hg

## Key

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

## RECALIBRATION

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

## Appendix E

---

### Dust Results

Location: DMS-2 Price Memorial Catholic Primary School

Details of 24-Hour TSP Monitoring

Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (°C)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m³/min)		Average Flow Rate (m³/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m³)	24-hour TSP Level (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103777	Jan-19	4-Jan-19	0:00	0:00	DMS2	Overcast	Normal Operation	767.1	765.4	18.8	19.8	38.0	38.0	2.5669	2.6558	0.0889	1.2928	1.2895	1.2912	8234.59	8258.59	1440.00	1859.3	47.8	167.4	260.0
103778	Jan-19	10-Jan-19	0:00	0:00	DMS2	Fine	Normal Operation	765.2	764.0	19.2	20.6	40.0	40.0	2.5375	2.6312	0.0937	1.3515	1.3477	1.3496	8258.60	8282.60	1440.00	1943.4	48.2	167.4	260.0
103779	Jan-19	16-Jan-19	0:00	0:00	DMS2	Fine	Normal Operation	765.4	766.7	17.3	16.7	38.0	38.0	2.5494	2.6446	0.0952	1.2944	1.2967	1.2956	8282.61	8306.61	1440.00	1865.59	51.0	167.4	260.0
103780	Jan-19	22-Jan-19	0:00	0:00	DMS2	Fine	Normal Operation	766.7	765.8	16.0	16.2	40.0	40.0	2.5412	2.7200	0.1788	1.3595	1.3583	1.3589	8306.62	8330.62	1440.00	1956.82	91.4	167.4	260.0
103781	Jan-19	28-Jan-19	0:00	0:00	DMS2	Fine	Normal Operation	766.2	766.1	17.5	18.5	42.0	42.0	2.5360	2.6387	0.1027	1.4172	1.4149	1.4161	8330.63	8354.63	1440.00	2039.11	50.4	167.4	260.0

Average (µg/m3)

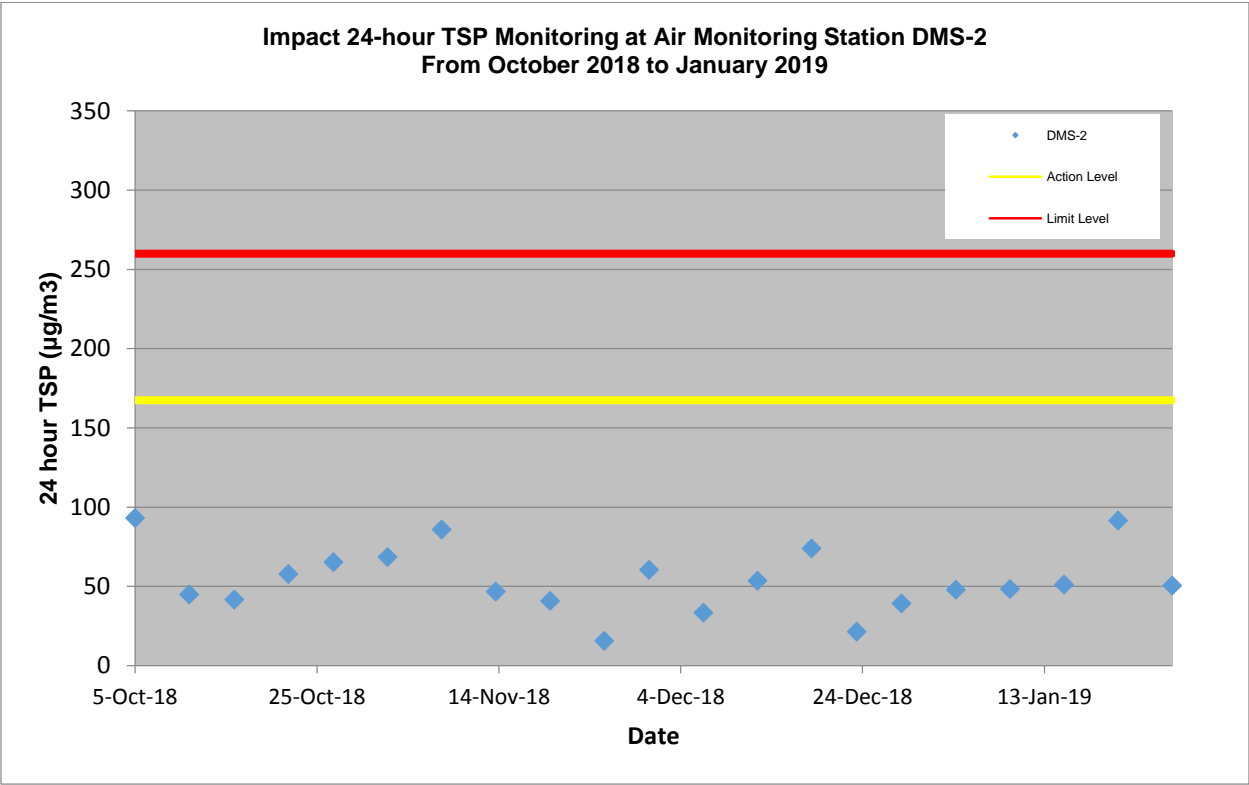
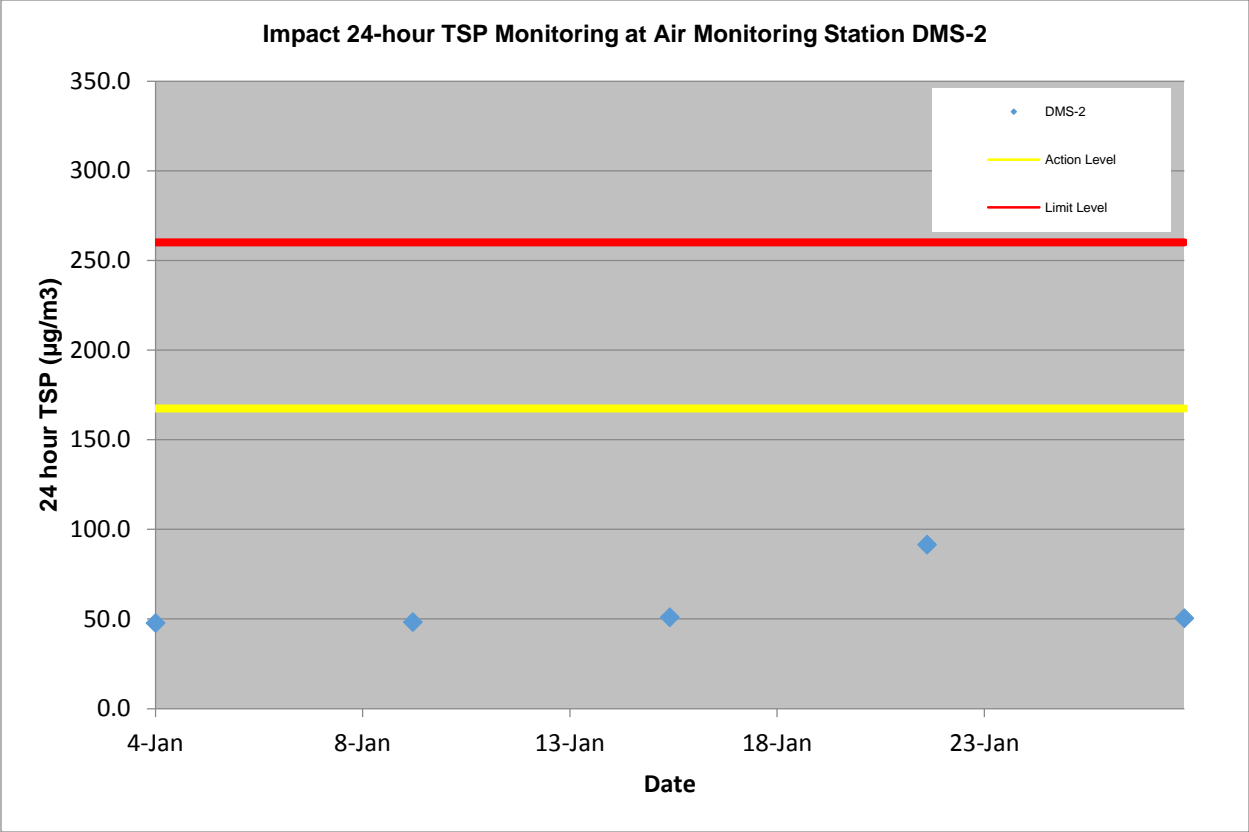
Max (µg/m3)

Min (µg/m3)

57.8

91.4

47.8



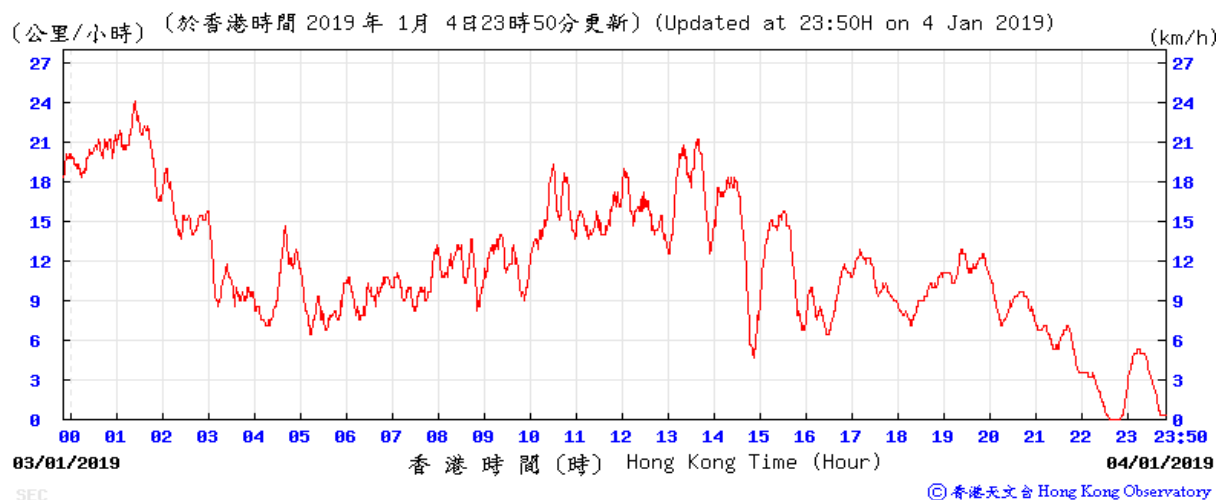
## Appendix F

---

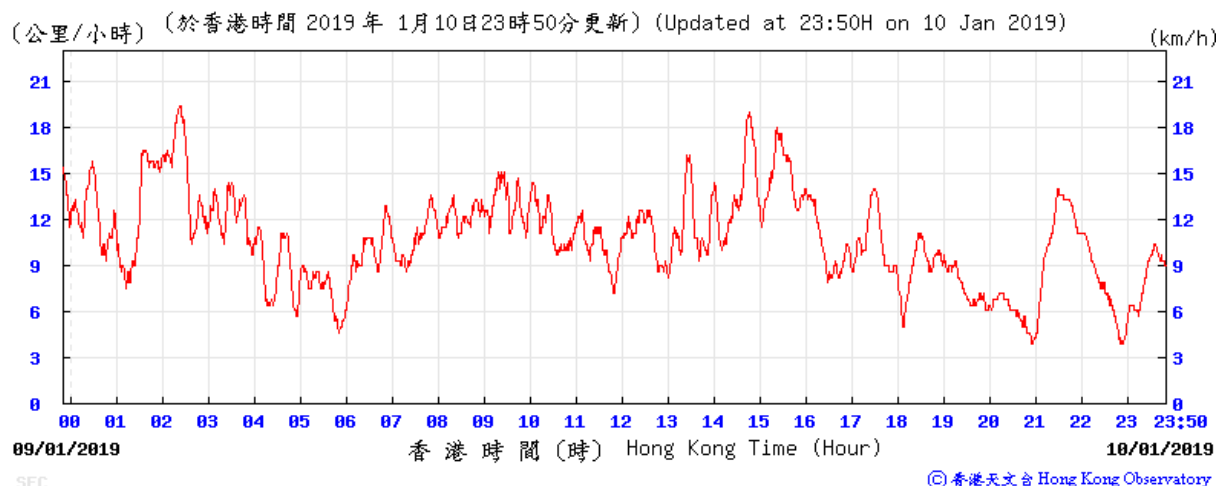
### Wind data

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

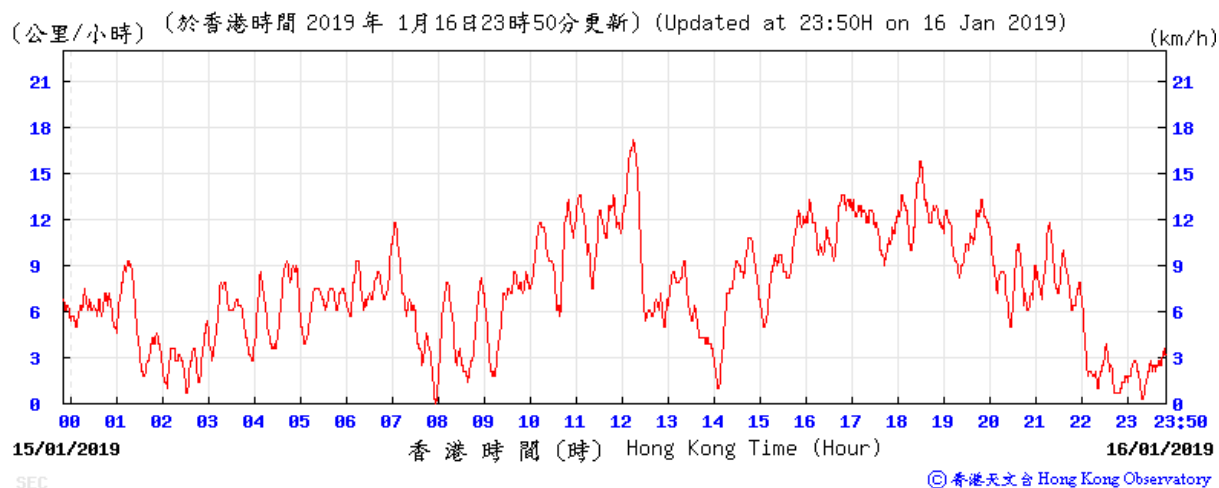
4 January 2019



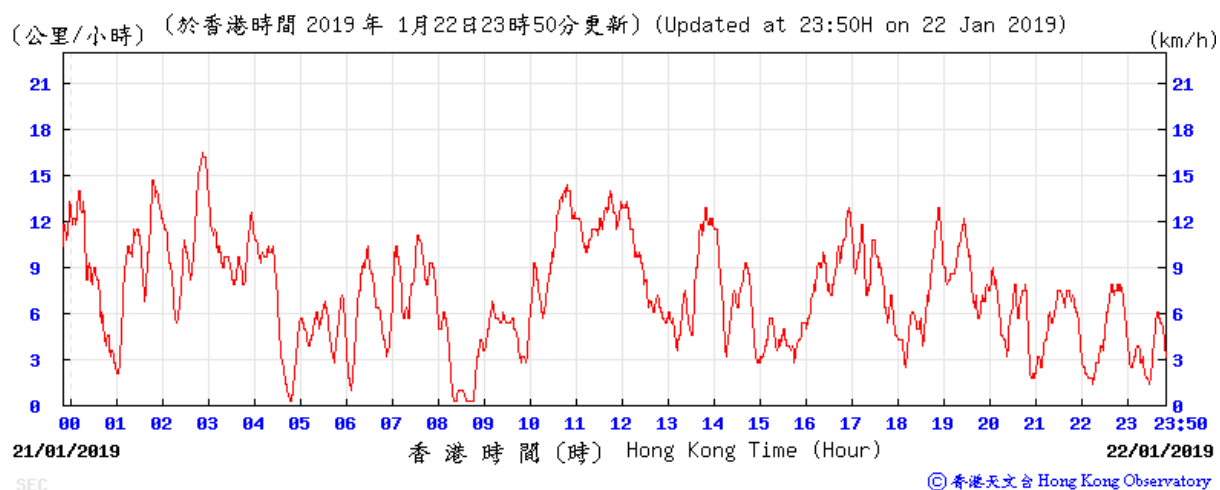
10 January 2019



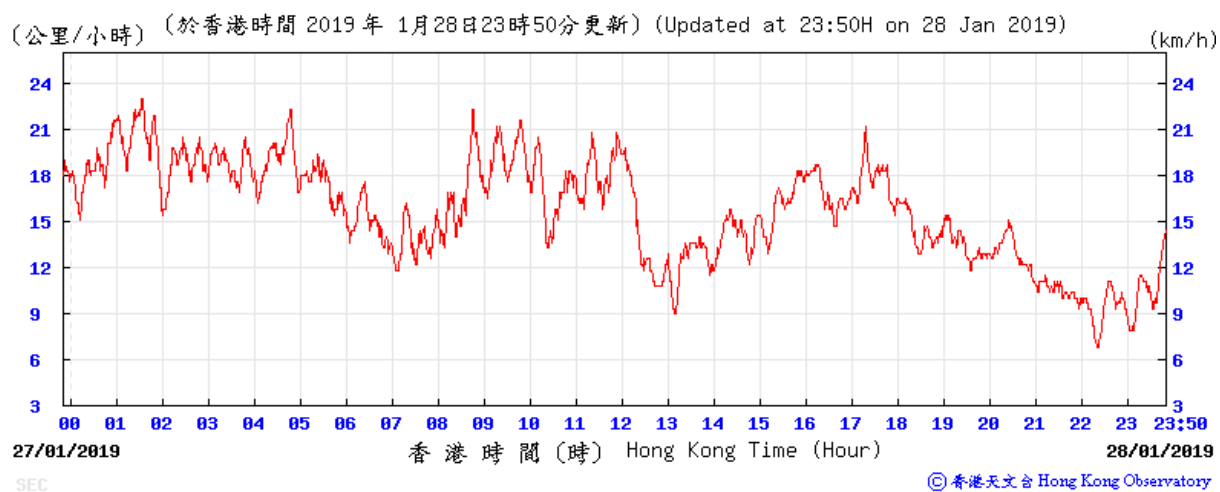
16 January 2019



## 22 January 2019



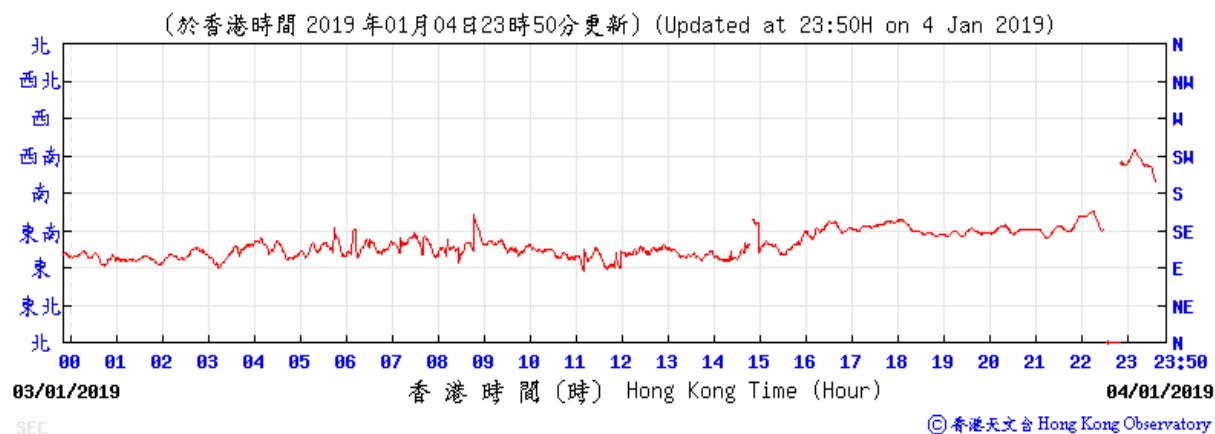
## 28 January 2019



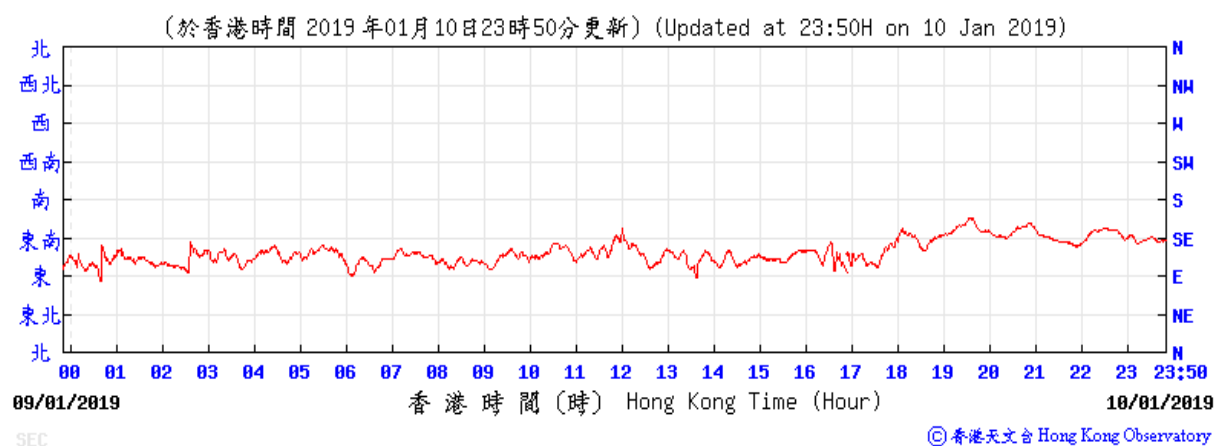


## Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

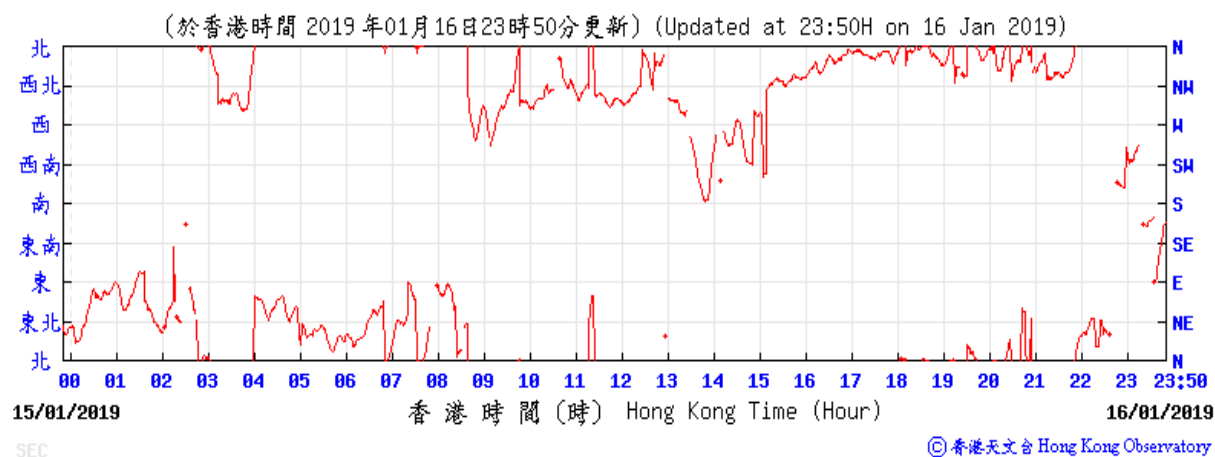
4 January 2019



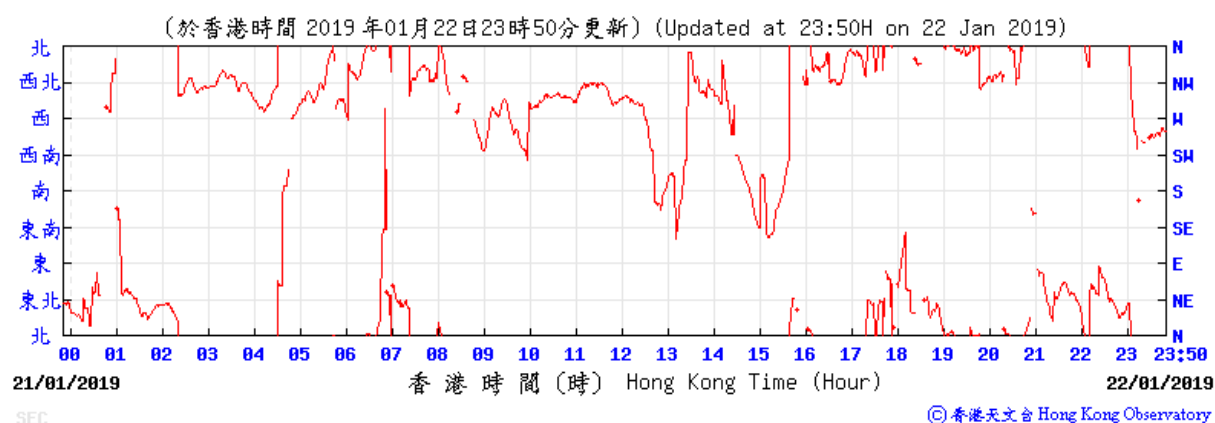
10 January 2019



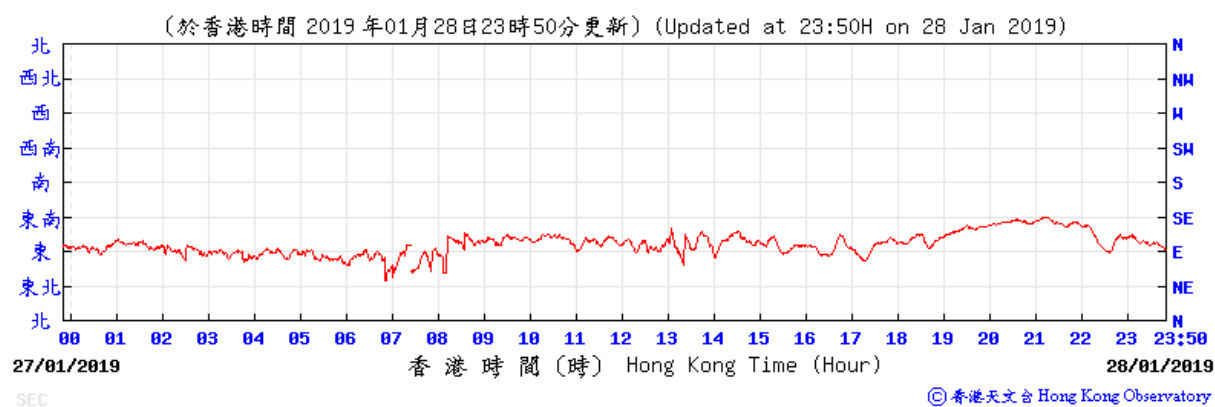
16 January 2019



## 22 January 2019



## 28 January 2019



## Appendix G

---

Calibration  
Certificates of Noise  
Monitoring  
Equipment



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C180944  
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0230)

Date of Receipt / 收件日期 : 26 January 2018

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NA-28

Serial No. / 編號 : 00511639

Supplied By / 委託者 : Ove Arup & Partners Hong Kong Co., Ltd.  
Level 5, Festival Walk, 80 Tat Chee Avenue, Kowloon Tong,  
Kowloon

## TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 February 2018

## 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
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- 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 : 20 February 2018  
簽發日期

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C180944  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C180024
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

UUT Setting		Applied Value		UUT Reading	IEC 61672 Class 1 Spec.
Range(dB)	Main	Level (dB)	Freq. (kHz)	(dB)	(dB)
20 - 120	LAF	94.00	1	93.9	± 1.1

#### 6.1.2 Linearity

UUT Setting		Applied Value		UUT Reading
Range (dB)	Main	Level (dB)	Freq. (kHz)	(dB)
20 - 120	LAF	94.00	1	93.9 (Ref.)
		104.00		103.9
		114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

### 6.2 Time Weighting

UUT Setting		Applied Value		UUT Reading	IEC 61672 Class 1 Spec.
Range (dB)	Main	Level (dB)	Freq. (kHz)	(dB)	(dB)
20 - 120	LAF	94.00	1	93.9	Ref.
	LAS			93.9	± 0.3

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C180944

證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Main	Level (dB)	Freq.		
20 - 120	LAF	94.00	63 Hz	68.0	-26.2 ± 1.5
			125 Hz	78.1	-16.1 ± 1.5
			250 Hz	85.6	-8.6 ± 1.4
			500 Hz	90.9	-3.2 ± 1.4
			1 kHz	93.9	Ref.
			2 kHz	94.9	+1.2 ± 1.6
			4 kHz	94.4	+1.0 ± 1.6
			8 kHz	92.1	-1.1(+2.1 ; -3.1)
			12.5 kHz	88.7	-4.3(+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Main	Level (dB)	Freq.		
20 - 120	LCF	94.00	63 Hz	93.5	-0.8 ± 1.5
			125 Hz	94.1	-0.2 ± 1.5
			250 Hz	94.3	0.0 ± 1.4
			500 Hz	94.2	0.0 ± 1.4
			1 kHz	94.0	Ref.
			2 kHz	93.5	-0.2 ± 1.6
			4 kHz	92.7	-0.8 ± 1.6
			8 kHz	90.2	-3.0 (+2.1 ; -3.1)
			12.5 kHz	86.7	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 02917

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB :

63 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)

- 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.

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 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 and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C180943

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0230)

Date of Receipt / 收件日期 : 26 January 2018

Description / 儀器名稱 : Sound Calibrator

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-74

Serial No. / 編號 : 34304660

Supplied By / 委託者 : Ove Arup & Partners Hong Kong Co., Ltd.  
Level 5, Festival Walk, 80 Tat Chee Avenue, Kowloon Tong,  
Kowloon

### TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 February 2018

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

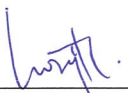
The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

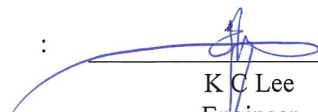
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- 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

20 February 2018

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C180943  
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	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

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	94.0	$\pm 0.3$	$\pm 0.2$

### 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.003	1 kHz $\pm 1\%$	$\pm 1$

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.



## Appendix H

---

### Noise Results

Location: NMS-CA-2 - Price Memorial Catholic Primary School

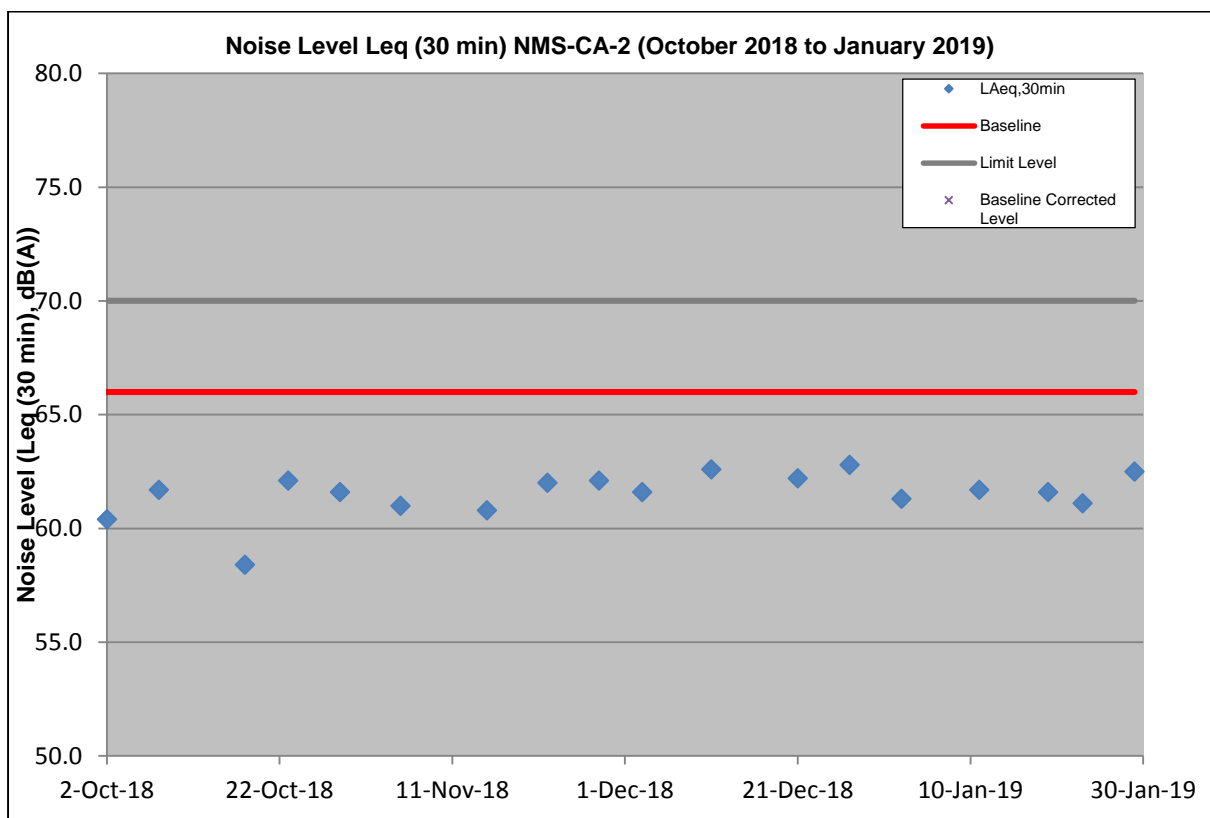
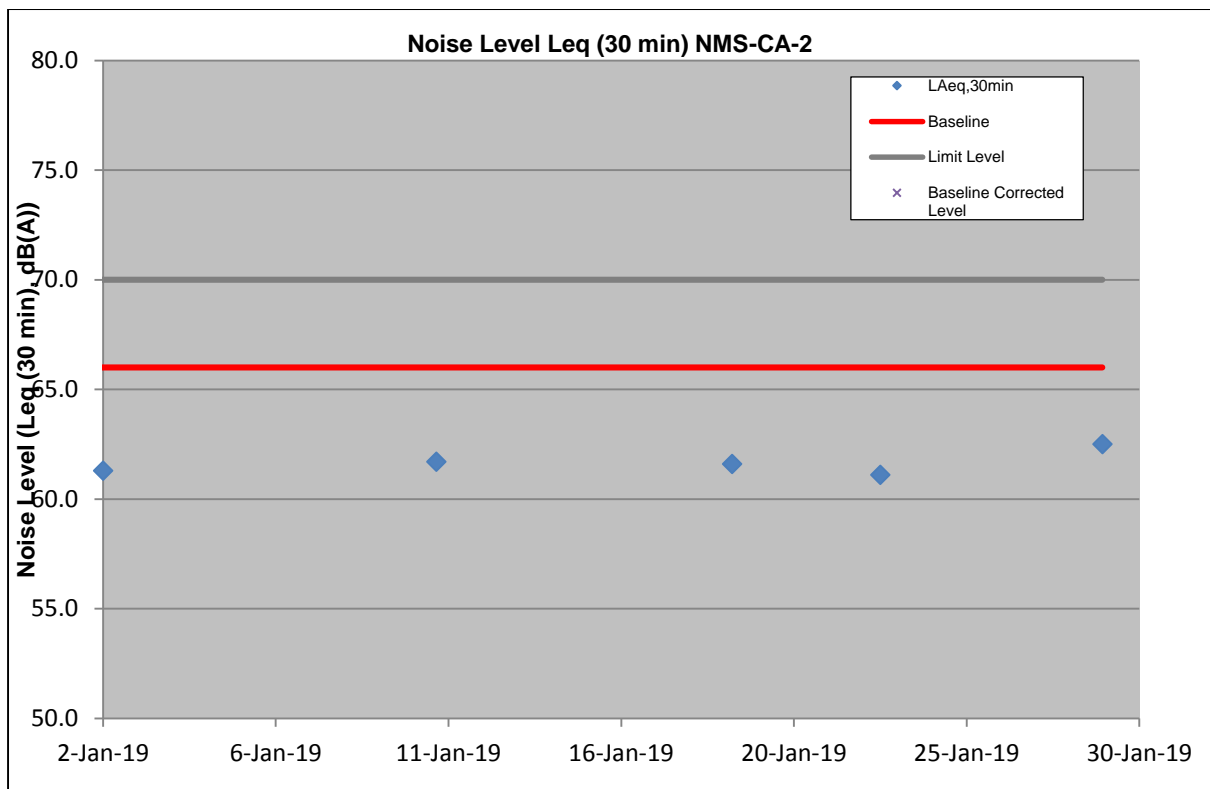
Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,30min	L <sub>90</sub> ,30min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
2-Jan-19	10:00-10:30	61.3	70.0	62.9	59.2	66.0	< Baseline Level
11-Jan-19	15:50-16:20	61.7	70.0	63.6	59.5	66.0	< Baseline Level
19-Jan-19	10:30-11:00	61.6	70.0	63.0	59.9	66.0	< Baseline Level
23-Jan-19	11:00-11:30	61.1	70.0	62.6	59.2	66.0	< Baseline Level
29-Jan-19	10:30-11:00	62.5	70.0	64.4	60.1	66.0	< Baseline Level

<b>Max</b>	<b>L<sub>Aeq</sub>,30min</b>	62.5
<b>Min</b>	<b>L<sub>Aeq</sub>,30min</b>	61.1

Notes: (\*) : Façade correction is included

(#) : Baseline Corrected Level = Measured Noise Level - Baseline Noise Level



## Appendix I

---

Event/Action Plan for  
Air Quality, Airborne  
Noise and Landscape  
and Visual

### **Event and Action Plan for Air Quality**

Event	Action			
	ET	IEC	ER	Contractor
<b>Action Level</b>				
1. Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Discuss with the Contractor, IEC and ER on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Implement remedial measures; 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; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Notify the Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Amend proposal if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, Contractor and EPD;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

### **Event and Action Plan for Airborne Noise**

Event	Action			
	ET	IEC	ER	Contractor
<b>Action Level</b>	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and ER</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required</li> <li>3. Increase monitoring frequency to check mitigation effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the contractor;</li> <li>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measures</li> <li>2. Report the results of investigation to the IEC, ET and ER</li> <li>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement noise mitigation proposals</li> </ol>
<b>Limit Level</b>	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency</li> <li>4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances</li> <li>7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ER, ET and Contractor on the potential remedial measures</li> <li>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>4. Supervise the implementation of remedial measures</li> <li>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</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement the agreed proposals</li> <li>5. Revise and resubmit proposals if problem still not under control</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated</li> </ol>

**Event / Action Plan for Landscape and Visual**

Action Level	ET	IEC	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Inform the Contractor, the IEC and the ER</li> <li>2. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>3. Monitor remedial actions until rectification has been completed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET, ER and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-conformity in writing</li> <li>2. Review and agree on the remedial measures proposed by the Contractor</li> <li>3. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify Source</li> <li>2. Inform the Contractor, the IEC and the ER</li> <li>3. Increase inspection frequency</li> <li>4. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>5. Monitor remedial actions until rectification has been completed</li> <li>6. If non-conformity stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.</li> </ol>

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer's Representative



## Appendix J

---

### Waste Flow Table

## MONTHLY SUMMARY WASTE FLOW TABLE

Name of Department: ENV

Contract No.:MTR-SCL1103

Monthly Summary Waste Flow Table for 2019

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	0.112	0.000	0.000	0.000	0.112	0.000	0.000	0.000	0.000	0.000	0.012
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	0.112	0.000	0.000	0.000	0.112	0.000	0.000	0.000	0.000	0.000	0.012
July											
August											
September											
October											
November											
December											
Total	0.112	0.000	0.000	0.000	0.112	0.000	0.000	0.000	0.000	0.000	0.012

### Comments:

- 1) Assumption: The densities of Rock, Soil, Mixed Rock and Soil, and Regular Spoil are 2.0 ton/m<sup>3</sup>; the density of general refuse is 1.0 ton/m<sup>3</sup>; the density of waste oil is 1.0 ton/m<sup>3</sup>.
- 2) The cut-off date of waste amount in Jan is 31/01/2019 for TKO137FB/TM38FB, NENT/SENT/WENT landfill.
- 3) The amount of waste in Jan is 12.05 tons for NENT/SENT/WENT Landfill, 224.46 tons for TKO137FB/TM38FB.
- 4) The amount of C&D material reused in the Contract in Jan is 0 tons, for cut-off date as 31/01/2019.
- 5) The amount of chemical waste in Jan is 0L for cut-off date as 31/01/2019.
- 6) The value of waste amount would be rounded up in three decimal places.

## Appendix K

---

Environmental  
Monitoring  
Programme for  
Coming Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels Tentative Impact Monitoring Schedule - February 2019				
Date		Air Quality	Noise	Site Inspection
		24-hours TSP	L <sub>Aeq</sub> , 30 min	
1-Feb-19	Fri			
2-Feb-19	Sat			
3-Feb-19	Sun			
4-Feb-19	Mon			
5-Feb-19	Tue			
6-Feb-19	Wed			
7-Feb-19	Thu			
8-Feb-19	Fri			
9-Feb-19	Sat			
10-Feb-19	Sun			
11-Feb-19	Mon			
12-Feb-19	Tue			
13-Feb-19	Wed			
14-Feb-19	Thu			
15-Feb-19	Fri			
16-Feb-19	Sat			
17-Feb-19	Sun			
18-Feb-19	Mon			
19-Feb-19	Tue			
20-Feb-19	Wed			
21-Feb-19	Thu			
22-Feb-19	Fri			
23-Feb-19	Sat			
24-Feb-19	Sun			
25-Feb-19	Mon			
26-Feb-19	Tue			
27-Feb-19	Wed			
28-Feb-19	Thu			

	Public Holiday
	Monitoring Day

#### Monitoring Details

Monitoring	Locations	Parameters
Air Quality	DMS-2 - Price Memorial Catholic Primary School	24-hour TSP
Noise	NMS-CA-2 - Price Memorial Catholic Primary School	L <sub>Aeq</sub> (30 min), L <sub>10</sub> , L <sub>90</sub>

Note:

No bi-weekly site inspection for Landscape & Visual Impact will be conducted at HK following the cessation of EM&A programme in the respective area.

## Appendix L

---

Cumulative Log for  
Complaints,  
Notifications of  
Summons and  
Successful  
Prosecutions

Ove Arup and Partners HK Ltd.

**SCL 1103 Hin Keng to Diamond Hill Tunnels Construction Stage Environmental Complaint Log (January 2019)**

[illegible]

Ove Arup and Partners HK Ltd.

**Environmental Complaint Log (Cumulative)**

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
February 2013	0	0	0
March 2013	0	0	0
April 2013	0	0	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	1	0	0
December 2014	2	0	0
January 2015	0	0	0
February 2015	3	0	0
March 2015	3	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	1	0	0
August 2015	0	0	0
September 2015	0	0	0
October 2015	1	0	0
November 2015	1	0	0
December 2015	0	0	0
January 2016	0	0	0
February 2016	0	0	0
March 2016	1	0	0
April 2016	1	0	0
May 2016	1	0	0
June 2016	1	0	0

Ove Arup and Partners HK Ltd.

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
November 2016	0	0	0
December 2016	0	0	0
January 2017	0	0	0
February 2017	0	0	0
March 2017	1	0	0
April 2017	0	0	0
May 2017	0	0	0
June 2017	1	0	0
July 2017	0	0	0
August 2017	1	0	0
September 2017	0	0	0
October 2017	0	0	0
November 2017	1	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	0	0	0
April 2018	0	0	0
May 2018	0	0	0
June 2018	0	0	0
July 2018	0	0	0
August 2018	1	0	0
September 2018	0	0	0
October 2018	0	0	0
November 2018	0	0	0
December 2018	0	0	0
January 2019	0	0	0
<b>Total</b>	24	0	0



---

**Appendix D**

**71<sup>st</sup> Monthly EM&A Report for Works Contract 1106 –  
Diamond Hill Station**

---

MTR Corporation Limited


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

Monthly EM&A Report No. 71

[Period from 1 to 31 January 2019]

Works Contract 1106 – Diamond Hill Station

(February 2019)

Certified by:   
Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 13<sup>th</sup> February 2019

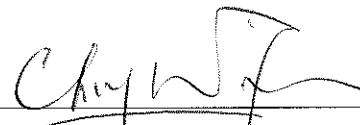
## **Leader Joint Venture**

### **Shatin to Central Link – Contract 1106 Diamond Hill Station**

### **Monthly Environmental Monitoring and Audit Report For January 2019**

(Version 1.0)

Certified By



Dr. Priscilla Choy  
(Environmental Team Leader)

#### REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

#### **CINOTECH CONSULTANTS LTD**

Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong  
Tel: (852) 2151 2083 Fax: (852) 3107 1388  
Email: [info@cinotech.com.hk](mailto:info@cinotech.com.hk)

## TABLE OF CONTENTS

	Page
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
Introduction .....	1
Summary of Construction Works undertaken during the Reporting Month .....	1
Environmental Monitoring and Audit Progress .....	1
Regular Construction Noise and Construction Dust Monitoring .....	1
Cultural Heritage .....	1
Waste Management .....	2
Landscape and Visual.....	2
Environmental Site Inspection .....	2
Environmental Exceedance/Non-conformance/Complaint/Summons and Successful Prosecution .....	2
Future Key Issues .....	2
<b>1 INTRODUCTION .....</b>	<b>4</b>
Purpose of the Report .....	4
Structure of the Report .....	4
<b>2 PROJECT INFORMATION.....</b>	<b>5</b>
Background .....	5
General Site Description .....	5
Construction Programme and Activities .....	5
Project Organisation .....	5
Status of Environmental Licences, Notification and Permits.....	5
Summary of EM&A Requirements .....	6
<b>3 ENVIRONMENTAL MONITORING REQUIREMENTS .....</b>	<b>7</b>
Regular Construction Noise Monitoring .....	7
Monitoring Parameter and Frequency .....	7
Monitoring Equipment and Methodology .....	7
Field Monitoring.....	7
Monitoring Equipment .....	8
Maintenance and Calibration.....	9
Action & Limit Level for Construction Noise Monitoring .....	9
Regular Construction Dust Monitoring .....	9
Monitoring Parameter and Frequency .....	10
Monitoring Equipment .....	10
Instrumentation.....	10
HVS Installation .....	10
Filters Preparation .....	11
Operating/Analytical Procedures .....	11
Maintenance/Calibration .....	12
Action and Limit Levels for Dust Monitoring .....	12
Cultural Heritage .....	12
Landscape and Visual.....	12
<b>4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS .....</b>	<b>13</b>
<b>5 MONITORING RESULTS .....</b>	<b>14</b>
Regular Construction Noise Monitoring .....	14
Regular Dust Monitoring.....	14
Cultural Heritage .....	15
Waste Management .....	15

Landscape and Visual.....	16
<b>6 ENVIRONMENTAL SITE INSPECTION.....</b>	<b>17</b>
Site Audits .....	17
Implementation Status of Environmental Mitigation Measures.....	17
<b>7 ENVIRONMENTAL NON-CONFORMANCE.....</b>	<b>18</b>
Summary of Exceedances .....	18
Summary of Environmental Non-Compliance.....	18
Summary of Environmental Complaint .....	18
Summary of Environmental Summon and Successful Prosecution .....	18
<b>8 FUTURE KEY ISSUES .....</b>	<b>19</b>
Construction Programme for the Next Month.....	19
Key Issues in the Next Reporting Month .....	19
Monitoring Schedule in the Next Month.....	19
<b>9 CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>20</b>
Conclusions .....	20
Recommendations .....	20

## LIST OF TABLES

Table 2.1	Status of Environmental Licences, Notification and Permits
Table 3.1	Regular Construction Noise Monitoring Location
Table 3.2	Noise Monitoring Equipment
Table 3.3	Dust Monitoring Location
Table 3.4	Dust Monitoring Parameters and Frequency
Table 3.5	Dust Monitoring Equipment
Table 4.1	Status of Required Submissions under EP
Table 5.1	Summary Table of Dust Monitoring Results during the reporting month
Table 5.2	Quantities of Waste Generated from the Project
Table 6.1	Observations and Recommendations of Site Audit

## LIST OF FIGURES

Figure 1	The Alignment and Works Area for Works Contract 1106
Figure 2	Locations of Construction Noise Monitoring
Figure 3	Locations of Dust Monitoring
Figure 4	Organisation Chart and Key Contact of the Project

## LIST OF APPENDICES

Appendix A	Tentative Construction Programme
Appendix B	Action and Limit Levels
Appendix C	Calibration Certificates for Monitoring Equipment
Appendix D	Impact Monitoring Schedule
Appendix E	24-hour TSP Monitoring Results and Graphical Presentations
Appendix F	Noise Monitoring Results and Graphical Presentations
Appendix G	Summary of Exceedance
Appendix H	Site Audit Summary
Appendix I	Event and Action Plans
Appendix J	Updated Environmental Mitigation Implementation Schedule
Appendix K	Waste Generation in the Reporting Month
Appendix L	Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

## EXECUTIVE SUMMARY

### Introduction

1. This is the 71<sup>st</sup> Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1106 – Diamond Hill Station**. This report documents the findings of EM&A Works conducted from 1<sup>st</sup> to 31<sup>st</sup> January 2019.

### Summary of Construction Works undertaken during the Reporting Month

2. The major site activities undertaken in the reporting month include:
  - Defect rectification for SCL DIH station - minor ABWF works;
  - TTA for site access and temporary footpath diversion at Choi Hung Road and Lung Cheung Road;
  - Installation of salt water main and fire service main; and
  - General site clearance works.

### Environmental Monitoring and Audit Progress

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

#### Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours  
Noise Monitoring Station ID

• NMS-CA-3 <sup>(1)</sup> /NMS-CA-4 <sup>(2)</sup> (H.K. Sheng Kung Hui Nursing Home)	5 times
• NMS-CA-4 <sup>(1)</sup> /NMS-CA-3 <sup>(2)</sup> (Block 1, Rhythm Garden (north-eastern façade))	5 times
• NMS-CA-5 <sup>(1)</sup> /NMS-CA-2 <sup>(2)</sup> (Block 1, Rhythm Garden (northern façade))	5 times
- Construction Dust (24-hour TSP) Monitoring  
Dust Monitoring Station ID

• DMS-3 <sup>(1)</sup> /DMS-4 <sup>(2)</sup> (H.K. Sheng Kung Hui Nursing Home)	6 times
• DMS-4 <sup>(1)</sup> /DMS-3 <sup>(2)</sup> (Block 1, Rhythm Garden)	6 times

#### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).  
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

### Cultural Heritage

4. An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village commenced on 9 May 2013 and the fieldwork had been completed in September 2013 in accordance with the Licence granted and the approved AAP. The finalized Archaeological Survey-cum-Excavation Report was submitted to AMO on 27 February 2017. Artefacts handover to AMO was completed on 18 May 2017.

5. The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar was carried out in accordance with the approved Conservation Plan and completed in June 2013. Relocation works for the Old Pillbox had been completed in November 2013 in accordance with the approved Conservation Plan. Proposal for relocation of two historic buildings was approved by EPD on 20 April 2018. The Old Pillbox relocation was completed on 18 Jul 2018 and the Former Royal Air Force Hanger relocation was completed on 25 Aug 2018. Regular maintenance and inspection works of the two historic buildings were carried out in accordance with the approved Conservation Plan and relocation proposal.

#### Waste Management

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. 46 m<sup>3</sup> inert C&D materials were generated from the Project and were sent to Tseung Kwan O Area 137 Fill Bank during the reporting month. 36 m<sup>3</sup> of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. No chemical waste was collected by licensed collector during the reporting month. No paper/cardboard packaging and no plastics and metal were generated in this reporting month.

#### Landscape and Visual

7. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 10 and 24 January 2019. All necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor. Details of the audit findings and implementation status are presented in Section 6.

#### Environmental Site Inspection

8. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 3, 10, 17, 24 and 30 January 2019. The representative of the IEC joined the site inspection on 24 January 2019. Details of the audit findings and implementation status are presented in Section 6.

#### **Environmental Exceedance/Non-conformance/Complaint/Summons and Successful Prosecution**

9. No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the reporting period.
10. No non-compliance event was recorded during the reporting period.
11. No Project related environmental complaint and no notification of summons/ successful prosecutions were received in this reporting period.

#### **Future Key Issues**

12. Major site activities for the coming reporting month will include:
- Defect rectification for SCL DIH station - minor ABWF works;

- Sealing of temporary wall opening at Entrance A2;
- TTA for site access and temporary footpath diversion at Choi Hung Road and Lung Cheung Road; and
- General site clearance works;



## 1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Leader Joint Venture (LJV) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL) Works Contract 1106 – Diamond Hill Station (hereafter referred to as the Project).

### **Purpose of the Report**

- 1.2 This is the 71<sup>st</sup> EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1<sup>st</sup> to 31<sup>st</sup> January 2019.

### **Structure of the Report**

- 1.3 The structure of the report is as follows:

Section 1: **Introduction** - details the scope and structure of the report.

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

Section 3: **Environmental Monitoring Requirement** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

Section 4: **Implementation Status on Environmental Mitigation Measures** - summarises the implementation of environmental protection measures during the reporting period.

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

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

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

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

Section 9: **Conclusions and Recommendations**

## 2 PROJECT INFORMATION

### Background

- 2.1 The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an approximately 11 km long extension of the Ma On Shan Line and 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).
- 2.2 The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts. This Works Contract 1106 covers the construction of Shatin-to-Central Link (SCL) station in Diamond Hill (DIH).

### General Site Description

- 2.3 For Works Contract 1106, the works area for the DIH station is located to the northeast of Choi Hung Road next to the existing Kwun Tong Line DIH Station. The DIH station will be constructed by cut-and-cover method. Since July 2016, southern portion of the works area at Choi Hung Road was handover to relevant government department. Part of the site area was handed over to Housing Department on 17 April 2018. The latest alignment and works areas for the Works Contract 1106 are shown in **Figure 1**.

### Construction Programme and Activities

- 2.4 A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.
- Defect rectification for SCL DIH station - minor ABWF works;
  - TTA for site access and temporary footpath diversion at Choi Hung Road and Lung Cheung Road;
  - Installation of salt water main and fire service main; and
  - General site clearance works.

### Project Organisation

- 2.5 The project organizational chart and contact details are shown in **Figure 4**.

### Status of Environmental Licences, Notification and Permits

- 2.6 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since the commencement of the construction works in March 2013 is presented in Table 2.1.

**Table 2.1 Summary of the Status of Environmental Licences, Notification and Permits**

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/K	04/10/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.: 378656	28/08/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No.: 7016601	27/12/2012	N/A	Valid
Registration of Chemical Waste Producer			
5213-281-L2974 -01	07/02/2018	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00030249-2018	28/02/2018	31/01/2023	Valid
Construction Noise Permit (CNP)			
GW-RE0651-18	27/09/2018	25/03/2019	Valid
GW-RE0741-18	06/11/2018	02/02/2019	Valid

### Summary of EM&A Requirements

- 2.7 The EM&A programme under Works Contract 1106 requires regular dust and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:
- All monitoring parameters;
  - Action and Limit levels for all environmental parameters;
  - Event / Action Plans;
  - Environmental mitigation measures, as recommended in the Project EIA study final report; and
  - Environmental requirements in contract documents.
- 2.8 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.
- 2.9 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely construction noise & dust monitoring as well as audit works for the Project in the reporting month.

### 3 ENVIRONMENTAL MONITORING REQUIREMENTS

#### Regular Construction Noise Monitoring

- 3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was rejected; 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 **Figure 2**.

**Table 3.1 Regular Construction Noise Monitoring Location**

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-3 <sup>(1)(3)</sup> / NMS-CA-4 <sup>(2)(3)</sup>	Hong Kong Sheng Kung Hui Nursing Home	Façade
NMS-CA-4 <sup>(1)</sup> / NMS-CA-3 <sup>(2)</sup>	Block 1, Rhythm Garden (north-eastern façade)	Façade
NMS-CA-5 <sup>(1)(4)</sup> / NMS-CA-2 <sup>(2)(4)</sup>	Block 1, Rhythm Garden (northern façade)	Façade

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.
- (4) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.

#### **Monitoring Parameter and Frequency**

- 3.2 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 of monitoring stations at Rhythm Garden is shown in **Appendix D**.
- 3.3 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) (as six consecutive  $L_{eq, 5-min}$  readings) was used as the monitoring metric for the time period between 0700 – 1900 hours on normal weekdays.

#### **Monitoring Equipment and Methodology**

##### **Field Monitoring**

- 3.4 The monitoring procedures are as follows:
- The microphone head of the sound level meter was positioned 1m exterior of the

noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.

- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - measurement time : 5 minutes (obtaining six consecutive  $L_{eq,5min}$  readings for a  $L_{eq,30 min}$  reading )
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- At the end of the monitoring period, the  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- A façade correction of +3dB(A) shall be made to the noise parameter obtained by free field measurement.

### Monitoring Equipment

- 3.5 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 **Appendix C**.

**Table 3.2 Noise Monitoring Equipment**

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	BSWA 801 (Serial no: 35927)
	BSWA 801 (Serial no: 35921)
	SVAN 957 (Serial no: 21459)
	SVAN 977 (Serial no: 45482)
Calibrator	4231 (Serial no. 2412367)
	SV30A (Serial no.: 24780)
	SV30A (Serial no.: 24803)

## Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator were checked and calibrated at yearly intervals. Copies of calibration certificates are attached in **Appendix C**.

### Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I**.

### Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and CNMMP prepared and submitted under EP Condition 2.9 and 2.10, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1106.

### Regular Construction Dust Monitoring

3.9 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

**Table 3.3 Dust Monitoring Location**

Regular Dust Monitoring Location	Description
DMS-3 <sup>(1)(3)</sup> / DMS-4 <sup>(2)(3)</sup>	Hong Kong Sheng Kung Hui Nursing Home
DMS-4 <sup>(1)</sup> / DMS-3 <sup>(2)</sup>	Block 1, Rhythm Garden

Note:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.

### Monitoring Parameter and Frequency

- 3.10 The 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 3.4**. The TSP monitoring at Rhythm Garden was conducted as per the schedule presented in **Appendix D**.

**Table 3.4 Dust Monitoring Parameters and Frequency**

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring <sup>(1)</sup>	Throughout the construction period	24-hour TSP	Once per 6 days

Note:

- (1) 1- hour TSP shall be conducted when one documented valid complaint is received.

### Monitoring Equipment

- 3.11 **Table 3.5** summarizes the equipment used for the dust monitoring.

**Table 3.5 Dust Monitoring Equipment**

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 2352	1
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 3223	1
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 2896	1

### Instrumentation

- 3.12 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 Appendix B (Part 50).

### HVS Installation

- 3.13 The following guidelines were adopted during the installation of HVS:
- Sufficient support was provided to secure the samplers against gusty wind.
  - No two samplers were placed less than 2 meters apart.
  - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
  - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
  - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
  - No furnaces or incineration flues were nearby.
  - Airflow around the sampler was unrestricted.



- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

### **Filters Preparation**

- 3.14 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3  $\mu\text{m}$  diameter. A HOKLAS accredited laboratory, Wellab Ltd. (HOKLAS Registration No. 083), was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.
- 3.15 All filters, which were prepared by Wellab Ltd., 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  $\pm 3$  °C; the relative humidity (RH) was < 50% and not variable by more than  $\pm 5\%$ . A convenient working RH was 40%.
- 3.16 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

### **Operating/Analytical Procedures**

- 3.17 Operating/analytical procedures for the TSP monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4  $\text{m}^3/\text{min.}$ ) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
  - The power supply was checked to ensure the sampler worked properly.
  - The filter holding frame and the area surrounding the filter were cleaned.
  - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
  - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
  - The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
  - The shelter lid was closed and secured with the aluminum strip.
  - A new flow rate record chart was set into the flow recorder.
  - The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
  - The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet before and after sampling.
  - The elapsed time and other relevant information was recorded. After sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
  - It was then placed in a clean plastic envelope and sealed and sent to the Wellab Ltd. for weighing.
  - Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than  $\pm 3$ °C; the relative humidity (RH) should be < 50% and not vary by more than  $\pm 5\%$ . A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations.



### **Maintenance/Calibration**

- 3.18 The following maintenance/calibration was required for the HVS:
- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
  - Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix C**.
  - The HVS calibration orifice will be calibrated annually.

### **Action and Limit Levels for Dust Monitoring**

- 3.19 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix I**.

### **Cultural Heritage**

- 3.20 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village shall be conducted in accordance with the Licence granted and the approved AAP.
- 3.21 The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar and relocation work of the Old Pillbox shall be carried out in accordance with the approved Conservation Plan. Regular maintenance, relocation works and inspection works of the two historic buildings shall be carried out in accordance with the approved Conservation Plan and relocation proposal.

### **Landscape and Visual**

- 3.22 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 **Appendix J**. The Event / Action Plan (EAP) for landscape and visual are presented in **Appendix I**.

#### 4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

- 4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix J**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

**Table 4.1 Status of Required Submissions under EP**

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (December 2018)	14 <sup>th</sup> January 2019

## 5 MONITORING RESULTS

### Regular Construction Noise Monitoring

- 5.1 A total of 15 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the Limit Level was recorded at designated monitoring stations.
- 5.2 The noise monitoring results recorded at NMS-CA-3<sup>(1)</sup>/ NMS-CA-4<sup>(2)</sup> (Hong Kong S.K.H Nursing Home) in January 2019 exceeded the daytime construction noise criterion except 3, 15 and 21 January 2019. However, the results were not considered as exceedance since the measured results were below the baseline noise levels.
- 5.3 The noise monitoring results recorded at (Block 1, Rhythm Garden (north-eastern façade)) in January 2019 did not exceed the daytime construction noise criterion.
- 5.4 The noise monitoring results recorded at NMS-CA-5<sup>(1)</sup>/NMS-CA-2<sup>(2)</sup> (Block 1, Rhythm Garden (northern façade)) in January 2019 exceeded the daytime construction noise criterion. However, the results were not considered as exceedance since the measured results were below the baseline noise levels or below the limit level after deducting the baseline noise level.
- 5.5 Based on observation during the on-site monitoring, road traffic nearby, other construction site at Choi Hung Road and foundation works in other construction site at former Tai Hom Village in January 2019 are considered as potential noise source other than construction works of the Project that affects the monitoring results in the reporting month.
- 5.6 The noise monitoring results together with their graphical presentations are presented in **Appendix F**.
- 5.7 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period. The summary of exceedance in this reporting month is provided in **Appendix G**.

### Regular Dust Monitoring

- 5.8 A total of 12 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E** and a summary of the dust monitoring results in this reporting month is given in **Table 5.1**.

**Table 5.1 Summary Table of Dust Monitoring Results during the reporting month**

Parameter	Minimum µg/m <sup>3</sup>	Maximum µg/m <sup>3</sup>	Average µg/m <sup>3</sup>	Action Level, µg/m <sup>3</sup>	Limit Level, µg/m <sup>3</sup>
24-hr TSP (DMS-3 <sup>(1)</sup> / DMS-4 <sup>(2)</sup> )	84.5	131.5	103.0	159.1	260
24-hr TSP (DMS-4 <sup>(1)</sup> / DMS-3 <sup>(2)</sup> )	41.3	93.1	61.4	160.4	260

Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).  
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

- 5.9 Based on observation during the on-site monitoring, road traffic emission nearby, other construction site at Choi Hung Road and foundation works in other construction site at former Tai Hom Village in January 2019 are considered as potential dust source other than construction works of the Project that affects the monitoring results in the reporting month.
- 5.10 Wind monitoring data were obtained from Kai Tak Meteorological Station of Hong Kong Observatory and shown on **Appendix E**.
- 5.11 No exceedance of the Action and Limit Levels of the 24-hour TSP was recorded during the reporting period. The summary of exceedance in this reporting month is provided in **Appendix G**.

### **Cultural Heritage**

- 5.12 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village commenced on 9 May 2013 and completed in September 2013 in accordance with the Licence granted and the approved AAP. The finalized Archaeological Survey-cum-Excavation Report was submitted to AMO on 27 February 2017. Artefacts handover to AMO was completed on 18 May 2017.
- 5.13 The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar was carried out in accordance with the approved Conservation Plan and completed in June 2013. Relocation works for the Old Pillbox had been completed in November 2013 in accordance with the approved Conservation Plan. Proposal for relocation of two historic buildings was approved by EPD on 20 April 2018. The Old Pillbox relocation was completed on 18 Jul 2018 and the Former Royal Air Force Hangar relocation was completed on 25 Aug 2018. Regular maintenance and inspection works of the two historic buildings were carried out in accordance with the approved Conservation Plan and relocation proposal.

### **Waste Management**

- 5.14 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 like plastics and paper/cardboard packaging materials. 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**. 46 m<sup>3</sup> of C&D materials was generated during the reporting period and were disposed as public fill. 36 m<sup>3</sup> of general refuse were generated during the reporting month. No chemical waste was collected by licensed

collector during the reporting month. No plastics and metal were generated in this reporting month. Detail of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) <sup>(a)</sup>	C&D Materials (non-inert) <sup>(b)</sup>				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
January 2019	46 m <sup>3</sup>	36 m <sup>3</sup>	0 kg	0 kg	0 kg	0 kg
Notes: (a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, which 46 m <sup>3</sup> was delivered to Tseung Kwan O Area 137 Fill Bank during the reporting month. (b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. General refuse was delivered to designated landfill for disposal.						

### Landscape and Visual

5.15 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 10 and 24 January 2019. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

## 6 ENVIRONMENTAL SITE INSPECTION

### Site Audits

- 6.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 6.2 Site audits were conducted on 3, 10, 17, 24 and 30 January 2019. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 24 January 2019. The details of observations during site audits carried out by ET can refer to **Table 6.1**.

### Implementation Status of Environmental Mitigation Measures

- 6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix J**.
- 6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**

**Table 6.1 Observations and Recommendations of Site Audit**

Parameters	Date	Observations and Recommendations	Follow-up
<i>Water Quality</i>	--	--	--
<i>Noise</i>	--	--	--
<i>Landscape and Visual</i>	27 December 2018, 03, 10, 17 January 2019	<u>Reminder / Observation:</u> The Contractor was reminded to remove the construction material near the retained tree and properly established a tree protection zone for the retained tree near the AquaSed.	As observed on 24 January 2019, the construction material was removed.
<i>Cultural Heritage</i>	--	--	--
<i>Air Quality</i>	--	--	--
<i>Waste/ Chemical Management</i>	10 January 2019	<u>Observation:</u> Chemical waste label should be affixed to the chemical waste containers inside the chemical waste storage area.	As observed on 17 January 2019, chemical waste labels were affixed to the chemical containers.
	24, 30 January 2019	<u>Observation:</u> The Contractor was reminded to remove oil stain on the ground near the breaker (site office area).	Follow up action will be reported in the next reporting month.
<i>Permits/ Licenses</i>	--	--	--

## **7 ENVIRONMENTAL NON-CONFORMANCE**

### **Summary of Exceedances**

- 7.1 No exceedance of the Action and Limit Levels of the regular construction noise and 24-hour TSP monitoring was recorded during the reporting month. The summary of exceedance is provided in **Appendix G**.

### **Summary of Environmental Non-Compliance**

- 7.2 No environmental non-compliance was recorded in the reporting month.

### **Summary of Environmental Complaint**

- 7.3 No environmental Project-related complaint was received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**.

### **Summary of Environmental Summon and Successful Prosecution**

- 7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix L**.

## 8 FUTURE KEY ISSUES

### Construction Programme for the Next Month

8.1 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:

- Defect rectification for SCL DIH station - minor ABWF works;
- Sealing of temporary wall opening at Entrance A2;
- TTA for site access and temporary footpath diversion at Choi Hung Road and Lung Cheung Road; and
- General site clearance works;

### Key Issues in the Next Reporting Month

8.2 Key issues to be considered in the coming month include:

- Control of silty surface runoff;
- Preservation of Former Royal Air Force Hangar and Old Pillbox after dismantling and relocation;
- Preservation and protection of retained and transplanted trees; and
- Implementation of mitigation measures for noise nuisance from construction works.

### Monitoring Schedule in the Next Month

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



## 9 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- 9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1<sup>st</sup> to 31<sup>st</sup> January 2019 in accordance with EM&A Manual and the requirement under EP.
- 9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.
- 9.3 5 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted during the reporting period.
- 9.4 No Project related environmental complaint and no successful prosecution or notification of summons were received in the reporting month.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

### Recommendations

- 9.6 According to the environmental audit performed in the reporting month, the following recommendations were made:

#### Landscape & Visual

- Tree protection zone should be properly established for the retained tree.

#### Waste / Chemical Management

- Proper mitigation measures should be provided on site to avoid any oil leakage from containers / plants.
- Chemical waste label should be affixed to the chemical waste containers.

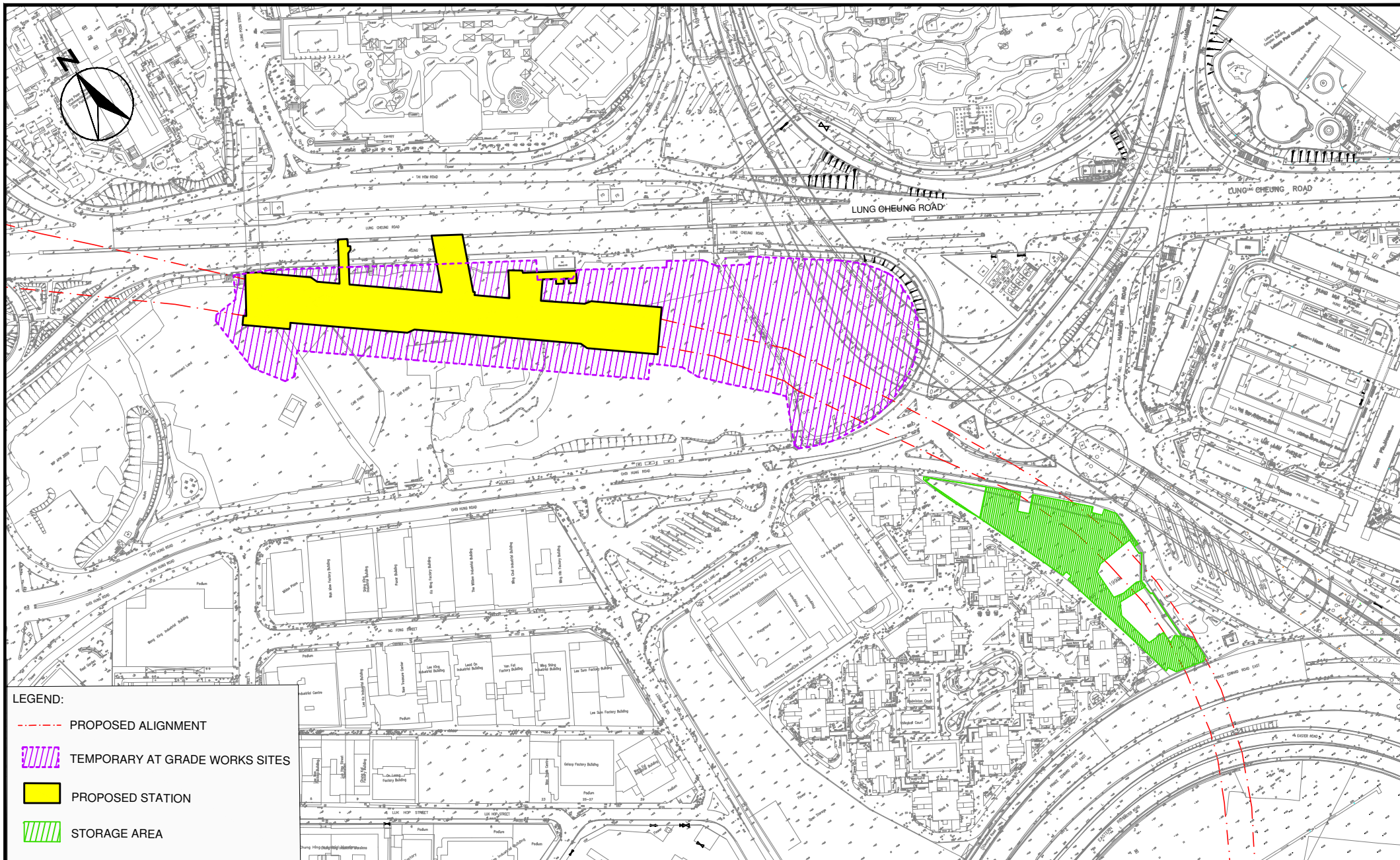
---

---

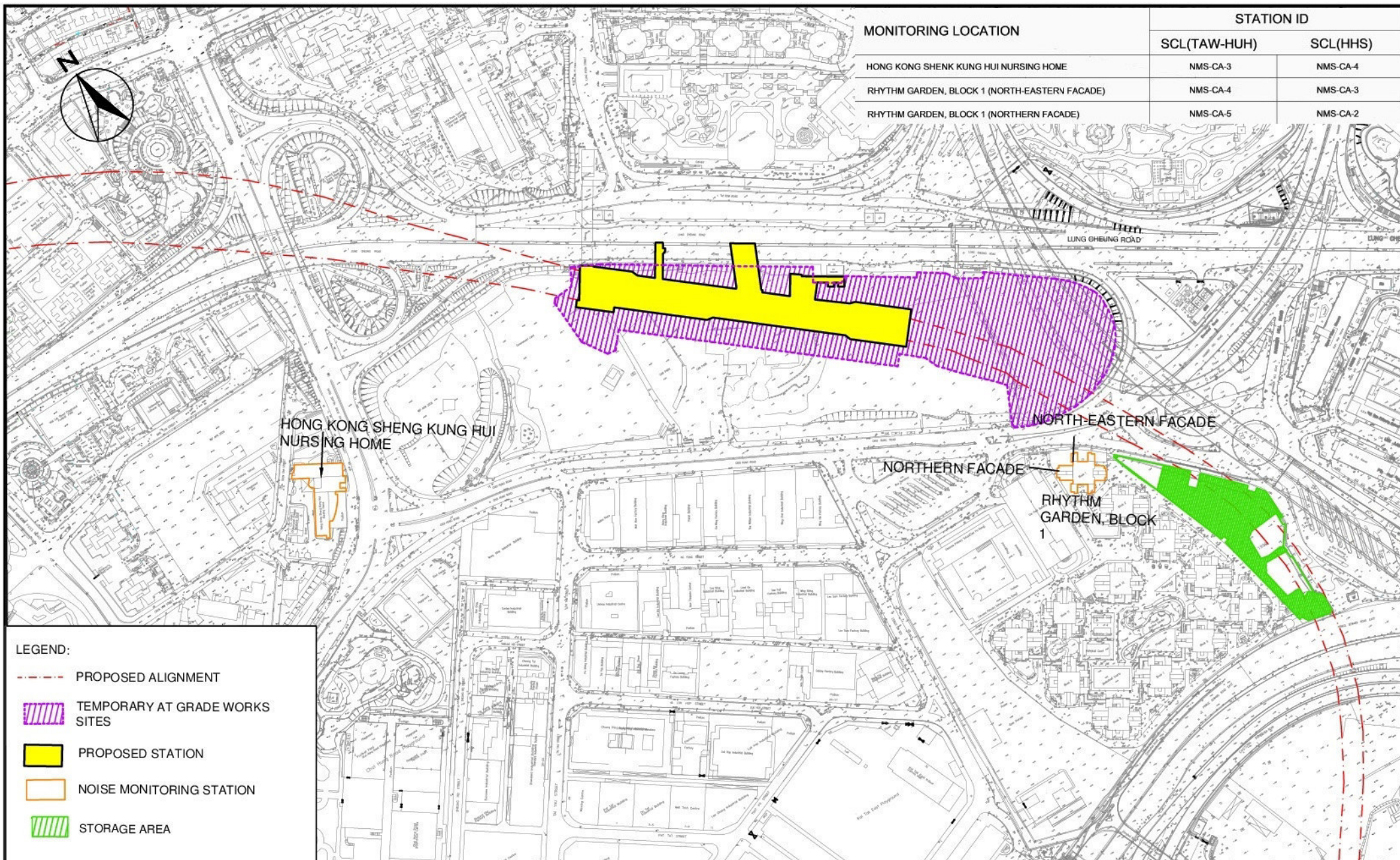
## FIGURES

---

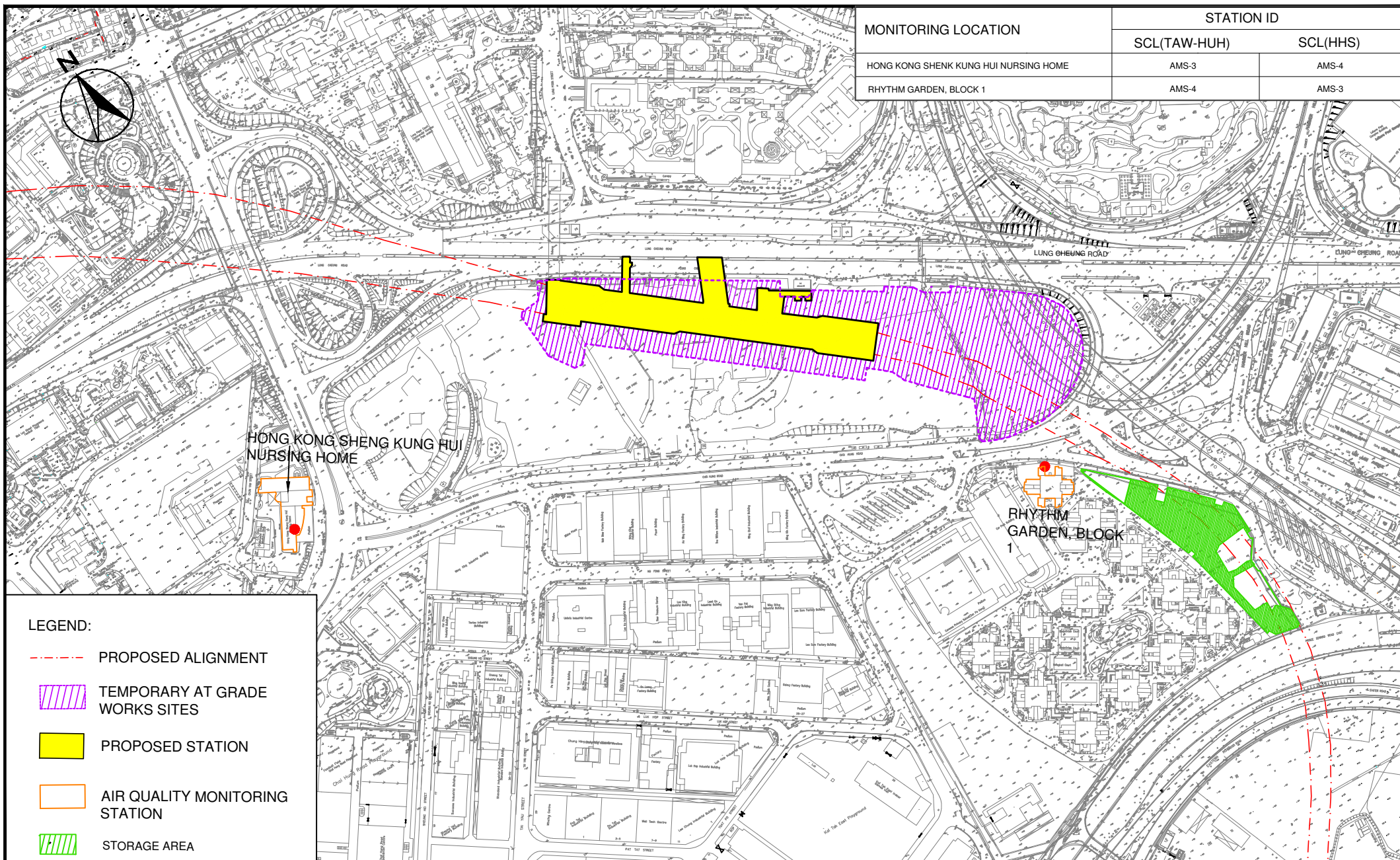
---

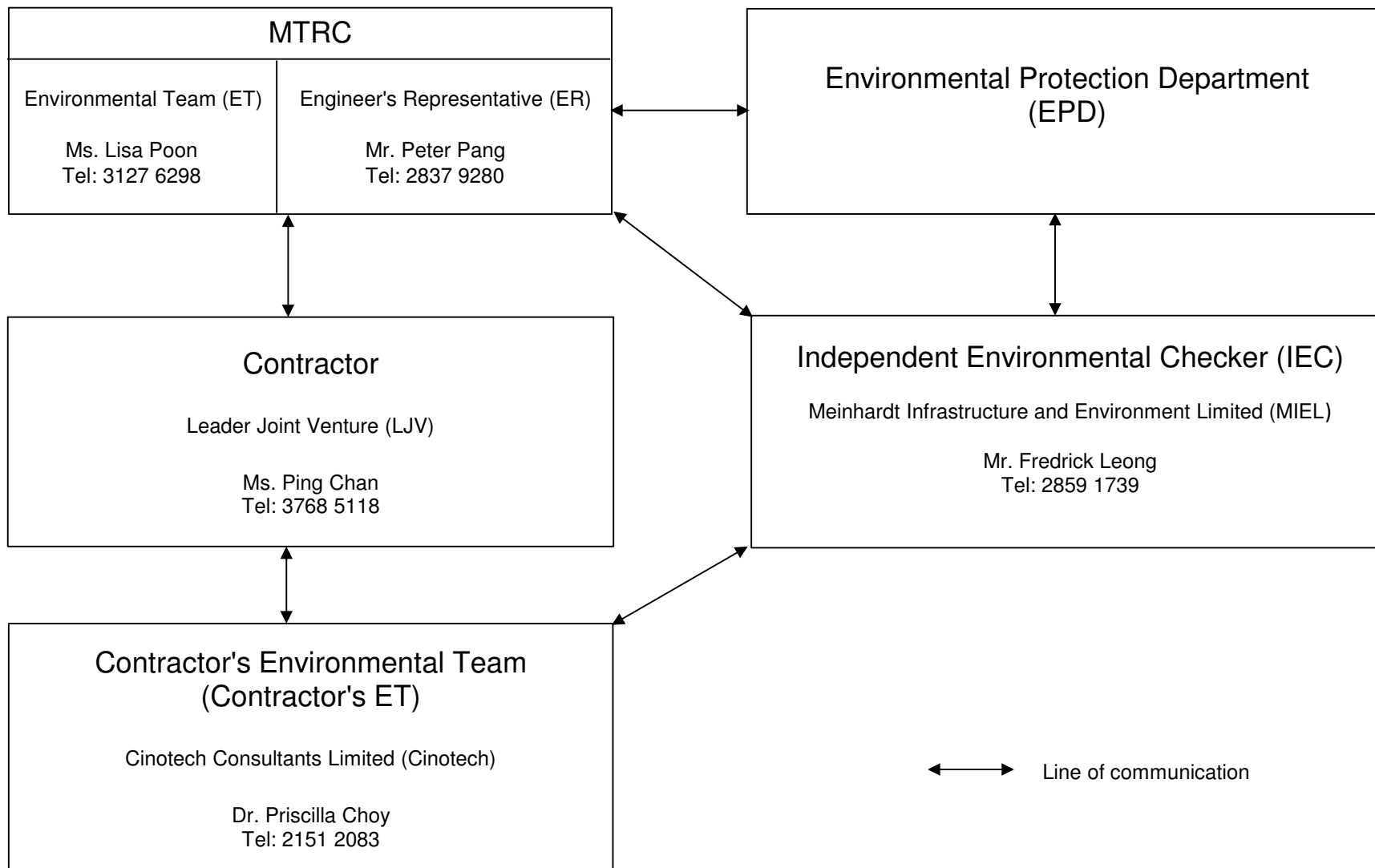












Title

MTR SCL Works Contract 1106  
Diamond Hill Station

Scale

N.T.S

Proposal

No. MA12051

Date

Nov-18

Figure

4

**CINOTECH**

Organisation Chart and Key Contact of the Project

---

---

**APPENDIX A  
TENTATIVE CONSTRUCTION  
PROGRAMME**

---

---



■ Remaining Work

■ Critical Remaining Work

■ Actual Work

◆ Baseline Milestone

◆ Milestone

\* Note 1: SFK is the Contractor of another construction project

1 of 1

**MTR Contract 1106 - Diamond Hill Station**

**Three Month Rolling Programme**

**As of 31 January 2019**

3 Month Rolling Programme			
Date	Revision	Checked	Approved
31-Jan-19	C-1106-3MRP/ 73		



---

---

**APPENDIX B**  
**ACTION AND LIMIT LEVELS**

---

---

## APPENDIX B – Action and Limit Levels

### 24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
DMS-3 <sup>(1)(3)</sup> / DMS-4 <sup>(2)(3)</sup>	Hong Kong Sheng Kung Hui Nursing Home	159.1	260
DMS-4 <sup>(1)</sup> / DMS-3 <sup>(2)</sup>	Block 1, Rhythm Garden	160.4	

Note:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.

### Construction Noise

Regular Construction Noise Monitoring Location <sup>(1)</sup>	Description	Time Period	Action Level	Limit Level (Leq (30-min))
NMS-CA-3 <sup>(1)(3)</sup> / NMS-CA-4 <sup>(2)(3)</sup>	Hong Kong Sheng Kung Hui Nursing Home	0700-1900 hrs on normal weekdays	When one documented complaint is received	70 dB(A)
NMS-CA-4 <sup>(1)</sup> / NMS-CA-3 <sup>(2)</sup>	Block 1, Rhythm Garden (north-eastern façade)			75 dB(A)
NMS-CA-5 <sup>(1)(4)</sup> / NMS-CA-2 <sup>(2)(4)</sup>	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A) <sup>(5)</sup>

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.
- (4) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
- (5) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

---

---

**APPENDIX C  
CALIBRATION CERTIFICATES FOR  
MONITORING EQUIPEMENT**

---

---

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	29499
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2019-08-12

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

## Certificate of Calibration

### Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

### Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

### Test Specifications:

Performance checking at 94 and 114 dB

### Methodology:

In-house method, according to manufacturer instruction manual

### Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	29815
Date of Issue:	2018-09-15
Date Received:	2018-09-14
Date Tested:	2018-09-14
Date Completed:	2018-09-15
Next Due Date:	2019-09-14

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

**Test conditions:**

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	30524A
Date of Issue:	2018-12-17
Date Received:	2018-12-15
Date Tested:	2018-12-15
Date Completed:	2018-12-17
Next Due Date:	2019-12-16

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35921
Equipment No.	: N-13-02

**Test conditions:**

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.: 30524C  
Date of Issue: 2018-12-17  
Date Received: 2018-12-15  
Date Tested: 2018-12-15  
Date Completed: 2018-12-17  
Next Due Date: 2019-12-16

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

## Certificate of Calibration

### Item for calibration:

Description : Sound & Vibration Analyser  
Manufacturer : BSWA  
Model No. : BSWA 801  
Serial No. : 35927  
Equipment No. : N-13-03

### Test conditions:

Room Temperature : 17-22 degree Celsius  
Relative Humidity : 40-70%

### Test Specifications:

Performance checking at 94 and 114 dB

### Methodology:

In-house method, according to manufacturer instruction manual

### Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	29816
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

### Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



**PATRICK TSE**

Laboratory Manager



## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	29817
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

### Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 $\pm$ 0.1 dB
At 114 dB SPL	114.0	114.0 $\pm$ 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	29683
Date of Issue:	2018-08-20
Date Received:	2018-08-17
Date Tested:	2018-08-17
Date Completed:	2018-08-20
Next Due Date:	2019-08-19

**ATTN:** Mr. W.K. Tang

Page: 1 of 1

### Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

### Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70 %

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA12051/64/0014

Station DMS-3 - Hong Kong Sheng Kung Hui Nursing Home Operator: MH  
 Date: 15-Nov-18 Next Due Date: 14-Jan-19  
 Equipment No.: A-01-64 Serial No. 3223

Ambient Condition			
Temperature, Ta (K)	295.8	Pressure, Pa (mmHg)	764.8

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.8	4.13	70.52	10.3	3.23
2	14.3	3.81	65.06	8.6	2.95
3	10.7	3.29	56.28	6.8	2.63
4	7.5	2.76	47.12	4.9	2.23
5	4.6	2.16	36.90	3.3	1.83

### By Linear Regression of Y on X

Slope, mw = 0.0413 Intercept, bw = 0.2946

Correlation coefficient\* = 0.9993

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.23

Remarks: \_\_\_\_\_

Conducted by: Chen Man Hui Signature: he  
 Checked by: W.K. Tang Signature: Kwun

Date: 15/11/2018  
 Date: 15/11/2018

## High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA12051/64/0015

Station DMS-3 - Hong Kong Sheng Kung Hui Nursing Home Operator: MH  
Date: 9-Jan-19 Next Due Date: 8-Mar-19  
Equipment No.: A-01-64 Serial No. 3223

Ambient Condition			
Temperature, Ta (K)	290.8	Pressure, Pa (mmHg)	770.4

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.7	4.17	71.17	9.9	3.21
2	14.5	3.88	66.32	8.7	3.01
3	10.9	3.36	57.50	6.9	2.68
4	7.6	2.81	48.01	4.8	2.23
5	4.8	2.23	38.16	3.4	1.88

**By Linear Regression of Y on X**

Slope, mw = 0.0407 Intercept, bw = 0.3141  
Correlation coefficient\* = 0.9992

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.10

Remarks: \_\_\_\_\_

Conducted by: LEE MAN HEE Signature: Lee  
Checked by: wk. Tang Signature: Kwan

Date: 9-1-2019  
Date: 9/1/2019

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0036

Station DMS-4 - Rhythm Garden, Block 1 Operator: MH  
 Date: 13-Dec-18 Next Due Date: 12-Feb-19  
 Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	288.2	Pressure, Pa (mmHg)	772.4

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	10.7	3.35	57.30	7.2	2.75
2	9.4	3.14	53.71	6.4	2.59
3	7.6	2.83	48.29	5.1	2.32
4	5.4	2.38	40.71	3.5	1.92
5	3.2	1.83	31.34	2.3	1.55

By Linear Regression of Y on X

Slope, mw = 0.0470 Intercept, bw = 0.0521Correlation coefficient\* = 0.9982

\*If Correlation Coefficient &lt; 0.990, check and recalibrate.

## Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.09

Remarks: \_\_\_\_\_

Conducted by: LEE MUN HEE Signature: Lee  
 Checked by: WIK TANG Signature: Kwan

Date: 13/12/2018  
 Date: 13/12/2018

## Certificate of Calibration

**Calibration Certification Information**

<b>Cal. Date:</b> February 13, 2018	<b>Rootsmeter S/N:</b> 438320	<b>Ta:</b> 293 °K
<b>Operator:</b> Jim Tisch		<b>Pa:</b> 763.3 mm Hg
<b>Calibration Model #:</b> TE-5025A	<b>Calibrator S/N:</b> 2896	

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4670	3.2	2.00
2	3	4	1	1.0380	6.4	4.00
3	5	6	1	0.9220	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7250	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)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
1.0172	0.6934	1.4293	0.9958	0.6788	0.8762
1.0129	0.9758	2.0213	0.9916	0.9553	1.2392
1.0107	1.0962	2.2599	0.9895	1.0732	1.3854
1.0097	1.1422	2.3702	0.9885	1.1182	1.4530
1.0043	1.3853	2.8586	0.9832	1.3562	1.7524
<b>QSTD</b>	m=	<b>2.06726</b>	<b>QA</b>	m=	<b>1.29448</b>
	b=	<b>-0.00045</b>		b=	<b>-0.00028</b>
	r=	<b>0.99992</b>		r=	<b>0.99992</b>

**Calculations**

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

**Standard Conditions**

<b>Tstd:</b>	298.15 °K
<b>Pstd:</b>	760 mm Hg
<b>Key</b>	
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

---

---

**APPENDIX D**  
**IMPACT MONITORING SCHEDULE**

---

---

**Shatin to Central Link – Contract 1106 Diamond Hill Station**  
**Impact Air Quality and Noise Monitoring Schedule for January 2019**

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

**Air Quality Monitoring Station**

DMS-3<sup>(1)</sup>/4<sup>(2)</sup>: - Hong Kong Sheng Kung Hui Nursing Home

DMS-4<sup>(1)</sup>/3<sup>(2)</sup>: - Rhythm Garden, Block 1

(1) NSR ID/ ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

(2) NSR ID/ ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

**Noise Monitoring Station**

NMS-CA-3<sup>(1)</sup>/4<sup>(2)</sup>: - Hong Kong Sheng Kung Hui Nursing Home

NMS-CA-4<sup>(1)</sup>/3<sup>(2)</sup>: - Block 1, Rhythm Garden (north-eastern façade)

NMS-CA-5<sup>(1)</sup>/2<sup>(2)</sup>: - Block 1, Rhythm Garden (northern façade)



**Shatin to Central Link – Contract 1106 Diamond Hill Station**  
**Tentative Impact Air Quality and Noise Monitoring Schedule for February 2019**

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station**

DMS-3<sup>(1)</sup>/4<sup>(2)</sup>: - Hong Kong Sheng Kung Hui Nursing Home

DMS-4<sup>(1)</sup>/3<sup>(2)</sup>: - Rhythm Garden, Block 1

**Noise Monitoring Station**

NMS-CA-3<sup>(1)</sup>/4<sup>(2)</sup>: - Hong Kong Sheng Kung Hui Nursing Home

NMS-CA-4<sup>(1)</sup>/3<sup>(2)</sup>: - Block 1, Rhythm Garden (north-eastern façade)

NMS-CA-5<sup>(1)</sup>/2<sup>(2)</sup>: - Block 1, Rhythm Garden (northern façade)

(1) NSR ID/ ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

(2) NSR ID/ ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

---

**APPENDIX E**  
**24-HOUR TSP MONITORING RESULTS**  
**AND GRAPHICAL PRESENTATIONS**

---

## Appendix E - 24-hour TSP Monitoring Results

### Location DMS-3: - Hong Kong Sheng Kung Hui Nursing Home

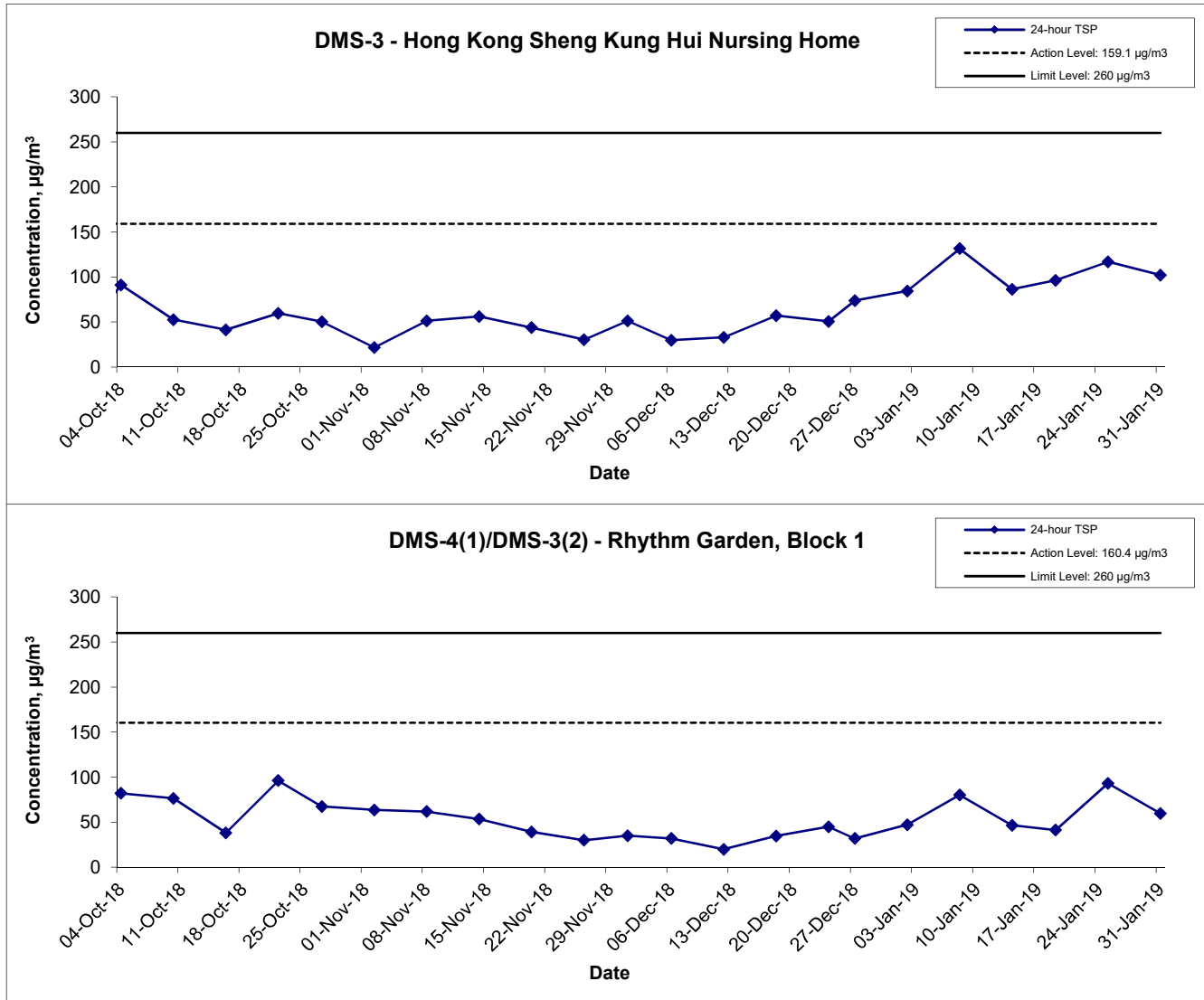
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Jan-19	9:00	Cloudy	289.1	770.4	3.3639	3.5140	0.1501	3442.0	3466.0	24.0	1.23	1.23	1.23	1776.4	84.5
8-Jan-19	9:00	Cloudy	290.4	770.1	2.9682	3.2012	0.2330	3466.0	3490.0	24.0	1.23	1.23	1.23	1771.4	131.5
14-Jan-19	9:00	Cloudy	291.1	767.4	3.3865	3.5373	0.1508	3490.0	3514.0	24.0	1.21	1.21	1.21	1746.8	86.3
19-Jan-19	9:00	Cloudy	293.6	768.2	2.9912	3.1588	0.1676	3514.0	3538.0	24.0	1.21	1.21	1.21	1739.1	96.4
25-Jan-19	9:00	Cloudy	292.3	769.7	3.0040	3.2081	0.2041	3538.0	3562.0	24.0	1.21	1.21	1.21	1745.6	116.9
31-Jan-19	9:00	Cloudy	292.7	767.5	3.3852	3.5631	0.1779	3562.0	3586.0	24.0	1.21	1.21	1.21	1741.3	102.2
														Min	84.5
														Max	131.5
														Average	103.0

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Jan-19	9:00	Cloudy	289.1	770.4	3.3641	3.4469	0.0828	9865.9	9889.9	24.0	1.22	1.21	1.21	1749.5	47.3
8-Jan-19	9:00	Cloudy	290.4	770.1	2.9547	3.0950	0.1403	9889.9	9913.9	24.0	1.21	1.21	1.21	1745.1	80.4
14-Jan-19	9:00	Cloudy	291.1	767.4	3.3914	3.4727	0.0813	9913.9	9937.9	24.0	1.21	1.21	1.21	1739.8	46.7
19-Jan-19	9:00	Cloudy	293.6	768.2	2.9807	3.0523	0.0716	9937.9	9961.9	24.0	1.20	1.20	1.20	1733.1	41.3
25-Jan-19	9:00	Cloudy	292.3	769.7	3.0113	3.1732	0.1619	9961.9	9985.9	24.0	1.21	1.21	1.21	1738.8	93.1
31-Jan-19	9:00	Cloudy	292.7	767.5	3.3821	3.4858	0.1037	9985.9	10009.9	24.0	1.21	1.20	1.20	1735.0	59.8
														Min	41.3
														Max	93.1
														Average	61.4

#### Remarks:


- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

## 24-hour TSP Concentration Levels



**Remarks:**

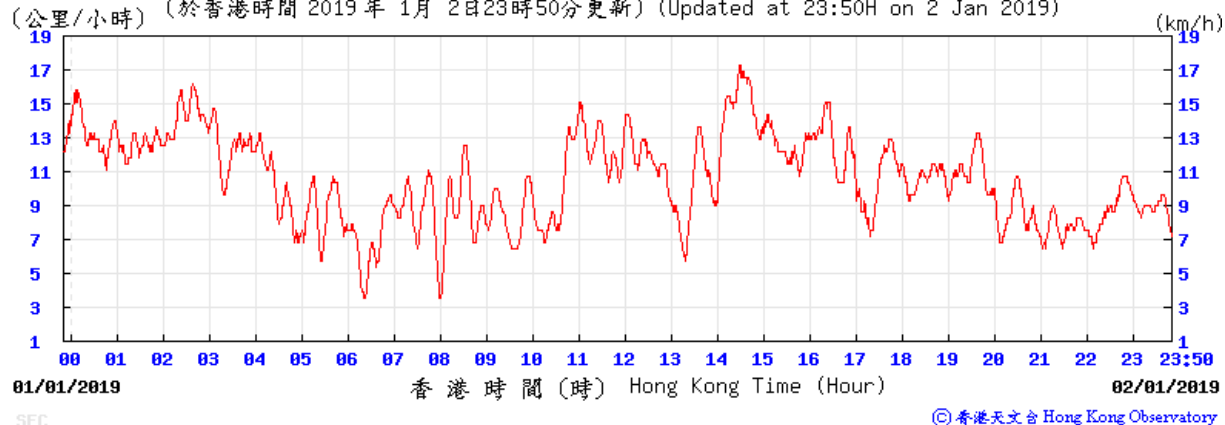
- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

Title Shatin to Central Link – Contract 1106 Diamond Hill Station  Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12051	
	Date Jan 19	Appendix E	

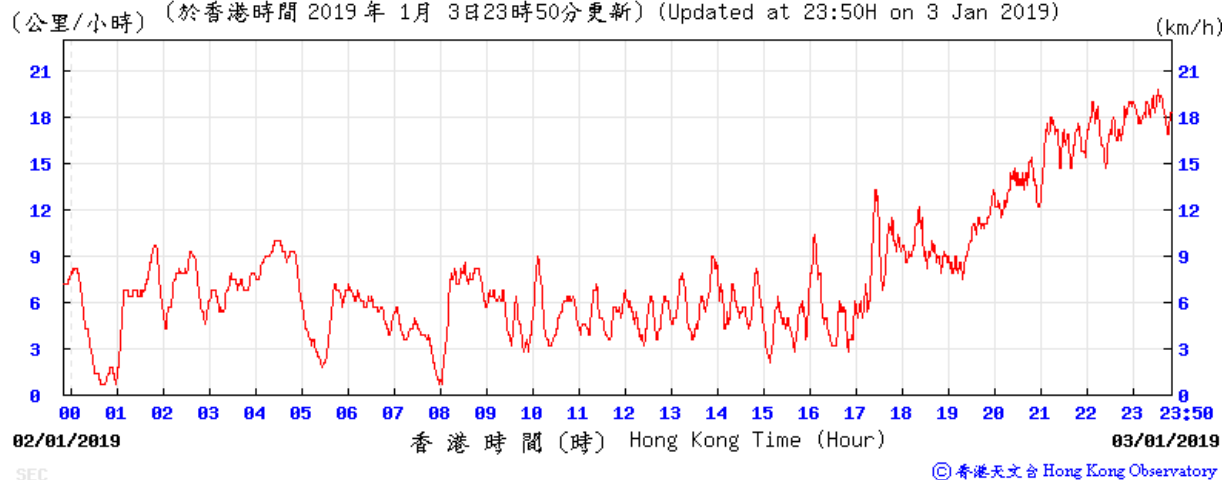
# Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

2-3 January 2019

(公里/小時) (於香港時間 2019 年 1 月 2 日 23 時 50 分更新) (Updated at 23:50H on 2 Jan 2019)



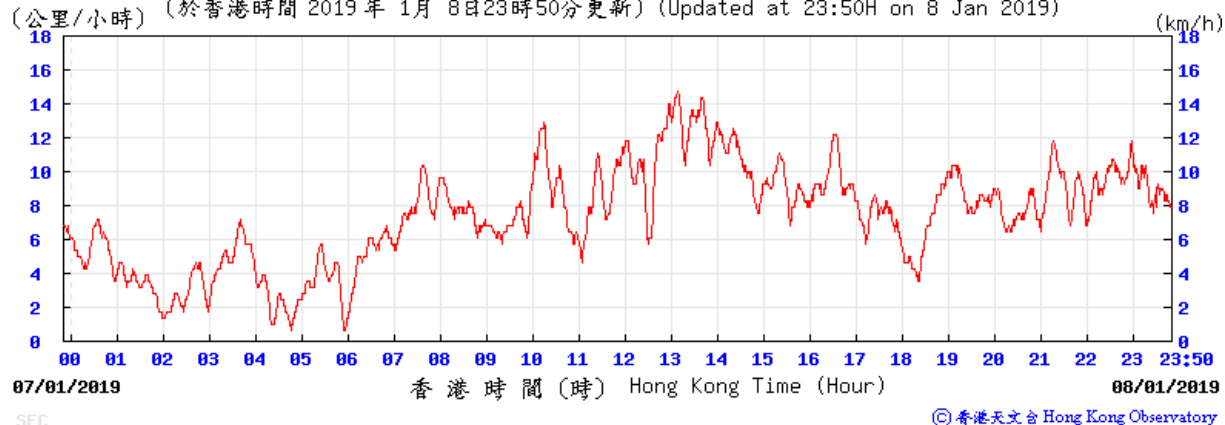
(公里/小時) (於香港時間 2019 年 1 月 3 日 23 時 50 分更新) (Updated at 23:50H on 3 Jan 2019)



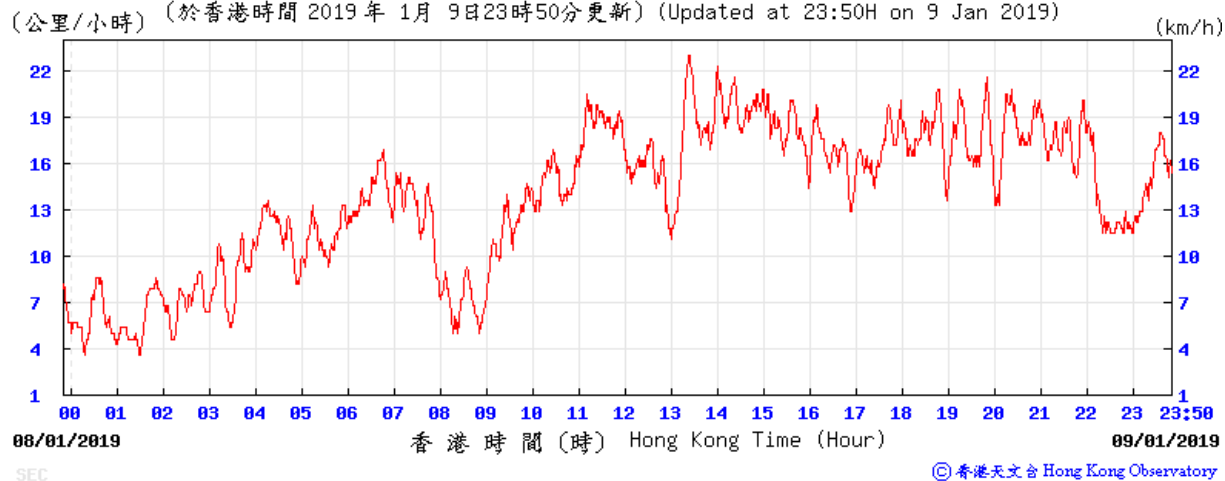
# Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

8-9 January 2019

(公里/小時) (於香港時間 2019 年 1 月 8 日 23 時 50 分更新) (Updated at 23:50H on 8 Jan 2019)

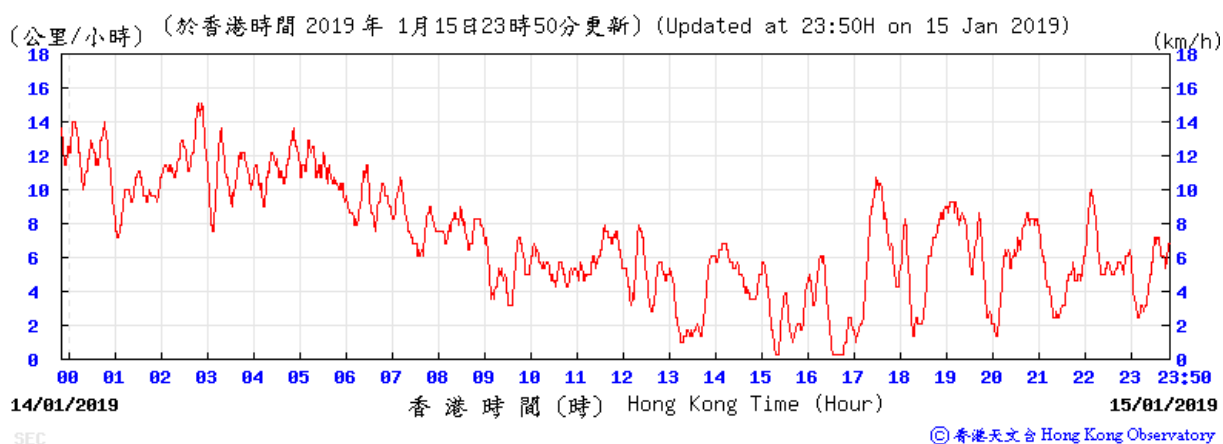
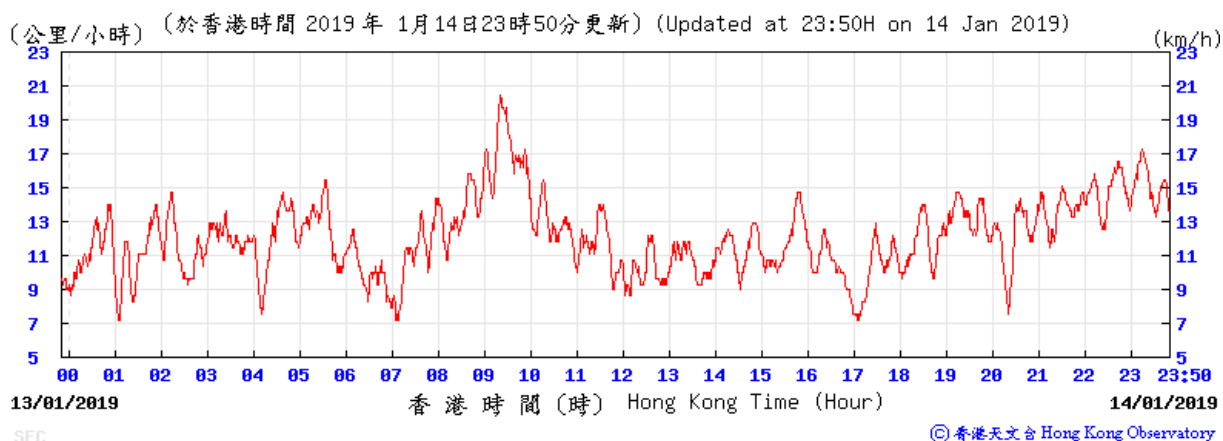


(公里/小時) (於香港時間 2019 年 1 月 9 日 23 時 50 分更新) (Updated at 23:50H on 9 Jan 2019)



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

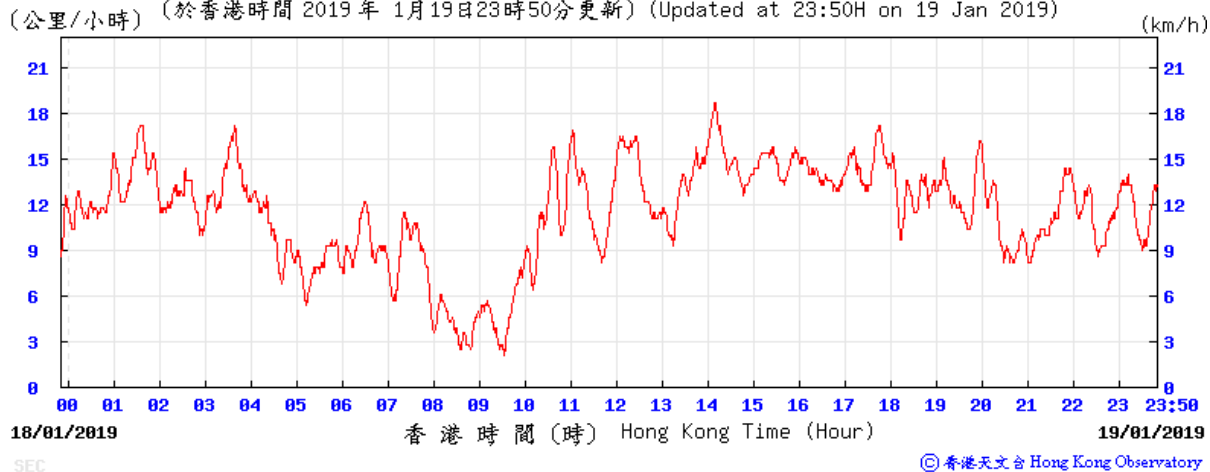
14-15 January 2019



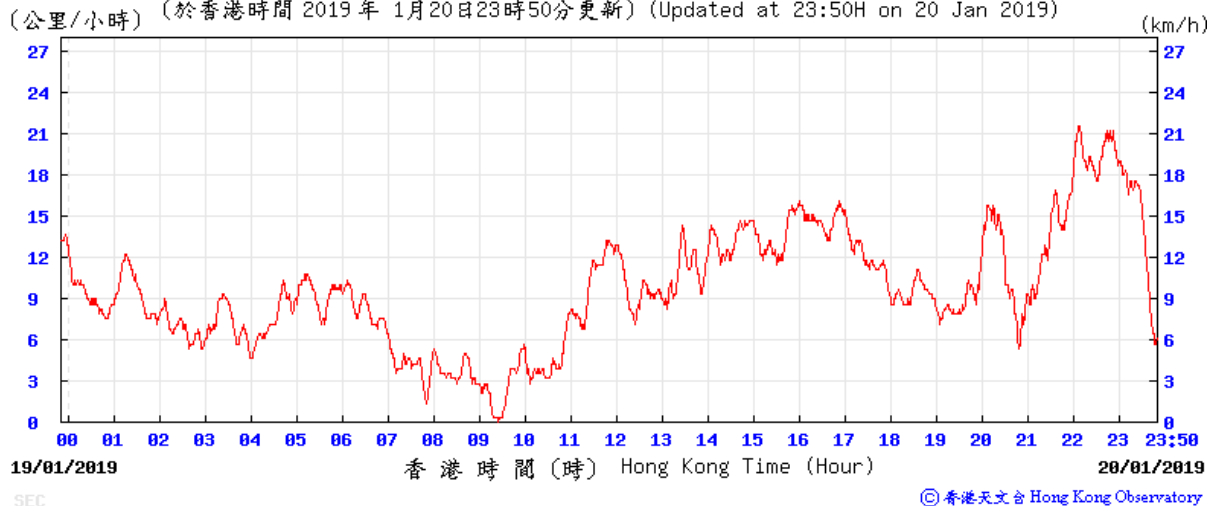
# Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

19-20 January 2019

(公里/小時) (於香港時間 2019 年 1月19日23時50分更新) (Updated at 23:50H on 19 Jan 2019)



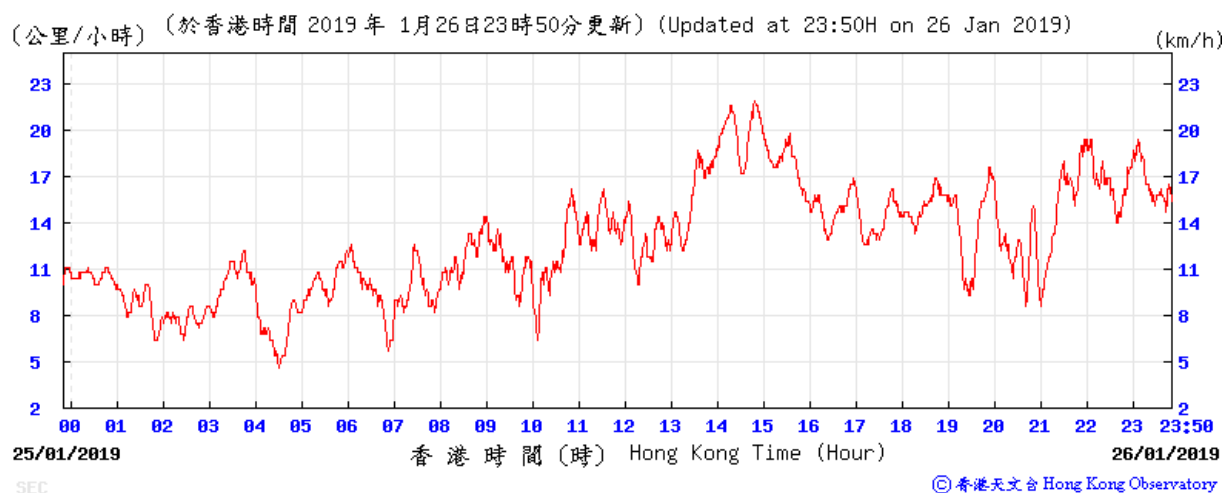
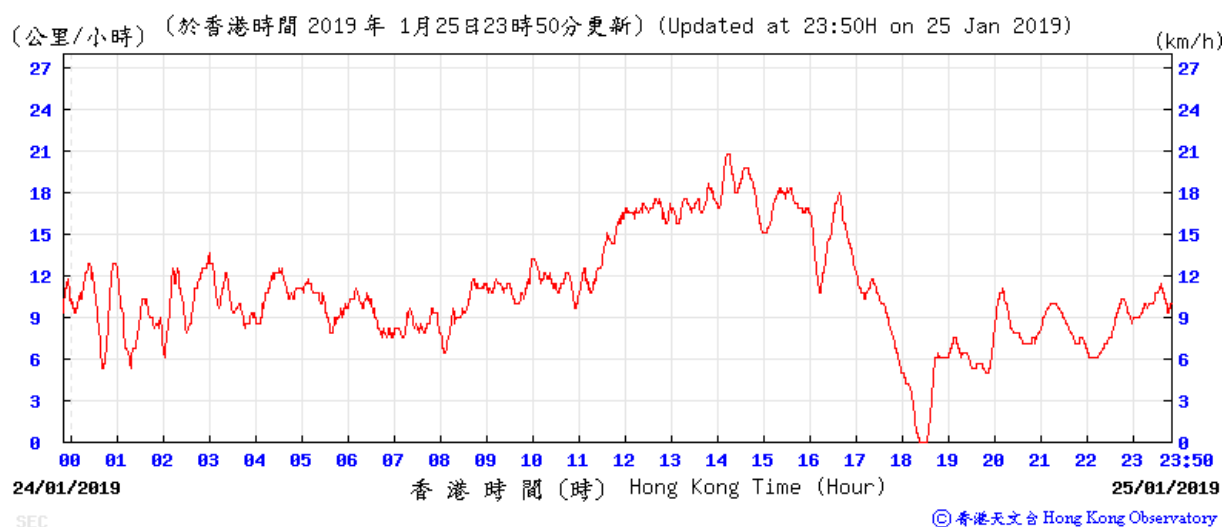
(公里/小時) (於香港時間 2019 年 1月20日23時50分更新) (Updated at 23:50H on 20 Jan 2019)





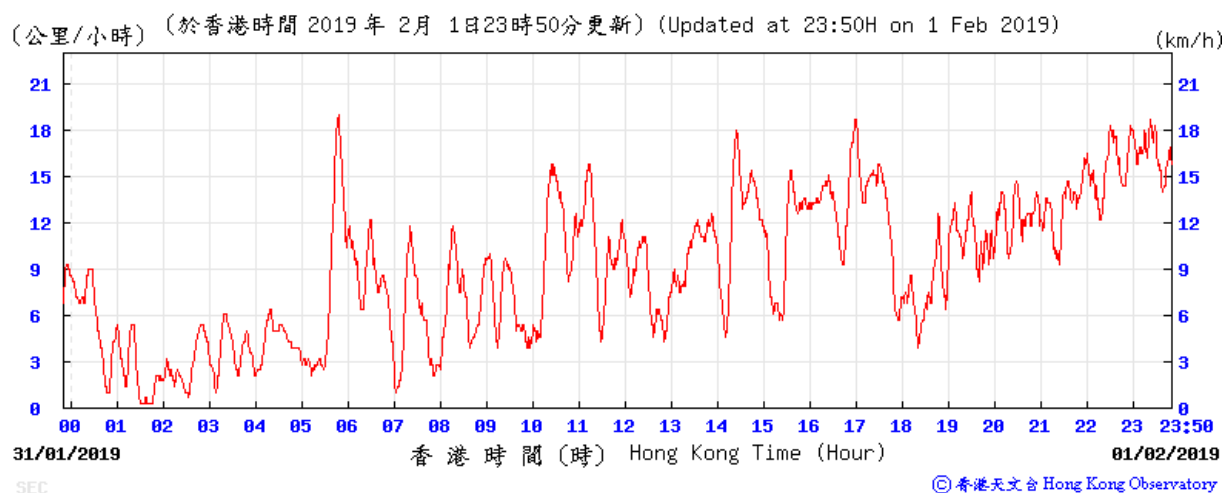
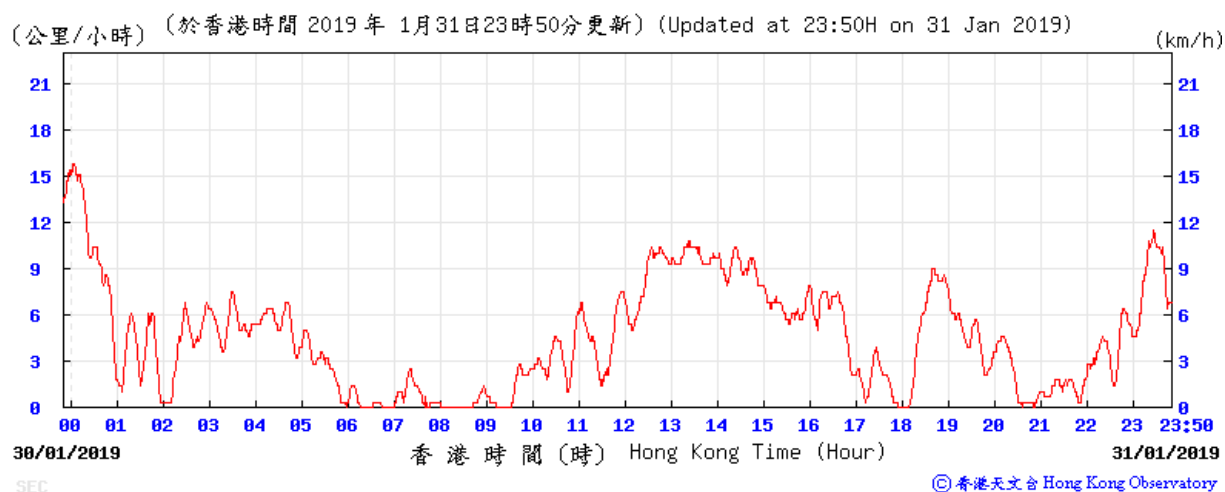
# Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

25-26 January 2019



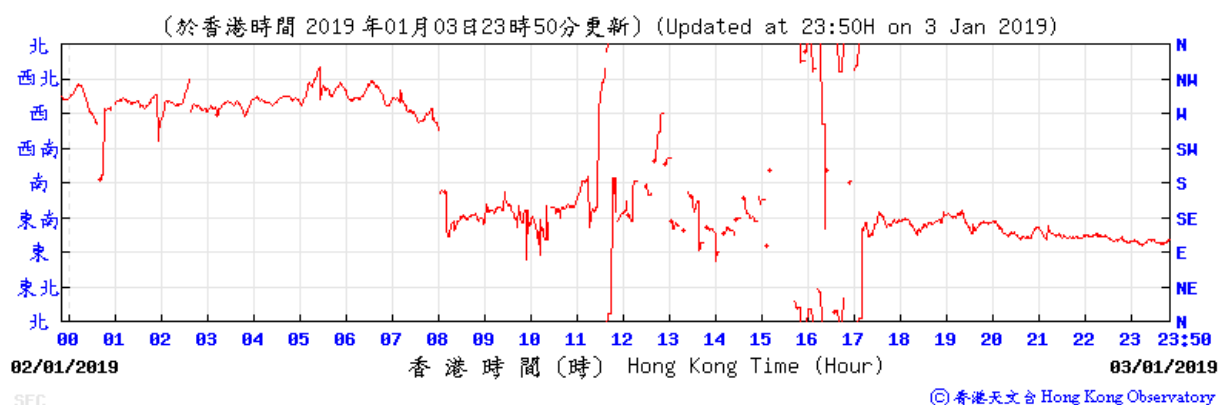
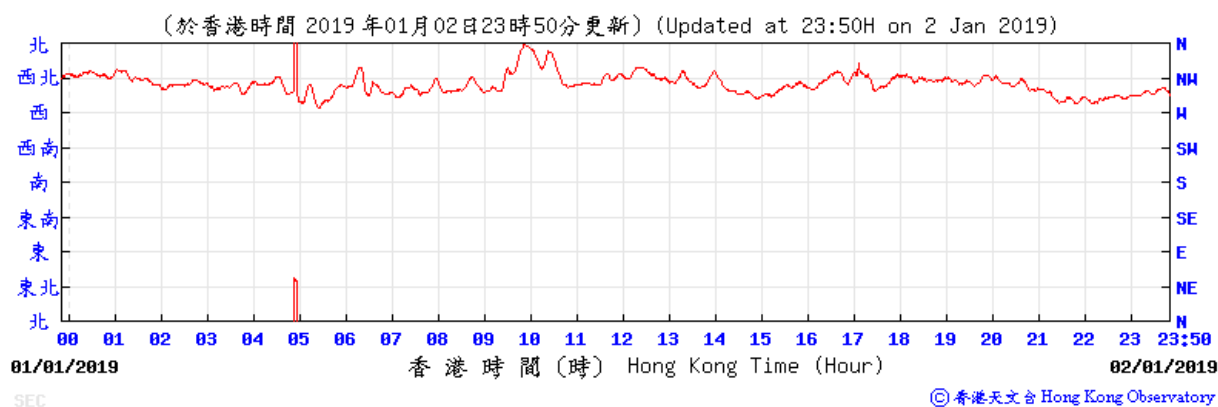
# Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

31 January 2019 – 1 February 2019



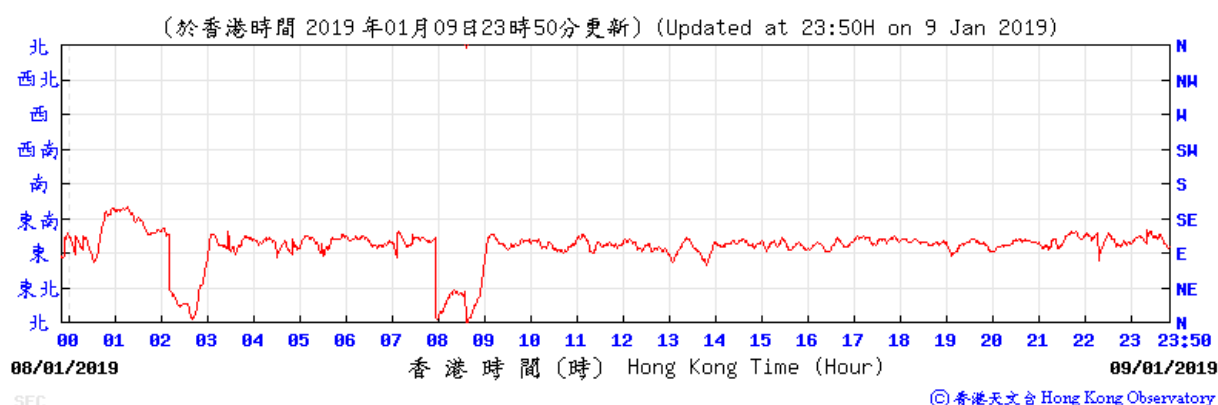
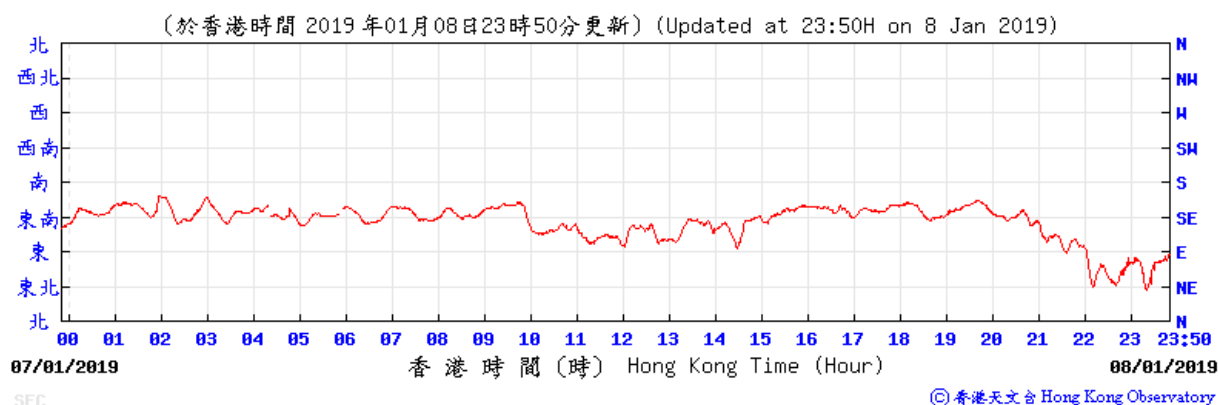
# Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

2-3 January 2019



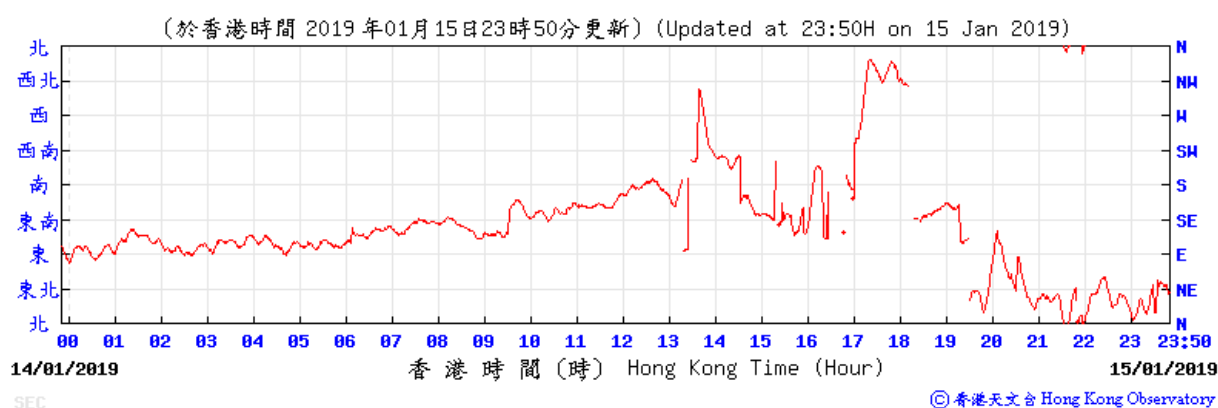
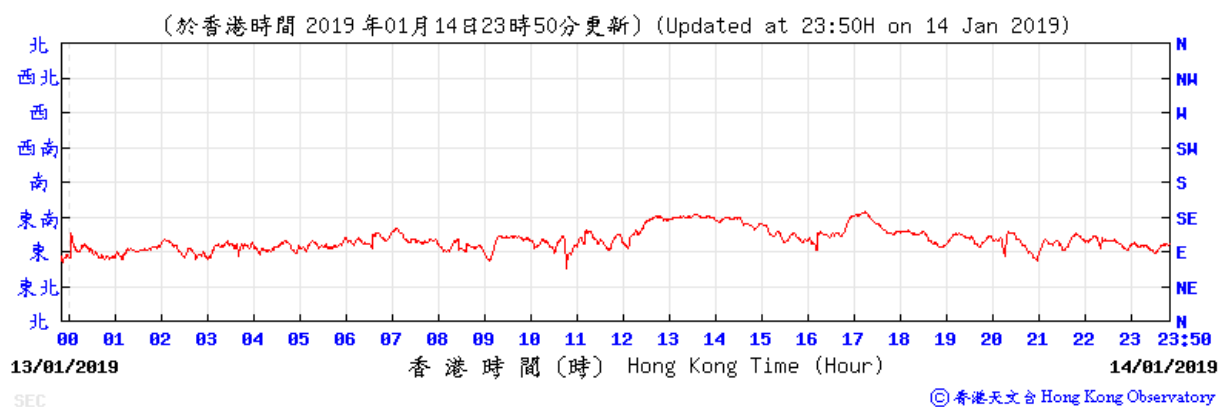
# Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

8-9 January 2019



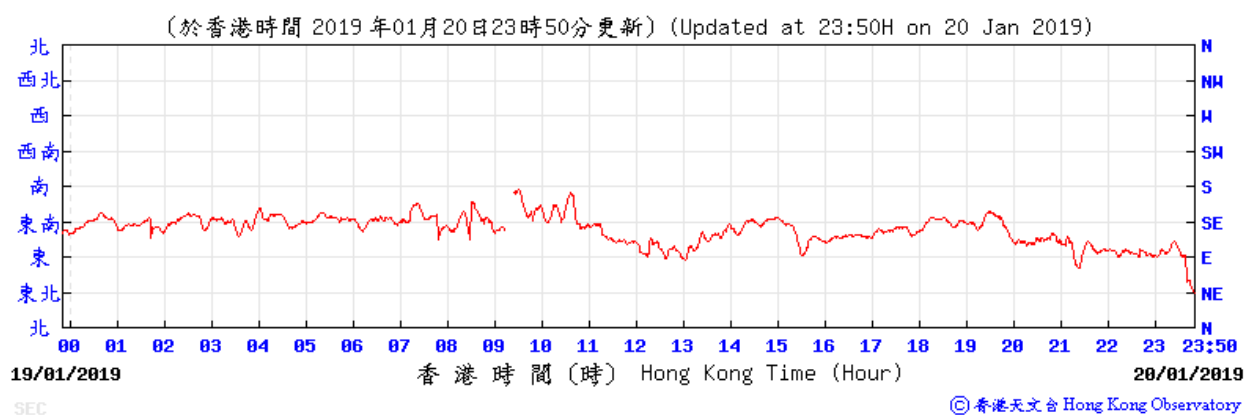
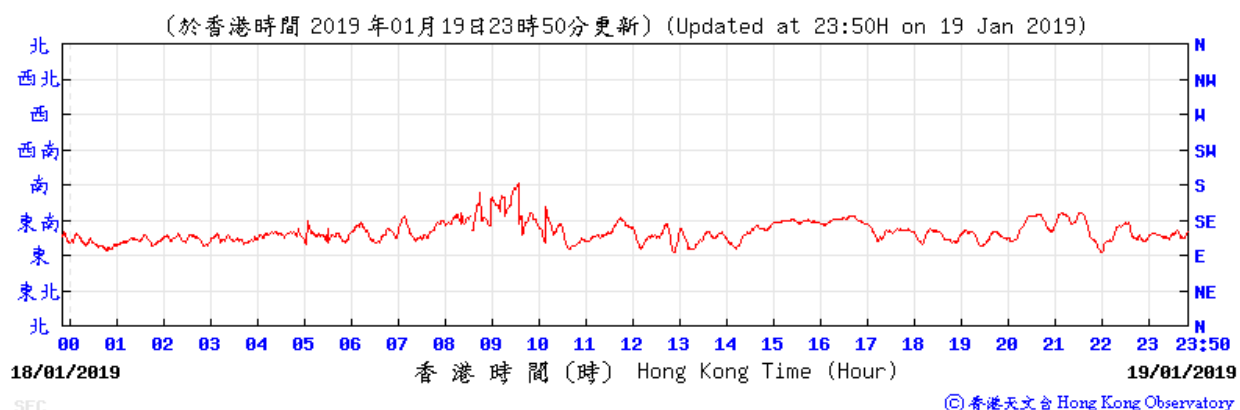
# Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

14-15 January 2019



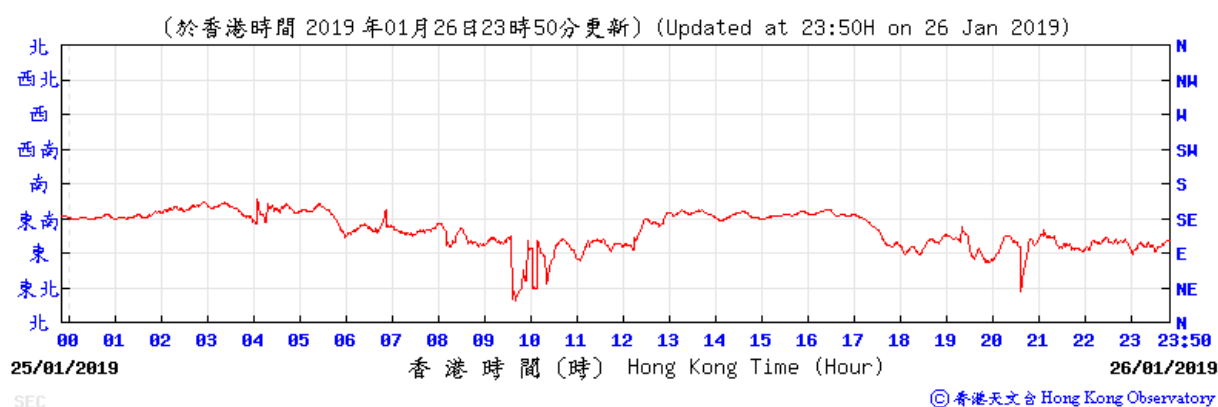
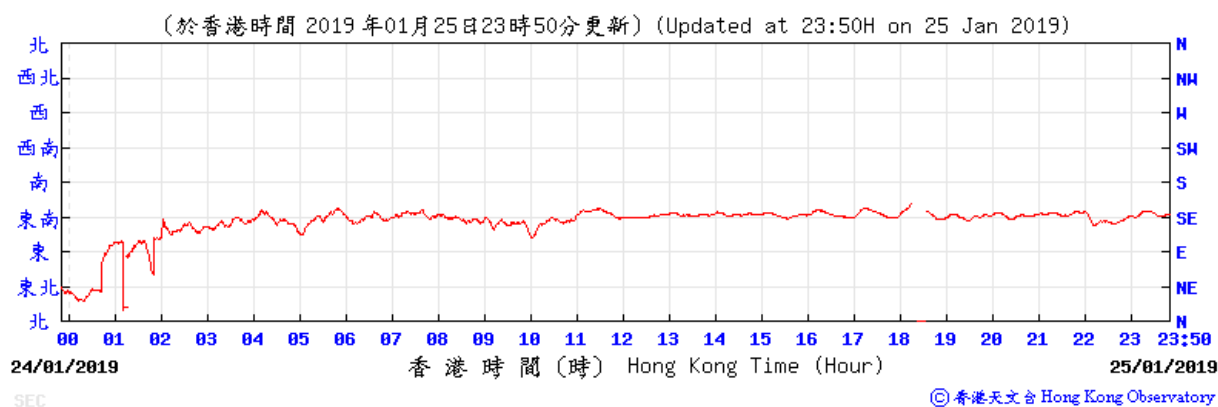
# Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

19-20 January 2019



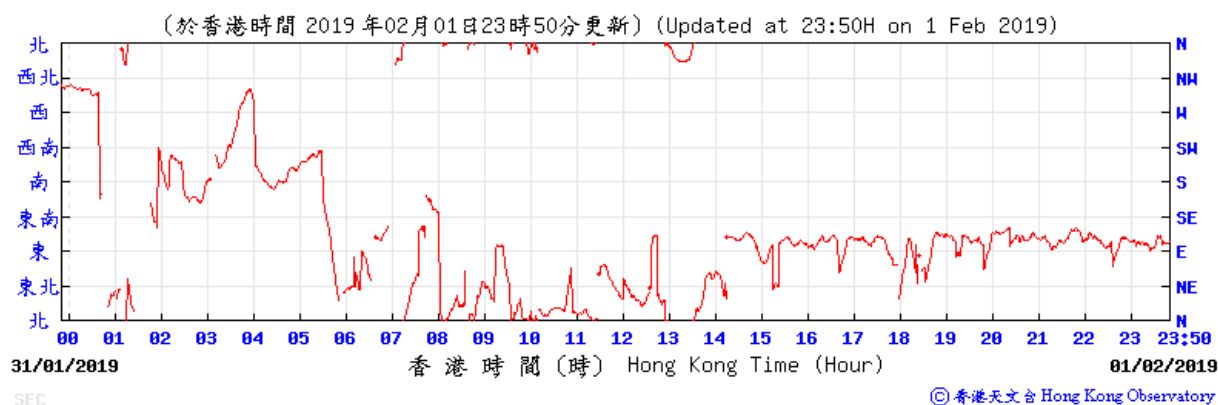
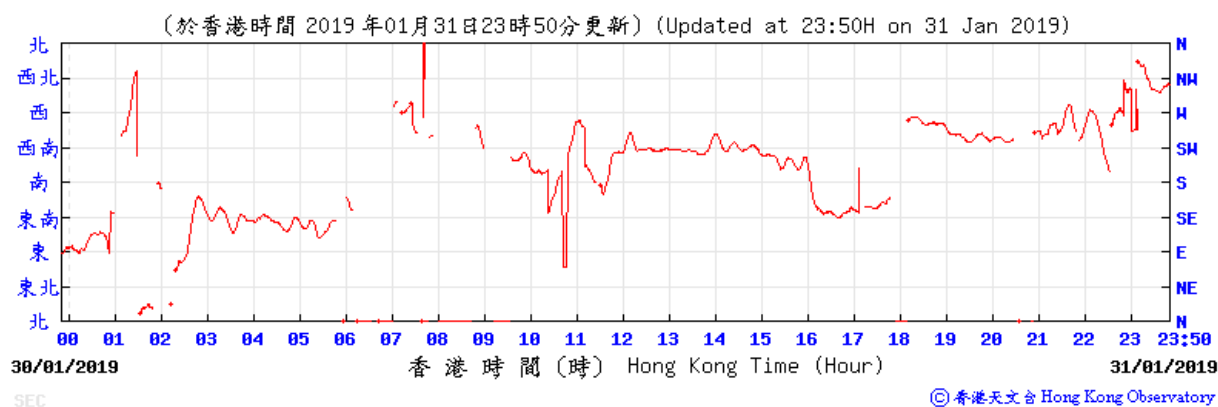
# Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

25-26 January 2019



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

31 January 2019 – 1 February 2019





---

---

**APPENDIX F**  
**NOISE MONITORING RESULTS AND**  
**GRAPHICAL PRESENTATIONS**

---

---

## Appendix F - Noise Monitoring Results

Location NMS-CA-3 / MNS-CA-4 - Hong Kong S.K.H Nursing Home								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-19	Cloudy	16:15	69.4	71.7	65.4	70.1	73	70.1 Measured ≤ Baseline Level
		16:20	71.1	73.8	67.2			
		16:25	69.3	71.9	65.8			
		16:30	69.6	71.9	66.1			
		16:35	69.8	72.0	66.5			
		16:40	70.8	73.1	66.9			
9-Jan-19	Cloudy	10:30	71.9	74.7	66.7	71.9		71.9 Measured ≤ Baseline Level
		10:35	71.8	74.4	67.7			
		10:40	71.6	74.0	67.7			
		10:45	72.2	74.7	68.0			
		10:50	72.4	74.8	68.1			
		10:55	71.2	74.1	68.0			
15-Jan-19	Cloudy	15:00	69.6	72.4	64.8	69.6		69.6 Measured ≤ Baseline Level
		15:05	69.8	72.7	64.7			
		15:10	69.4	71.8	63.9			
		15:15	69.3	71.7	63.5			
		15:20	69.5	71.9	63.6			
		15:25	69.7	72.3	64.5			
21-Jan-19	Cloudy	17:15	69.8	72.6	64.5	69.4		69.4 Measured ≤ Baseline Level
		17:20	69.4	71.9	64.3			
		17:25	68.9	71.3	63.8			
		17:30	69.2	71.5	64.3			
		17:35	69.3	72.1	64.7			
		17:40	69.8	72.5	65.2			
28-Jan-19	Cloudy	8:40	71.6	73.5	67.8	71.0		71.0 Measured ≤ Baseline Level
		8:45	70.6	72.7	67.2			
		8:50	71.0	73.0	67.6			
		8:55	70.6	72.7	67.3			
		9:00	71.3	74.5	68.0			
		9:05	71.0	73.1	68.0			

Remarks:

(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

## Appendix F - Noise Monitoring Results

Location NMS-CA-4(1)/NMS-CA-3(2) - Block 1, Rhythm Garden (north-eastern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-19	Cloudy	15:35	70.8	71.8	70.0	71.7	71	63.4
		15:40	71.4	73.1	69.7			
		15:45	72.3	73.6	71.0			
		15:50	72.7	74.0	71.2			
		15:55	71.6	72.6	70.4			
		16:00	71.1	72.1	70.1			
9-Jan-19	Cloudy	9:35	72.8	73.6	71.6	73.4		69.7
		9:40	73.3	74.6	72.0			
		9:45	73.2	74.4	71.9			
		9:50	73.3	74.5	72.0			
		9:55	73.5	74.5	72.2			
		10:00	74.1	75.4	72.4			
15-Jan-19	Cloudy	16:50	74.9	77.2	72.3	74.3		71.6
		16:55	74.2	76.8	71.7			
		17:00	74.1	76.7	71.5			
		17:05	73.8	76.6	71.4			
		17:10	74.6	77.1	72.5			
		17:15	73.9	76.5	71.8			
21-Jan-19	Cloudy	16:05	73.3	74.5	72.1	73.3		69.4
		16:10	74.1	74.7	72.1			
		16:15	73.7	74.6	72.4			
		16:20	72.8	74.1	71.9			
		16:25	73.1	74.3	71.9			
		16:30	72.4	73.8	71.5			
28-Jan-19	Cloudy	10:10	72.9	74.6	71.0	72.6		67.5
		10:15	72.5	73.7	71.2			
		10:20	72.4	73.5	71.2			
		10:25	72.8	73.9	71.3			
		10:30	72.5	73.8	71.1			
		10:35	72.3	73.5	71.0			

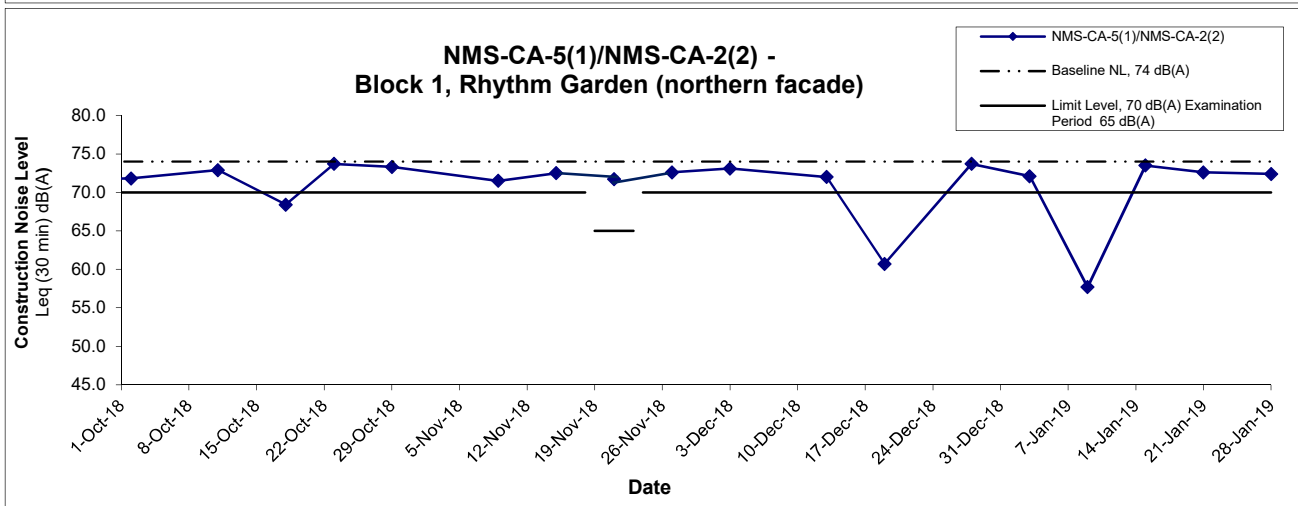
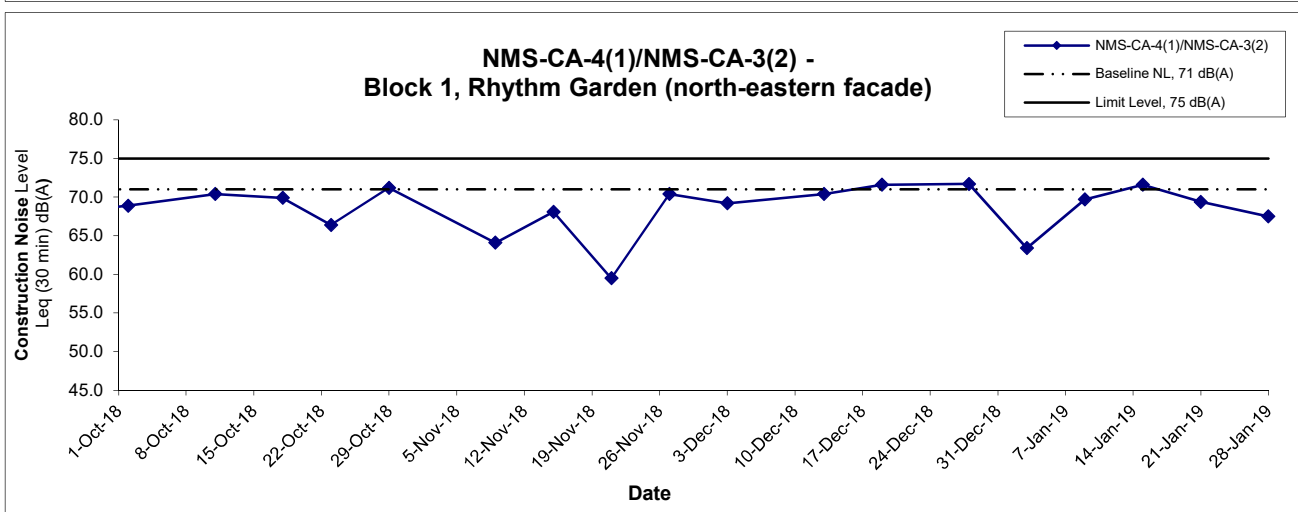
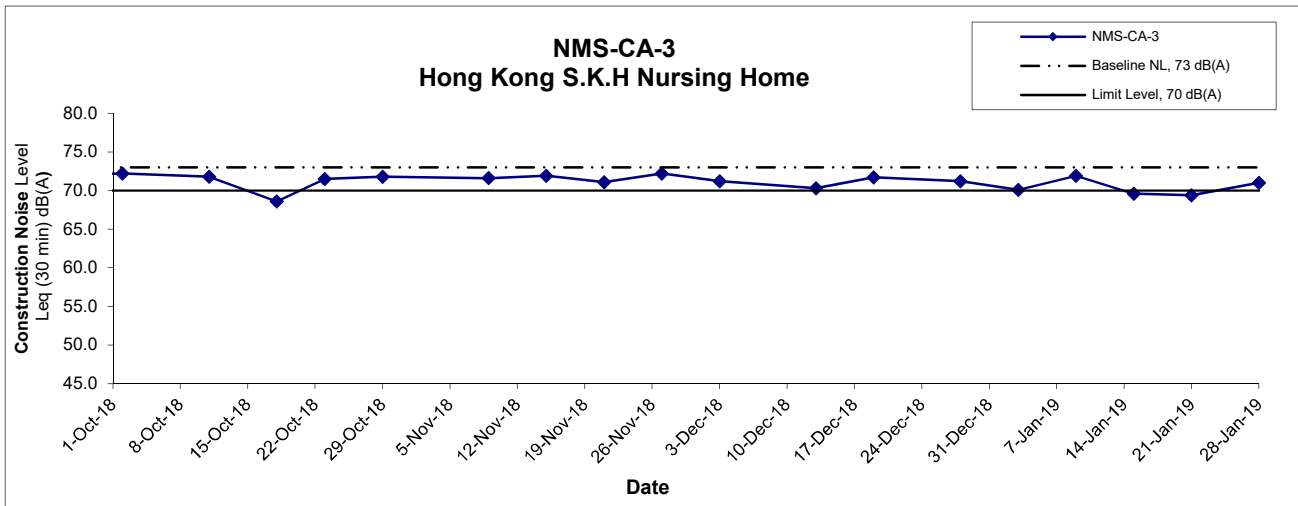
### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

## Appendix F - Noise Monitoring Results

Location NMS-CA-5(1)/NMS-CA-2(2) - Block 1, Rhythm Garden (northern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-19	Cloudy	15:00	72.5	73.4	71.4	72.1	74	72.1 Measured ≤ Baseline Level
		15:05	72.3	73.3	71.3			
		15:10	72.2	72.9	71.2			
		15:15	72.2	73.2	71.1			
		15:20	71.8	72.8	70.7			
		15:25	71.2	71.9	70.2			
9-Jan-19	Cloudy	9:00	74.7	76.4	72.9	74.1		57.7
		9:05	74.5	75.6	73.3			
		9:10	74.0	74.8	72.6			
		9:15	73.8	74.8	72.4			
		9:20	74.4	76.0	72.5			
		9:25	72.8	73.7	72.0			
15-Jan-19	Cloudy	16:15	72.9	74.1	71.6	73.5		73.5 Measured ≤ Baseline Level
		16:20	73.1	74.5	71.9			
		16:25	73.2	74.7	72.0			
		16:30	73.6	74.8	71.0			
		16:35	73.4	74.8	71.5			
		16:40	74.8	75.9	72.2			
21-Jan-19	Cloudy	15:30	72.7	73.7	71.5	72.6		72.6 Measured ≤ Baseline Level
		15:35	72.4	73.5	71.2			
		15:40	72.5	73.4	71.3			
		15:45	72.5	73.5	71.4			
		15:50	72.8	73.7	71.7			
		15:55	72.5	73.6	71.5			
28-Jan-19	Cloudy	9:35	72.2	73.0	71.1	72.4		72.4 Measured ≤ Baseline Level
		9:40	72.2	73.1	71.2			
		9:45	72.2	73.1	71.2			
		9:50	72.3	73.2	71.2			
		9:55	72.8	73.5	71.4			
		10:00	72.5	73.4	71.4			

## Noise Levels



### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) In case of Measured Level  $\leq$  Baseline Level, only Measured Level is presented on the graphical presentation.

Title	Shatin to Central Link - Contract 1106 - Diamond Hill Station	Scale	N.T.S	Project No.	MA12051	CINOTECH
	Graphical Presentation of Construction Noise Monitoring Results	Date	Jan 19	Appendix	F	

---

---

**APPENDIX G**  
**SUMMARY OF EXCEEDANCE**

---

---

## **APPENIDX G – SUMMARY OF EXCEEDANCE**

**Reporting Month:** January 2019

**a) Exceedance Report for Dust Monitoring (NIL)**

**b) Exceedance Report for Noise Monitoring (NIL)**

---

---

**APPENDIX H**  
**SITE AUDIT SUMMARY**

---

---

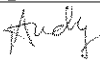
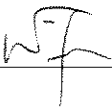


**Shatin to Central Link -****Contract 1106 Diamond Hill Station****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	190103
Date	03 January 2019 (Thursday)
Time	10:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190103-O01	<p><b>Part B – Water Quality</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C – Ecology</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part D – Landscape &amp; Visual</b></p> <ul style="list-style-type: none"><li>• The Contractor was reminded to remove construction material near the retained tress for preservation.</li></ul> <p><b>Part E – Air Quality</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part F – Cultural Heritage</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part G – Construction Noise Impact</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part H – Waste/Chemical Management</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part I – Permits/Licenses</b></p> <ul style="list-style-type: none"><li>• No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part J – Others</b></p> <p>Follow-up on previous audit session (Ref. No.: 181227), item 181227-R01 was remarked as 190103-O01 and the follow up action is needed to be reviewed.</p>	D2

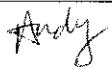
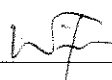
	Name	Signature	Date
Recorded by	Andy Chan		03 January 2019
Checked by	Dr. Priscilla Choy		04 January 2019

**Shatin to Central Link -****Contract 1106 Diamond Hill Station****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	190110
Date	10 January 2019 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190110-001	<b>Part B – Water Quality</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <b>Part C – Ecology</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <b>Part D – Landscape &amp; Visual</b> <ul style="list-style-type: none"><li>The Contractor was reminded to remove construction material near the retained tress for preservation.</li></ul> <b>Part E – Air Quality</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <b>Part F – Cultural Heritage</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <b>Part G – Construction Noise Impact</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul>	D2
190110-002	<b>Part H – Waste/Chemical Management</b> <ul style="list-style-type: none"><li>Chemical waste label should be affixed to the chemical waste containers inside the chemical waste storage area.</li></ul> <b>Part I – Permits/Licenses</b> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <b>Part J – Others</b> <p>Follow-up on previous audit session (Ref. No.: 190103), item 190110-001 was remarked as 190110-001 and the follow up action is needed to be reviewed.</p>	H2 i

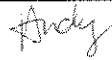

	Name	Signature	Date
Recorded by	Andy Chan		10 January 2019
Checked by	Dr. Priscilla Choy		11 January 2019

**Shatin to Central Link -****Contract 1106 Diamond Hill Station****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	190117
Date	17 January 2019 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190117-001	<p><b>Part B – Water Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C – Ecology</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part D – Landscape &amp; Visual</b></p> <ul style="list-style-type: none"><li>The Contractor was reminded to remove construction material near the retained tress for preservation.</li></ul> <p><b>Part E – Air Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part F – Cultural Heritage</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part G – Construction Noise Impact</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part H – Waste/Chemical Management</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part I – Permits/Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part J – Others</b></p> <p>Follow-up on previous audit session (Ref. No.: 190110), item 190110-001 was remarked as 190117-001 and the follow up action is needed to be reviewed.</p>	D2

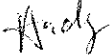

	Name	Signature	Date
Recorded by	Andy Chan		17 January 2019
Checked by	Dr. Priscilla Choy		21 January 2019

**Shatin to Central Link -****Contract 1106 Diamond Hill Station****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	190124
Date	24 January 2019 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190124-001	<p><b>Part B – Water Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C – Ecology</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part D – Landscape &amp; Visual</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part E – Air Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part F – Cultural Heritage</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part G – Construction Noise Impact</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part H – Waste/Chemical Management</b></p> <ul style="list-style-type: none"><li>The Contractor was reminded to remove oil stain on the ground near the breaker (site office area).</li></ul> <p><b>Part I – Permits/Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part J – Others</b></p> <p>Follow-up on previous audit session (Ref. No.: 190117), all environmental deficiency was rectified or improved by the Contractor.</p>	H9

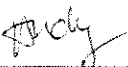

	Name	Signature	Date
Recorded by	Andy Chan		24 January 2019
Checked by	Dr. Priscilla Choy		25 January 2019

**Shatin to Central Link -****Contract 1106 Diamond Hill Station****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	190130
Date	30 January 2019 (Wednesday)
Time	14:30-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190130-001	<p><b>Part B – Water Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part C – Ecology</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part D – Landscape &amp; Visual</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part E – Air Quality</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part F – Cultural Heritage</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part G – Construction Noise Impact</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part H – Waste/Chemical Management</b></p> <ul style="list-style-type: none"><li>The Contractor was reminded to remove oil stain on the ground near the breaker (site office area).</li></ul> <p><b>Part I – Permits/Licenses</b></p> <ul style="list-style-type: none"><li>No environmental deficiency was identified during the site inspection.</li></ul> <p><b>Part J – Others</b></p> <p>Follow-up on previous audit session (Ref. No.: 190124), item 190124-001 was remarked as 190130-001 and the follow-up action is needed to be reviewed.</p>	H9

	Name	Signature	Date
Recorded by	Andy Chan		30 January 2019
Checked by	Dr. Priscilla Choy		31 January 2019

---

---

**APPENDIX I**  
**EVENT AND ACTION PLANS**

---

---

## Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1106 ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Discuss with the Contractor, IEC and ER on the remedial measures required;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Implement remedial measures;</li> <li>3. Amend working methods agreed with the ER as appropriate.</li> </ol>
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. If exceedance continues, arrange meeting with the IEC, ER and Contractor;</li> <li>6. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal as appropriate.</li> </ol>

LIMIT LEVEL				
1.Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Amend proposal if appropriate.</li> </ol>
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, Contractor and EPD;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>



### Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1106 ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and ER</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required</li> <li>3. Increase monitoring frequency to check mitigation effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the contractor;</li> <li>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measures</li> <li>2. Report the results of investigation to the IEC, ET and ER</li> <li>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement noise mitigation proposals</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency</li> <li>4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances</li> <li>7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ER, ET and Contractor on the potential remedial measures</li> <li>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>4. Supervise the implementation of remedial measures</li> <li>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</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement the agreed proposals</li> <li>5. Revise and resubmit proposals if problem still not under control</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated</li> </ol>

### Event and Action Plan for Landscape and Visual during Construction Phase

Action Level	Works Contract 1106 ET	IEC	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Inform the Contractor, the IEC and the ER</li> <li>2. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>3. Monitor remedial actions until rectification has been completed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET, ER and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-conformity in writing</li> <li>2. Review and agree on the remedial measures proposed by the Contractor</li> <li>3. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify Source</li> <li>2. Inform the Contractor, the IEC and the ER</li> <li>3. Increase inspection frequency</li> <li>4. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>5. Monitor remedial actions until rectification has been completed</li> <li>6. If non-conformity stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.</li> </ol>

---

---

**APPENDIX J  
UPDATED ENVIRONMENTAL  
MITIGATION IMPLEMENTATION  
SCHEDULE**

---

---

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<b><i>Cultural Heritage Impact (Construction Phase)</i></b>								
S4.8.1	CH1	Submit an Archaeological Action Plan.  Survey-cum-excavation shall be conducted prior to the construction works at the former Tai Hom Village site.	Salvage cultural remains at the Former Tai Hom Village Site	Contractor	Former Tai Hom Village Site	Prior to the Construction Phase of DIH site	<ul style="list-style-type: none"> <li>• AMO's requirements</li> </ul>	^  ^
S4.8.2	CH2	Submit a Conservation Plan for the Former Royal Air Force Hangar and the Old Pillbox to AMO for agreement.	Proposal for conservation of  2 historical buildings	Contractor	Former Tai Hom Village Site	Prior to the Construction Phase of DIH site	<ul style="list-style-type: none"> <li>• AMO's requirements</li> <li>• Principles for the Conservation of Heritage Sites in China</li> <li>• Burra Charter, the Australia's ICOMOS Charter for Places of Cultural Significance</li> </ul>	^
<b><i>Ecology (Construction Phase)</i></b>								
S5.7	E1	<u>Good Site Practices</u>  Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for	Minimise ecological impacts	Contractor	All construction sites	During Construction	<ul style="list-style-type: none"> <li>• ProPECC PN 1/94</li> </ul>	^

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> <li>• No on-site burning of waste;</li> <li>• Waste and refuse in appropriate receptacles.</li> </ul>						<p>^</p> <p>^</p>
<b><i>Landscape &amp; Visual (Construction Phase)</i></b>								
S6.12	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> <li>• 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 ground may be set up on-site as necessary.</li> </ul> <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> <li>• To maximize 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</li> </ul>	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	<p>^</p> <p>*</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>no-intrusion zone. 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.</p> <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> <li>All retained trees should be recorded photographically 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 specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</li> <li>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 trees in contractor’s works sites.</li> </ul>						<p>*</p> <p>^</p>
Table 6.9	LV2	<p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> <li>Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context.</li> </ul> <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> <li>To provide proper management of the facilities on the sites, give</li> </ul>	Minimize the visual and landscape impact of the Project during construction phase	Contractor	Within Project Site	Detailed design and construction stage	<ul style="list-style-type: none"> <li>EIAO – TM</li> <li>ETWB TCW 2/2004</li> <li>ETWB TCW 3/2006</li> </ul>	<p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.</p> <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> <li>Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable.</li> </ul> <p>Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.</p>						^
<b>Air Quality (Construction Phase)</b>								
/	A1	<p>Emission from Vehicles and Plants</p> <ul style="list-style-type: none"> <li>All vehicles shall be shut down in intermittent use.</li> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	<p>Reduce air pollution emission from construction vehicles and plants</p>	Contractor	All construction sites	Construction stage	• APCO	^  ^  ^
/	A2	Open burning shall be prohibited	<p>Reduce air pollution emission from work site</p>	Contractor	All construction sites	Construction stage	APCO	^
<b>Construction Dust Impact</b>								
S7.6.6	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	<p>• APCO</p> <p>• To control the dust</p>	^

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
							impact to meet HKAQO and TM-EIA criteria	
S7.6.6	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 road 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 <sup>2</sup> to achieve the dust removal efficiency	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	<ul style="list-style-type: none"> <li>• APCO</li> <li>• To control the dust impact to meet HKAQO and TM-EIA criteria</li> </ul>	^
S7.6.6	D3	<ul style="list-style-type: none"> <li>• Any excavated or stockpile of dusty material should 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that</li> </ul>	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	<ul style="list-style-type: none"> <li>• APCO</li> <li>• To control the dust impact to meet HKAQO and TM-EIA criteria</li> </ul>	^    ^    ^



## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>the dusty materials do not leak from the vehicle;</p> <ul style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;</li> <li>Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;</li> <li>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, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</li> <li>Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;</li> <li>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;</li> <li>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; and</li> </ul>						<p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>N/A</p> <p>N/A</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>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.</li> </ul>						N/A
S7.6.6	D4	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	^
<b>Construction Airborne Noise</b>								
S8.5.6	AN1	Implement the following good site practices: <ul style="list-style-type: none"> <li>only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>mobile plant should be sited as far away from NSRs as possible</li> </ul>	Control construction airborne noise	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^          

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		and practicable; <ul style="list-style-type: none"> <li>material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>						^
S8.5.6	AN2	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	• Annex 5, TM-EIA	^
S8.5.6	AN3	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	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN4	Use "Quiet" plant	Reduce the noise levels of plant items	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
			noise					
S8.5.6	AN6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	•TM-EIA	^
<b>Water Quality (Construction Phase)</b>								
S10.7.1	W1	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> <li>At the start of site establishment (including the barging facilities), 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 site runoff and 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.</li> <li>The dikes or embankments for flood protection should be</li> </ul>	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN1/94</li> <li>TM-EIAO</li> <li>TM-Water</li> </ul>	<p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>implemented around the boundaries of earthwork areas. Temporary ditches should be provided to 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.</p> <p>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<sup>3</sup>/s a ph basin of 30m<sup>3</sup> would be required and for a flow rate of 0.5 m<sup>3</sup>/s the basin would be 150 m<sup>3</sup>.</p> <p>The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.</p> <ul style="list-style-type: none"> <li>All exposed earth areas should 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 should be covered by tarpaulin or other means.</li> <li>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 coarse stone ballast. An additional</li> </ul>						<p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.</p> <ul style="list-style-type: none"> <li>All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</li> <li>Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they 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.</li> <li>Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> should be covered with tarpaulin or similar fabric during rainstorms.</li> <li>Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt,</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers</p> <ul style="list-style-type: none"> <li>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 should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes</li> <li>All vehicles and plant should 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 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 silty water to public roads and drains.</li> <li>Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors</li> </ul>						<p>^</p> <p>^</p> <p>N/A</p>



## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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.</p> <ul style="list-style-type: none"> <li>Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>All fuel tanks and storage areas should be provided with locks and sited on 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 water sensitive receivers nearby</li> <li>All the earth works involving should 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.</li> <li>Adopt best management practices.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> <li>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 appropriate disposal and maintenance.</li> </ul>	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>TM-water</li> </ul>	^

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S10.7.1	W5	<u>Accidental Spillage</u> In order to prevent accidental spillage of chemicals, the following is recommended: <ul style="list-style-type: none"> <li>• Proper storage and handling facilities should be provided;</li> <li>• 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;</li> <li>• 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; and</li> <li>• Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.</li> </ul>	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ * * ^
<b><i>Waste Management (Construction Waste)</i></b>								
S11.4.1.1	WM1	<u>On-site sorting of C&amp;D material</u> <ul style="list-style-type: none"> <li>• 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</li> </ul>	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) No. 6/2010	N/A

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should 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 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 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) 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 Material</u> <ul style="list-style-type: none"> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>Adopt 'Selective Demolition' technique to demolish the existing</li> </ul>	Good site practice to minimize 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	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No.</li> </ul>	^   ^  ^  N/A

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</p> <ul style="list-style-type: none"> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>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&amp;D materials and to minimize their generation during the course of construction.</li> <li>In addition, disposal of the C&amp;D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and EPD and get their approval before implementation</li> </ul>					19/2005	<p>^</p> <p>^</p> <p>^</p>
S11.5.1	WM3	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;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, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and</li> </ul>	<p>Good site practice to minimize the waste generation and recycle the C&amp;D materials as far as practicable so as to reduce the amount for final disposal</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No.19/2005</li> </ul>	^

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>wastage.</p> <ul style="list-style-type: none"> <li>The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;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.</li> </ul>						^
S11.5.1	WM4	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>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.</li> <li>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.</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	<p>^</p> <p>^</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.</li> </ul>						^
S11.5.1	WM6	<u>Chemical Waste</u> <ul style="list-style-type: none"> <li>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>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; 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.</li> <li>The storage area for chemical wastes should 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</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All Construction Sites	Construction Stage	<ul style="list-style-type: none"> <li>Waste Disposal (Chemical Waste) (General) Regulation</li> <li>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>	<p>*</p> <p>*</p> <p>^</p>

## SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>materials are adequately separated.</p> <ul style="list-style-type: none"> <li>Disposal of chemical waste should 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.</li> </ul>						^

Remarks:    ^    Compliance of mitigation measure                      X    Non-compliance of mitigation measure

•    Non-compliance but rectified by the contractor

\*    Recommendation was made during site audit but improved/rectified by the contractor.

N/A    Not Applicable

---

**APPENDIX K  
WASTE GENERATION IN THE  
REPORTING MONTH**

---



**Monthly Summary Waste Flow Table for 2019**

Monthly	Actual Quantities of C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Remarks
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste (See Note 2)	Others, e.g. general refuse	
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )	
Jan	0.046	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.036	
Feb												
Mar												
Apr												
May												
Jun												
Sub-total	0.046	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.036	
Jul												
Aug												
Sept												
Oct												
Nov												
Dec												
Total	0.046	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.036	

**Notes:**

- 1) Assume the densities of Rock, Soil, Mix Rock and Soil, are Regular Spoil to be 2.0 tonnes/m<sup>3</sup>. Assumption the densities of general refuse is 1.0 tonnes/m<sup>3</sup>
- 2) Chemical waste includes waste diesel oil. It is assumed density of diesel oil to be 0.8kg/L.
- 3) Figures are rounded up to 3 decimal places

---

**APPENDIX L  
CUMULATIVE LOG FOR COMPLAINT  
LOGS, NOTIFICATION OF SUMMONS  
AND SUCCESSFUL PROSECUTIONS**

---

## Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecution

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
March 2013	0	0	0
April 2013	0	0	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	0	0	0
December 2014	0	0	0
January 2015	0	0	0
February 2015	3	0	0
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	1	0	0
August 2015	0	0	0
September 2015	0	0	0
October 2015	0	0	0
November 2015	0	0	0
December 2015	0	0	0
January 2016	0	0	0
February 2016	0	0	0
March 2016	1	0	0
April 2016	1	0	0

May 2016	0	0	0
June 2016	1	0	0
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
November 2016	0	0	0
December 2016	1	0	0
January 2017	0	0	0
February 2017	0	0	0
March 2017	0	0	0
April 2017	0	0	0
May 2017	0	0	0
June 2017	1	0	0
July 2017	1	0	0
August 2017	0	0	0
September 2017	0	0	0
October 2017	1	0	0
November 2017	0	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	1	0	0
April 2018	1	0	0
May 2018	0	0	0
June 2018	1	0	0
July 2018	0	0	0
August 2018	0	0	0
September 2018	0	0	0
October 2018	0	0	0
November 2018	0	0	0
December 2018	0	0	0
January 2019	0	0	0
<b>Total</b>	<b>17</b>	<b>0</b>	<b>0</b>

### Environmental Complaint Log (January 2019)

Contractor Log Ref.	Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date or Period of Complaint Received	Date of Complaint received from EPD	Details of Complaint	Investigation/ Mitigation Action	Status
--	--	--	--	--	--	--	--

### Log for Notifications of Summons (January 2019)

Log Ref.	Location/Nature	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
--	--	--	--	--	--

### Log for Successful Prosecutions (January 2019)

Log Ref.	Location/Nature	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
--	--	--	--	--	--

---

**Appendix E**

**68<sup>th</sup> 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 31 January 2019]

(February 2019)

Certified by: Vivian Chan 

Position: Environmental Team Leader

Date: 12 February 2019



D242 68th Monthly EM&A Report for January 2019

---

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

---

Prepared for Leighton Contractors (Asia) Limited  
12 February 2019



## Document Control

Document:	D242 68th Monthly EM&A Report for January 2019
File Location:	z:\jobs\7076187 - leighton - et for scl1112\08 submission\em&a reports\68. jan 19\7076187 d242 monthly em&a (jan 2019) v2.0 - final.docx
Project Name:	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Project Number:	7076187
Revision Number:	2.0 (Final)

## Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED FOR ISSUE BY
1.0 (Draft)	1 February 2019	Joanne PONG	Vivian CHAN	Antony WONG
2.0 (Final)	12 February 2019	Joanne PONG	Vivian CHAN	Antony WONG

## Issue Register

DISTRIBUTION LIST	DATE ISSUED	NUMBER OF COPIES
Leighton Contractors (Asia) Limited	12 February 2019	1 soft copy
MTR Corporation Limited	12 February 2019	1 soft copy

## 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:	<a href="http://www.smec.com">www.smec.com</a>

The information within this document is and shall remain the property of:

SMEC Asia Limited

## Important Notice

This report is confidential and is provided solely for the purposes of supporting Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings. This report is provided pursuant to a Consultancy Agreement between SMEC Asia Limited (“SMEC”) and Leighton Contractors (Asia) Limited, under which SMEC undertook to perform specific and limited tasks for Leighton Contractors (Asia) Limited. This report is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

This report must be read as a whole. Any subsequent report must be read in conjunction with this report.

The report supersedes all previous draft or interim reports, whether written or presented orally, before the date of this report. This report has not and will not be updated for events or transactions occurring after the date of the report or any other matters that might have a material effect on its contents or which come to light after the date of the report. SMEC is not obliged to inform you of any such event, transaction or matter nor to update the report for anything that occurs, or of which SMEC becomes aware, after the date of this report.

Unless expressly agreed otherwise in writing, SMEC does not accept a duty of care or any other legal responsibility whatsoever in relation to this report, or any related enquiries, advice or other work, nor does SMEC make any representation in connection with this report, to any person other than Leighton Contractors (Asia) Limited. Any other person who receives a draft or a copy of this report (or any part of it) or discusses it (or any part of it) or any related matter with SMEC, does so on the basis that he or she acknowledges and accepts that he or she may not rely on this report nor on any related information or advice given by SMEC for any purpose whatsoever.

## Table of Contents

EXECUTIVE SUMMARY .....	1-1
Introduction.....	1-1
Landscape and Visual Monitoring .....	1-1
Air Quality Monitoring.....	1-1
Noise Quality Monitoring .....	1-1
Waste Management .....	1-1
Environmental Auditing.....	1-1
Complaint, Notification of Summons and Successful Prosecution.....	1-1
Future Key Issues.....	1-1
1 INTRODUCTION .....	1-1
1.1 Project Background .....	1-1
1.2 Purpose of the Report .....	1-1
1.3 Report Structure.....	1-1
2 PROJECT INFORMATION .....	2-2
2.1 General Site Description.....	2-2
2.2 Construction Programme and Activities .....	2-3
2.3 Project Organisation.....	2-3
2.4 Status of Environmental Licences, Notification and Permits .....	2-3
3 ENVIRONMENTAL MONITORING PARAMETERS.....	3-1
3.1 Landscape and Visual Impact Monitoring .....	3-1
3.2 Air Quality Monitoring .....	3-1
3.3 Construction Noise Monitoring .....	3-3
4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES .....	4-1
5 MONITORING RESULTS.....	5-1
5.1 Landscape and Visual .....	5-1
5.2 Air Quality Monitoring .....	5-1
5.3 Regular Construction Noise Monitoring.....	5-1
5.4 Waste Management.....	5-1
6 ENVIRONMENTAL SITE INSPECTION AND AUDIT.....	6-1
7 ENVIRONMENTAL NON-CONFORMANCE .....	7-1
7.1 Summary of Monitoring Exceedances.....	7-1
7.2 Summary of Environmental Non-Compliance.....	7-1
7.3 Summary of Environmental Complaint .....	7-1
7.4 Summary of Environmental Summons and Successful Prosecution .....	7-1
8 FUTURE KEY ISSUES .....	8-1
8.1 Construction Programme for Next Month .....	8-1
8.2 Key Issues for the Coming Months.....	8-1
8.3 Monitoring Schedule for Next Month .....	8-1
9 CONCLUSIONS AND RECOMMENDATIONS .....	9-1
9.1 Conclusions .....	9-1
9.2 Recommendations .....	9-1

## Appendices

APPENDIX A	PROJECT WORKS BOUNDARY
APPENDIX B	CONSTRUCTION PROGRAMME
APPENDIX C	PROJECT ORGANISATION FOR ENVIRONMENTAL WORKS
APPENDIX D	LOCATION OF AIR QUALITY MONITORING STATION
APPENDIX E	CALIBRATION CERTIFICATES OF MONITORING EQUIPMENT
APPENDIX F	WIND DATA
APPENDIX G	ENVIRONMENTAL MONITORING PROGRAMME
APPENDIX H	IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES
APPENDIX I	EVENT AND ACTION PLAN
APPENDIX J	MONITORING RESULTS AND THEIR GRAPHICAL PRESENTATIONS
APPENDIX K	WASTE FLOW TABLE
APPENDIX L	CUMULATIVE STATISTICS OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

## List of Tables

Table 2-1	Contact Information of Key Personnel .....	2-3
Table 2-2	Status of Environmental Licenses, Notification and Permits .....	2-3
Table 3-1	Air Quality Monitoring Parameters and Frequency .....	3-1
Table 3-2	Air Quality Monitoring Location .....	3-1
Table 3-3	Air Quality Monitoring Equipment .....	3-2
Table 4-1	Summary of Status of Required Submission under EP .....	4-1
Table 5-1	Summary of 24-hour TSP Monitoring Results .....	5-1
Table 5-2	Action and Limit Levels.....	5-1
Table 6-1	Observations and Recommendations of Site Audits .....	6-1

# 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 68<sup>th</sup> Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 January 2019 in accordance with the EM&A manual.

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

- Building Service works at G.L J of HUH
- Water main connection at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Transplantation of tree from Kai Tak Nursery to final receptor
- Landscape preparation works near SAT Ventilation Shaft
- Modification works at Concourse level, mid-level walkway

## Landscape and Visual Monitoring

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 9 and 23 January 2019. All necessary mitigation measures have been implemented by the Contractor.

## Air Quality Monitoring

Air quality (24-hour TSP) monitoring was carried out on 3, 9, 15, 21 and 26 January 2019. No exceedance of Action and Limit Level of 24-hour TSP monitoring was recorded at the monitoring location in the reporting month.

## Noise Quality 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, 67,720 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 240 m<sup>3</sup> inert construction and demolition (C&D) materials were generated from the Project, and 240 m<sup>3</sup> 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 5 weekly environmental site audits were conducted on 2, 10, 16, 23 and 30 January 2019. The IEC joint site audit was undertaken on 23 January 2019.

## Complaint, Notification of Summons and Successful Prosecution

One environmental complaint regarding noise nuisance 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:

- Building Service works at G.L J of HUH
- Water main connection at G.L.J of HUH
- Platform ABWF and E&M works at HUH
- Landscape Works
- Modification works at Concourse level, mid-level walkway

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 68<sup>th</sup> EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 January 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 stabling 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:

- Building Service work at G.L.J of HUH
- Water main connection at G.L.J of HUH
- Platform ABWF and E&M works at HUH
- Transplantation of tree from Kai Tak Nursery to final receptor
- Landscape preparation works near SAT Ventilation Shaft
- Modification works at Concourse level, mid-level walkway

## 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-RE0604-18	28 Aug 2018	27 Feb 2019	Valid	Works for SAT, NAT and Under Podium
GW-RE0677-18	9 Oct 2018	8 Apr 2019	Valid	Works in Concourse
GW-RE0904-18	3 Jan 2019	30 Mar 2019	Valid	External work for Concourse involving TTM + Mid-level Walkway + Installation of Instrument

PERMIT / LICENCE NO. / NOTIFICATION	VALID PERIOD		STATUS	REMARK
				near NAT Track + Painting outside Concourse for North East Corner + Protective Barrier Removal adjoining NAT
GW-RE0926-18	8 Jan 2019	6 Mar 2019	Valid	Remaining Paving Block Installation outside Concourse
GW-RE0032-19	28 Jan 2019	27 Jul 2019	Valid	EWL Stitch Joint Reconstruction Work (Including Shunt Neck Track) Extend Evening Time without Noise Mitigation
<b>Wastewater Discharge License</b>				
EPD Receipt Ref. No. 434982	-	-	Under EPD Process	Renewal application submitted on 25 Jun 2018
<b>Chemical Waste Producer Registration</b>				
5213-213-L2603-03	28 Jun 2013	-	Valid	-
<b>Billing Account for Construction Waste Disposal</b>				
7017179	27 Mar 2013	-	Active Account	-
<b>Notification Under Air Pollution Control (Construction Dust) Regulation</b>				
357078	18 Mar 2013	-	Notified	-
<b>Notification of Asbestos Abatement Works</b>				
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 <sup>[1]</sup>	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 <sup>[1]</sup>	Harbourfront Horizon <sup>[2]</sup>

Note:

- 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.
- 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)	1612

- 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 - 1.7m<sup>3</sup> 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 406cm<sup>2</sup>
- 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  $\pm 3$  °C; the relative humidity (RH) was < 50% and not variable by more than  $\pm 5$ %. 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 m<sup>3</sup>/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m<sup>3</sup>/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 January 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 January 2019	Submitted
	EP-438/2012/K	14 January 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 9 and 23 January 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 ( $\mu\text{G}/\text{M}^3$ )	RANGE ( $\mu\text{G}/\text{M}^3$ )	ACTION LEVEL ( $\mu\text{G}/\text{M}^3$ )	LIMIT LEVEL ( $\mu\text{G}/\text{M}^3$ )
AM2	52.1	46.0 – 55.6	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 in the reporting month can be referred to the Monthly EM&A Report for Contract 1111.
- 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, 67,720 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 240 m<sup>3</sup> inert construction and demolition (C&D) materials were generated from the Project, and 240 m<sup>3</sup> 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. 5 site audits were carried out on 2, 10, 16, 23 and 30 January 2019 during the reporting month. Representative of the IEC joined the site inspection on 23 January 2019. A summary of the implementation schedule of environmental mitigation measures is provided in [Appendix H](#).
- 6.1.2 One EPD inspection was carried on 19 January 2019, where no major findings were found.
- 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	Stockpile was observed uncovered. The Contractor should cover stockpile with impervious sheeting to prevent dust emission.	SAT	2 January 2019	The item will be followed-up in the next reporting month.
Water Quality	Water quality was observed unsatisfactory. The Contractor should ensure site effluent was properly treated before discharge.	Gate 3	19 December 2018	The item was rectified by the Contractor on 2 January 2019.
Waste/ Chemicals Management	Chemical containers were observed without secondary containment. The Contractor should provide secondary containment to all chemical containers to prevent land contamination.	Gate 2	12 December 2018	The item will be followed-up in the next reporting month.
		NFA	10 January 2019	The item was rectified by the Contractor on 16 January 2019.
		SAT	23 January 2019	The item was rectified by the Contractor on 30 January 2019.

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 EPD received a public complaints on 7 January 2019 regarding noise nuisance at Hung Hom MTR Station. The investigation report was prepared and submitted to EPD on 17 January 2019.

7.3.2 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 reporting month is provided in *Appendix B* and the key issues to be considered in the upcoming months include:

- Building Service works at G.L J of HUH
- Water main connection at G.L.J of HUH
- Platform ABWF and E&M works at HUH
- Landscape Works
- Modification works at Concourse level, mid-level walkway

### 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 February 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 68<sup>th</sup> Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 January 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 five 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 Impact

- Cover stockpile with impervious sheeting to prevent dust emission.

#### Water Quality Impact

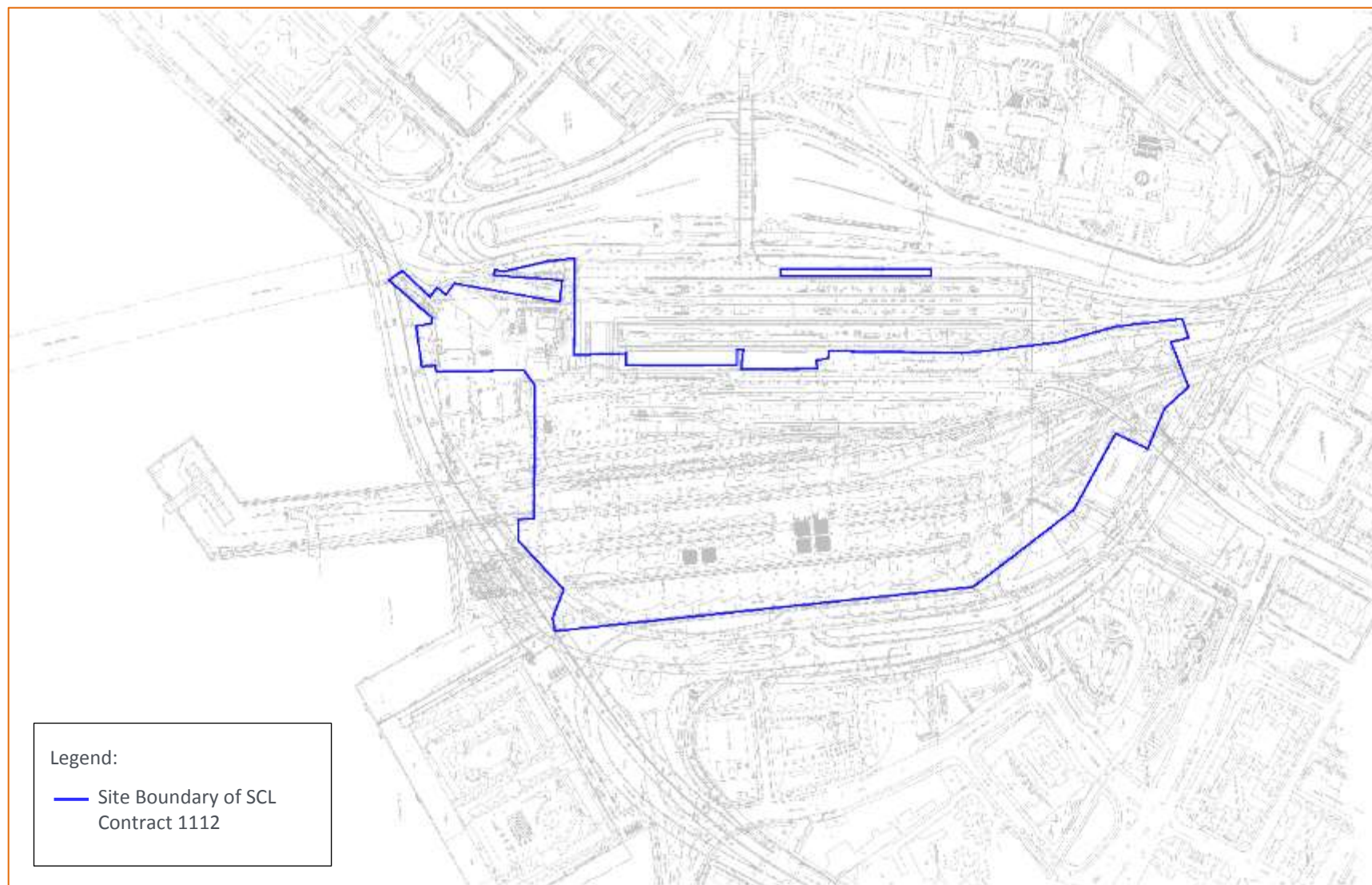
- Ensure site effluent was properly treated before discharge.

#### Chemical and Waste Management

- Provide secondary containment to all chemical containers to prevent land contamination.

---

## Appendix A PROJECT WORKS BOUNDARY



Legend:

— Site Boundary of SCL  
Contract 1112

---

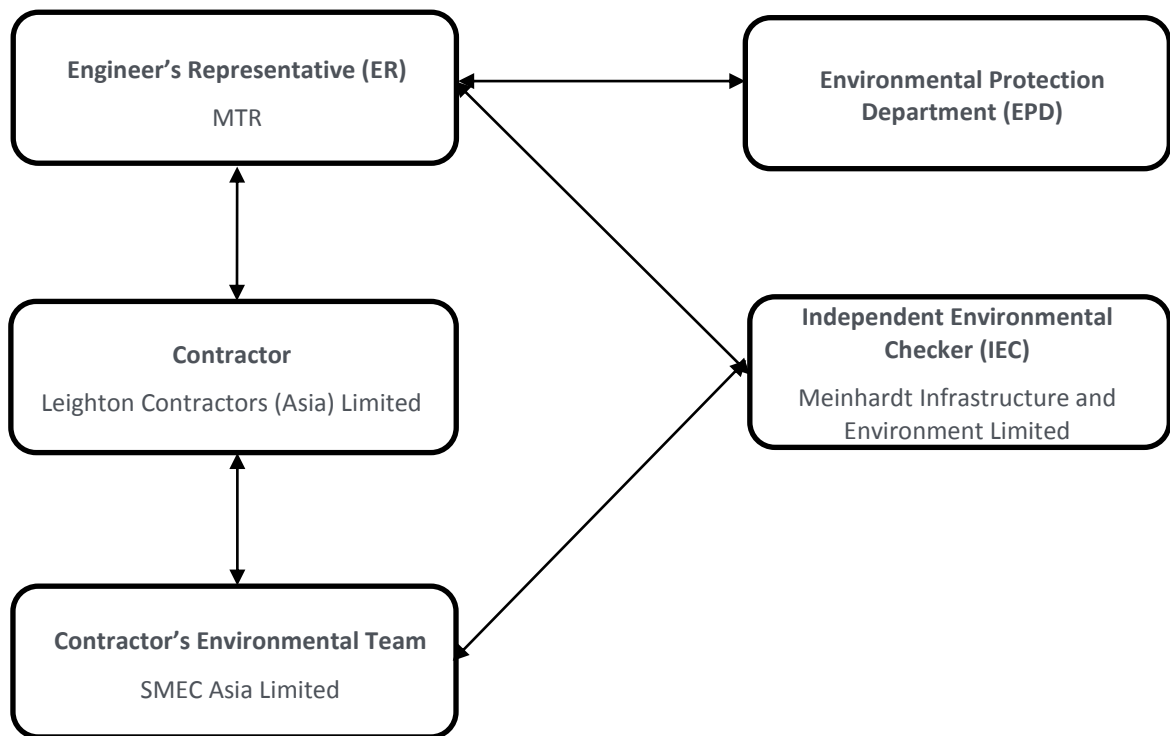
## Appendix B CONSTRUCTION PROGRAM

Simplified Works Programme	Duration of Work		
	Feb-19	Mar-19	Apr-19
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 at Gate 3			
Concourse Modification			
Landscape Work			

---

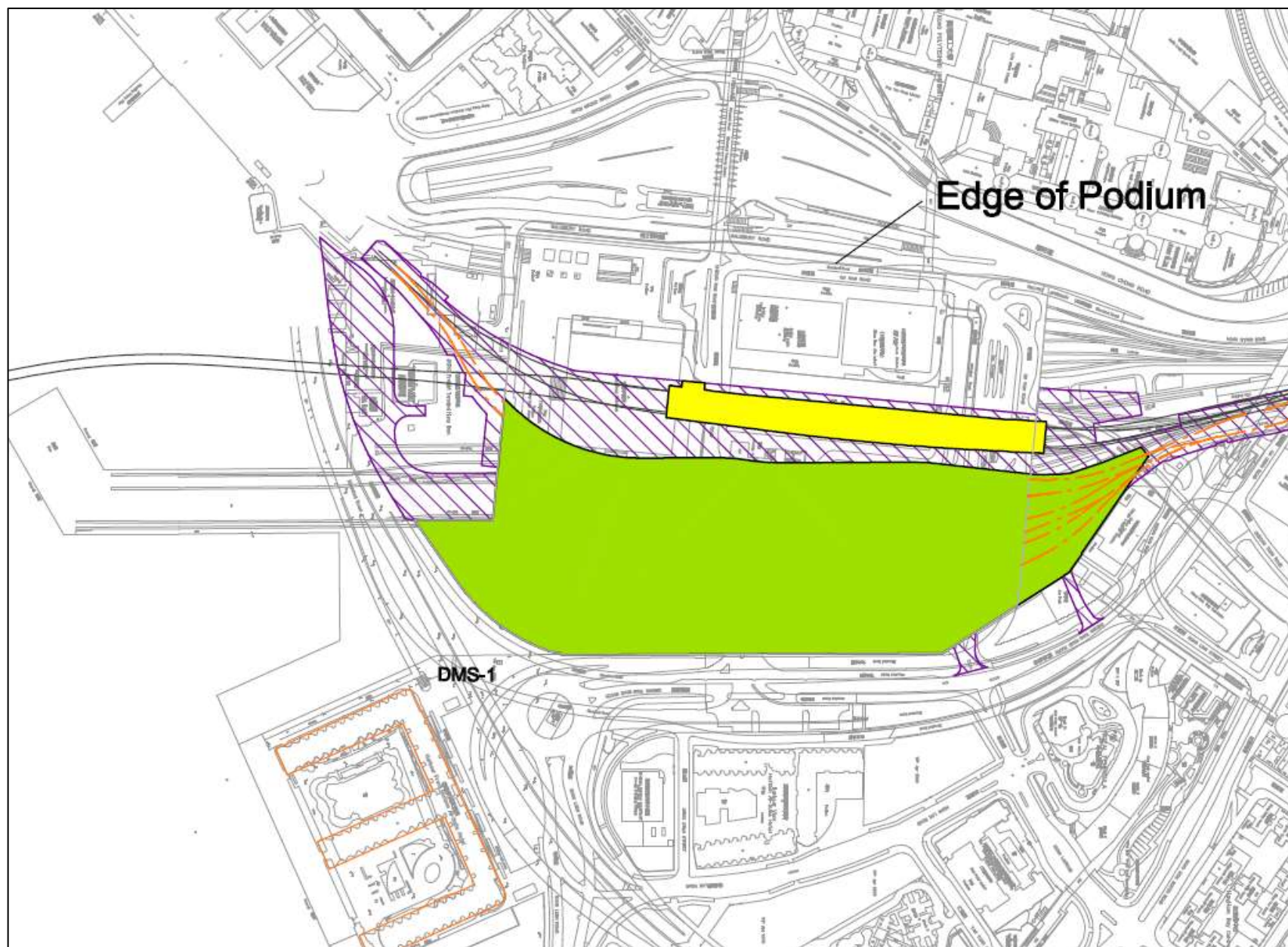
## Appendix C PROJECT ORGANISATION FOR ENVIRONMENTAL WORKS





---

## Appendix D LOCATION OF AIR QUALITY MONITORING STATION



---

## Appendix E CALIBRATION CERTIFICATES FOR MONITORING EQUIPMENT

## TSP Sampler Calibration

### SITE

Location: Hung Hom                      Calibration Date: November 14, 2018  
 Sampler: Hunghom MTR TSP              Next Calibration Date: January 14, 2019  
 Serial No 694-0665                      Tech: Sam Wong

### CONDITIONS

Barometric Pressure (in Hg):	40.00	Corrected Pressure (mm Hg):	1016
Temperature (deg F):	75	Temperature (deg K):	297
Average Press. (in Hg):	40.00	Corrected Average (mm Hg):	1016
Average Temp. (deg F):	75	Average Temp. (deg K):	297

-2017-2017-2017-2017-2017

### CALIBRATION ORIFICE

Make: Tisch                      Qstd Slope: 2.02017  
 Model: TE-5025A              Qstd Intercept: -0.03691  
 Serial#: 1612                  Date Certified: February 13, 2018

### CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	2.005	58.0	67.19	Slope -	33.2668
2	10.00	1.832	54.0	62.55	Intercept -	1.1404
3	7.80	1.620	48.0	55.60	Corr. coeff.-	0.9992
4	5.00	1.300	38.0	44.02		
5	3.00	1.011	30.0	34.75	# of Observations:	5

#### Calculations

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

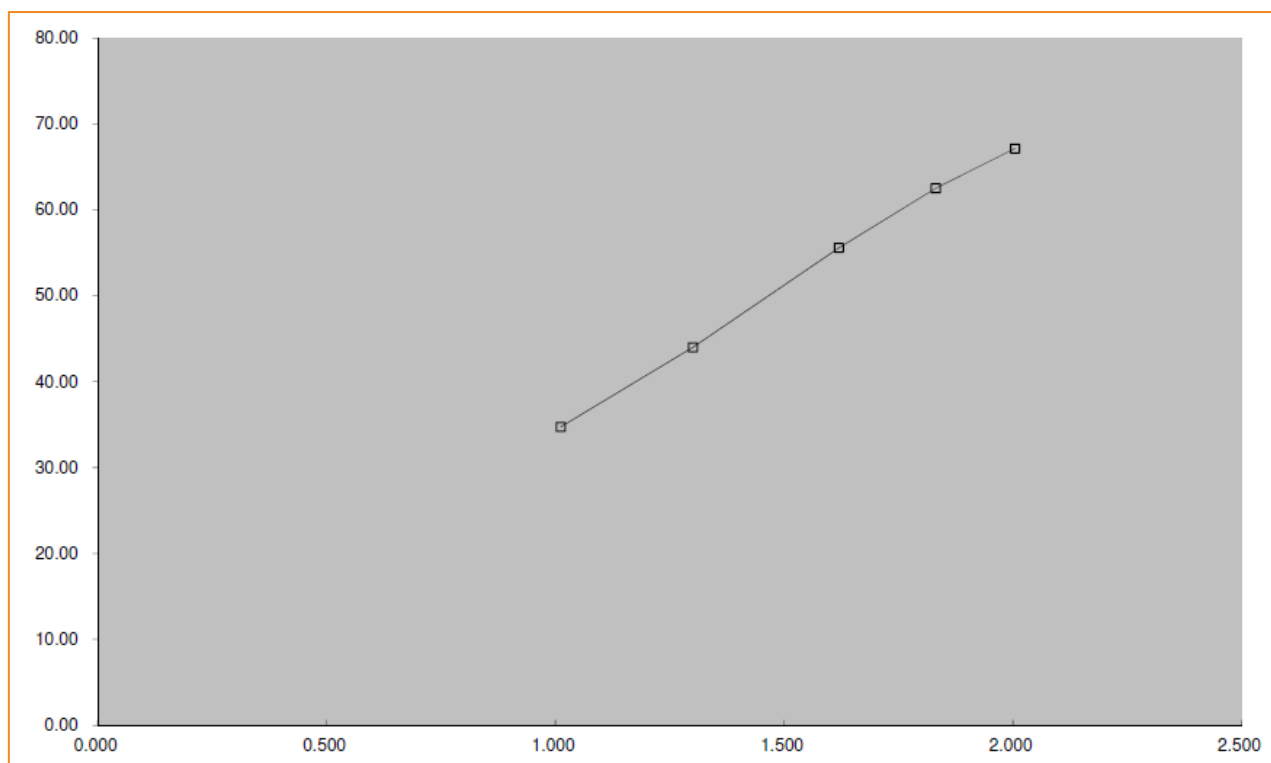
Qstd - standard flow rate  
 IC - corrected chart response  
 I - actual chart response  
 m - calibrator Qstd slope  
 b - calibrator Qstd intercept  
 Ta - actual temperature during calibration (deg K)  
 Pa - actual pressure during calibration (mm Hg)  
 Tstd - 298 deg K  
 Pstd - 760 mm Hg  
 For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

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

Reviewer: Sam Wong

Signature: 

Date: November 14, 2018



## TSP Sampler Calibration

### SITE

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

Calibration Date: January 14, 2019  
 Next Calibration Date: March 14, 2019  
 Tech: Sam Wong

### CONDITIONS

Barometric Pressure (in Hg): <u>40.07</u>	Corrected Pressure (mm Hg): <u>1018</u>
Temperature (deg F): <u>65</u>	Temperature (deg K): <u>291</u>
Average Press. (in Hg): <u>40.07</u>	Corrected Average (mm Hg): <u>1018</u>
Average Temp. (deg F): <u>65</u>	Average Temp. (deg K): <u>291</u>

-2017-2017-2017-2017-2017

### CALIBRATION ORIFICE

Make: Tisch  
 Model: TE-5025A  
 Serial#: 1612

Qstd Slope: 2.02017  
 Qstd Intercept: -0.03691  
 Date Certified: February 13, 2018

### CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	2.025	58.0	67.88	Slope =	33.2668
2	10.00	1.850	54.0	63.20	Intercept =	1.1585
3	7.80	1.636	48.0	56.18	Corr. coeff.=	0.9992
4	5.00	1.314	38.0	44.48		
5	3.00	1.022	30.0	35.11	# of Observations:	5

#### Calculations

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

Qstd - standard flow rate  
 IC - corrected chart 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:

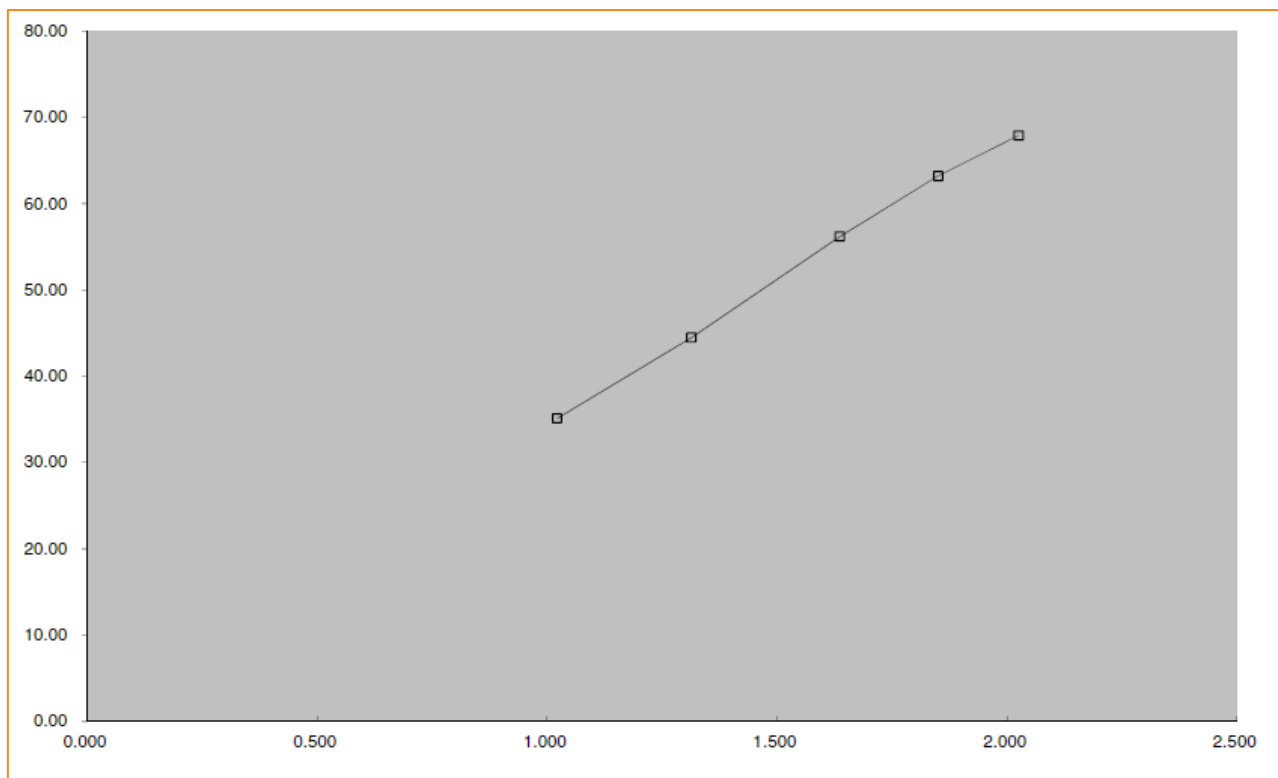
$1/m(I[\text{Sqrt}(298/Tav)(Pav/760)] - b)$

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

Reviewer: Sam Wong

Signature: 

Date: January 14, 2019





# Certificate of Calibration

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

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

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

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

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

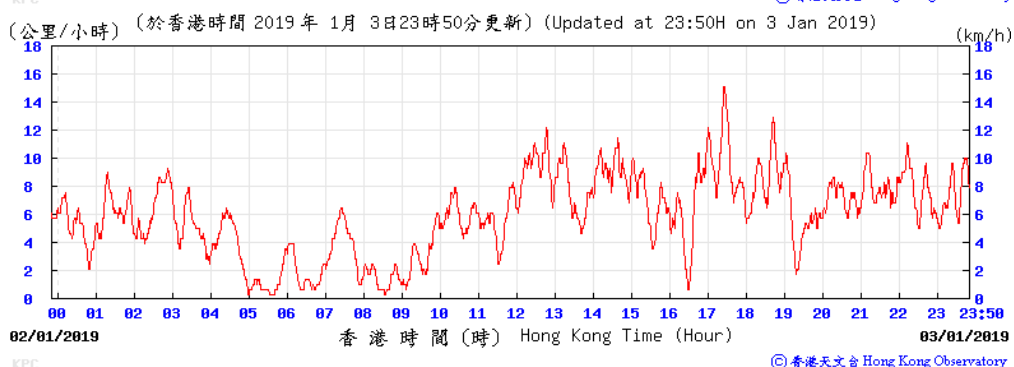
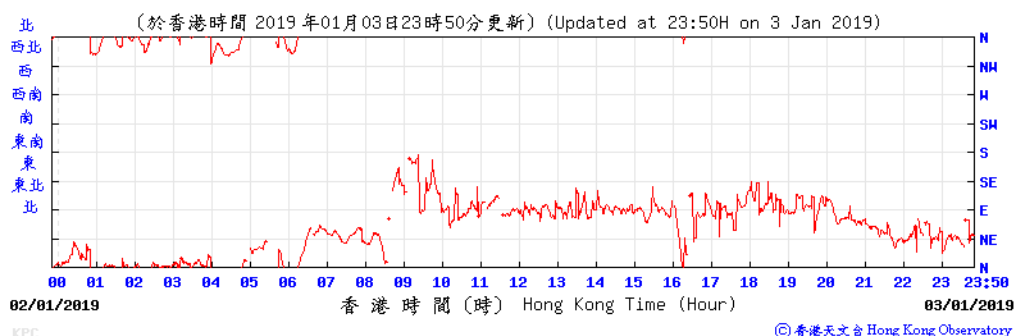
Tisch Environmental, Inc.  
145 South Miami Avenue  
Village of Cleves, OH 45002

[www.tisch-env.com](http://www.tisch-env.com)  
TOLL FREE: (877)263-7611  
FAX: (513)467-900

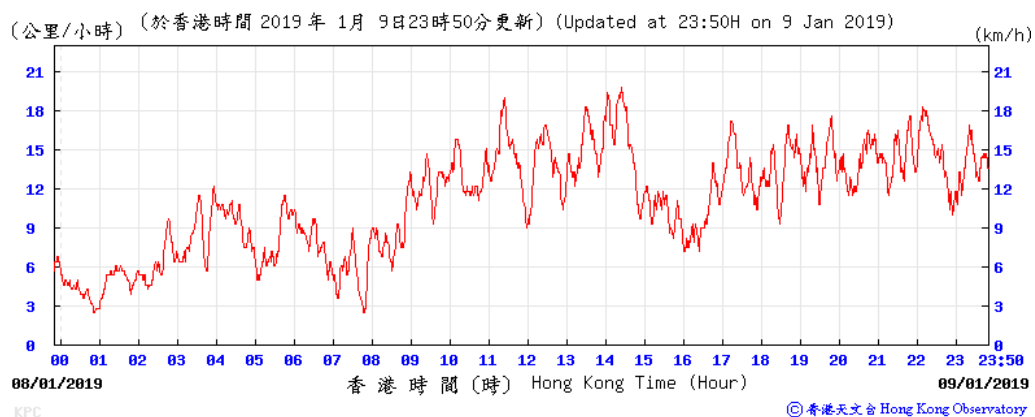
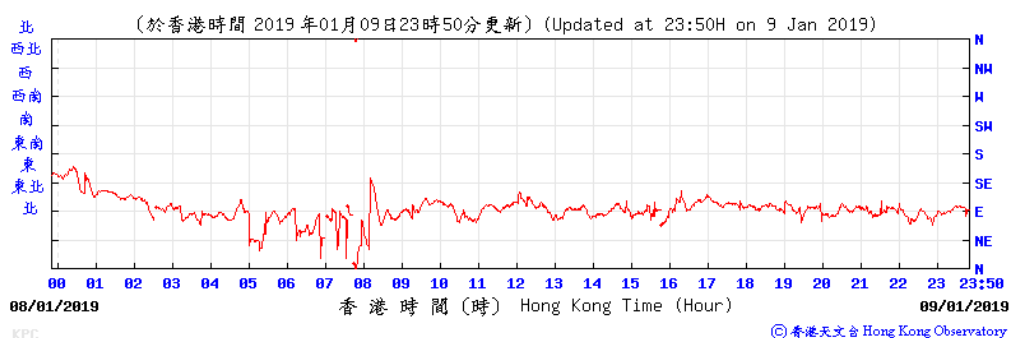
---

## Appendix F WIND DATA

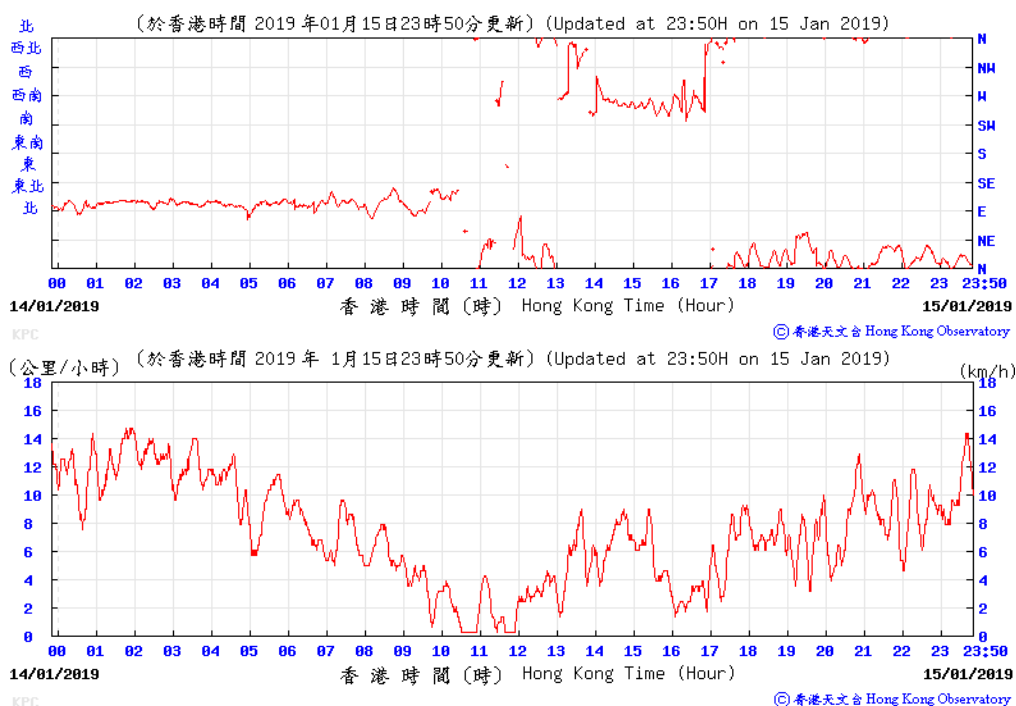
### 3 January 2019



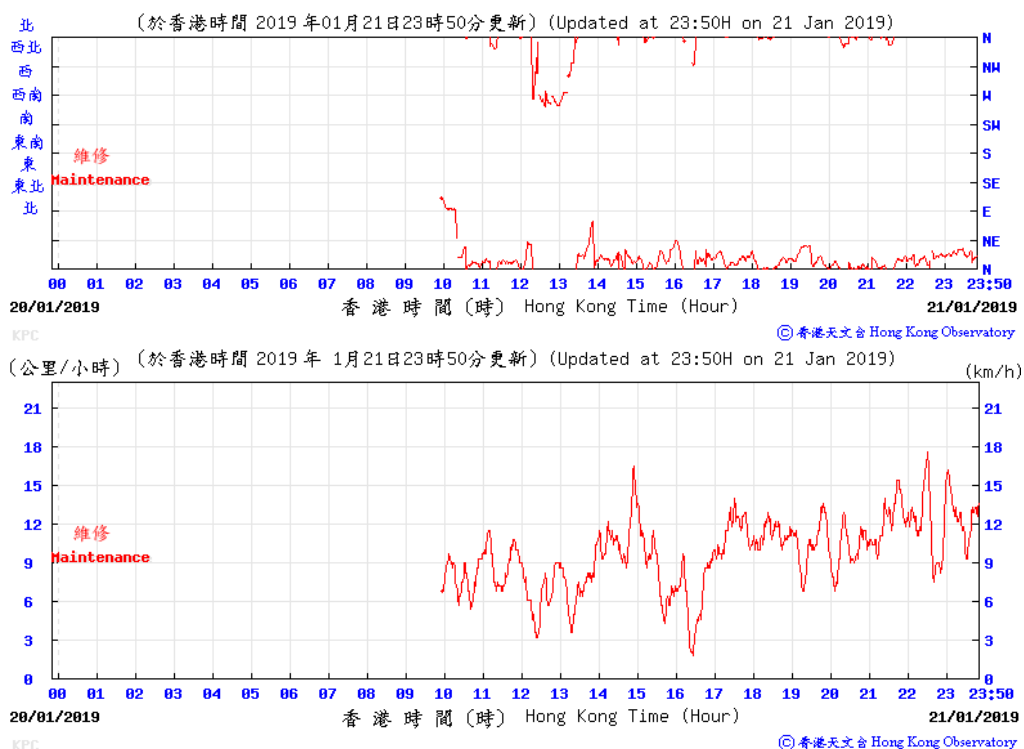
### 9 January 2019



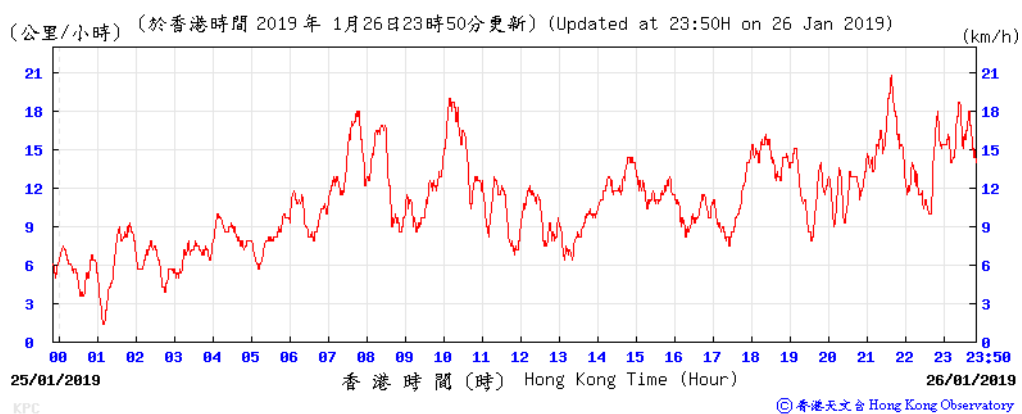
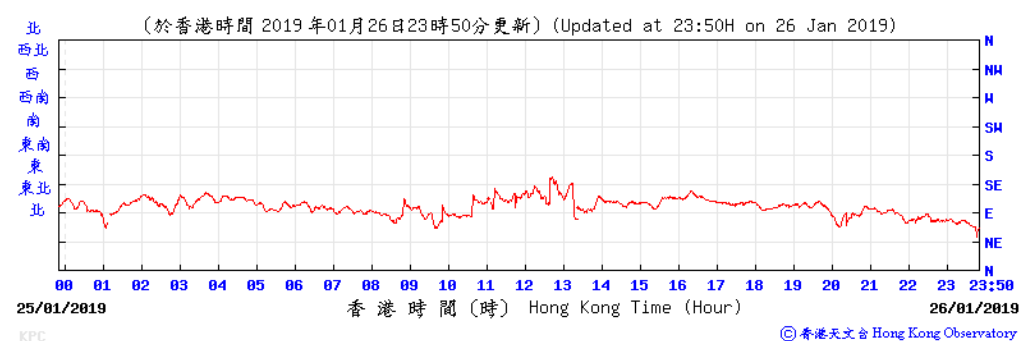
## 15 January 2019



## 21 January 2019



## 26 January 2019



---

## Appendix G ENVIRONMENTAL MONITORING PROGRAMME

### Environmental Monitoring Schedule for SCL1112 in January 2019

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

### Environmental Monitoring Schedule for SCL1112 in February 2019

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

---

## 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
<b>Landscape &amp; Visual (Construction Phase)</b>							
S6.9.3 and S6.12 of Ref.1; Table 4.9 of Ref. 2; S6.12 of Ref. 3	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of existing soil</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>No-intrusion zone</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Protection of retained trees</u></p> <ul style="list-style-type: none"> <li>All retained trees will be recorded photographically at the commencement of the contract, and carefully protected during the construction period. <ul style="list-style-type: none"> <li>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.</li> </ul> </li> </ul>	Minimise visual and landscape impact	Contractor	Within project site	Construction Stage	EIAO-TM	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S6.12 of Ref.1; Table 4.9 of Ref. 2; Table 6.9 of Ref. 3	<p><u>Decorative hoarding</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Tree transplanting</u></p> <ul style="list-style-type: none"> <li>Trees of medium to high survival rate that would be affected by</li> </ul>	Minimise the visual and landscape impact of the Project during construction phase	Contractor	Within project site	Detailed design and construction stage	EIAO-TM ETWB TCW 2/2004 ETWB TCW 3/2006	<p>^</p> <p>^</p>

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
	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.						^
<b>Air Quality (Construction Phase)</b>							
N.A.	Emission from Vehicles and Plants: <ul style="list-style-type: none"> <li>All vehicles shall be shut down in intermittent use.</li> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD).</li> </ul>	Reduce air pollution emission from construction vehicles and plants	Contractor	All constructions sites	Construction stage	Air Pollution Control Ordinance (APCO)	^ ^ ^
<b>Construction Dust Impact</b>							
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 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: <ul style="list-style-type: none"> <li>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.</li> <li>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<sup>2</sup> 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<sup>2</sup> to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&amp;A programme as specified in the EM&amp;A Manual.</li> </ul>	To minimize the construction dust impacts to the nearby sensitive receivers	Contractor	Barging point at Hung Hom Freight Pier	Construction stage	APCO	N/A  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
	<ul style="list-style-type: none"> <li>Vehicles leaving the barging facilities – vehicles would be required to pass through the wheel washing facilities to be provided at site exit.</li> </ul>						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 <sup>2</sup> 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 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	<ul style="list-style-type: none"> <li>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.</li> <li>Any dusty materials remaining after stockpiles are removed will be wetted and cleared from the surface of roads.</li> <li>A stockpile of dusty material will not be extended beyond the pedestrian barriers, fencing or traffic cones.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Any area that involves demolition activities will be sprayed with</li> </ul>	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO Air Pollution Control (Construction Dust) Regulation To control the dust impact to meet HKAQO and EIAO-TM criteria	#  ^  ^  ^  ^  ^  ^

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
	<p>water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet.</p> <ul style="list-style-type: none"> <li>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.</li> <li>Any skip hoist for material transport will be totally enclosed by impervious sheeting.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>						<p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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 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
<b>Construction Airborne Noise</b>							
S8.3.6 of Ref. 1; S6.61 of Ref. 2; S8.5.6 of Ref. 3	Implement the following good site practices: <ul style="list-style-type: none"> <li>Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction programme.</li> <li>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.</li> <li>Plant known to emit noise strongly in one direction, where possible; be orientated so that the noise is directed away from nearby NSRs.</li> <li>Silencers or mufflers on construction equipment will be properly fitted and maintained during the construction works.</li> <li>Mobile plant will be sited as far away from NSRs as possible and practicable.</li> <li>Material stockpiles, mobile container site office and other structures will be effectively utilised, where practicable, to screen noise from onsite construction activities.</li> </ul>	Control construction airborne noise	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^  ^  ^  ^  ^
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: <ul style="list-style-type: none"> <li>Asphalt Paver (SWL=101dB(A))</li> <li>Backhoe (SWL=106dB(A))</li> <li>Backhoe with Hydraulic Breaker (SWL=110dB(A))</li> <li>Concrete lorry mixer (SWL=96dB(A))</li> <li>Concrete mixer truck (SWL=96dB(A))</li> <li>Concrete Pump (SWL=106dB(A))</li> <li>Concrete Pump Truck (SWL=106dB(A))</li> <li>Crane, mobile (SWL=94dB(A))</li> <li>Crawler Crane (SWL=102dB(A))</li> <li>Drill, hand-held (SWL=98dB(A))</li> </ul>	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^

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
	<ul style="list-style-type: none"> <li>• Dump truck (SWL=104dB(A))</li> <li>• Excavator (SWL=106dB(A))</li> <li>• Flat Bed Lorry (SWL=102dB(A))</li> <li>• Generator (SWL=95dB(A))</li> <li>• Giken Piler and Power-pack (SWL=94dB(A))</li> <li>• Hydraulic breaker (SWL=110dB(A))</li> <li>• Hydraulic excavator (SWL=106dB(A))</li> <li>• Lorry (SWL=102dB(A))</li> <li>• Lorry with crane/ grab (SWL=94dB(A))</li> <li>• Mini Piling Rig (SWL=112dB(A))</li> <li>• Piling Rig (SWL=112dB(A))</li> <li>• Poker, vibrator, hand-held (SWL=98dB(A))</li> <li>• Road Roller (SWL=101dB(A))</li> <li>• Rock Drill (SWL = 108dB(A))</li> <li>• Roller (SWL = 101dB(A))</li> <li>• Truck (SWL=103dB(A))</li> <li>• Vibratory Hammer (SWL=118dB(A))</li> </ul>						
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	^

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
<b>Water Quality (Construction Phase)</b>							
S10.7.1 of Ref. 1; S8.41 – 8.39 and S8.50 of Ref. 2; S10.7.1 of Ref. 3	<p>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:</p> <p><u>Construction runoff and site drainage</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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 0.1m<sup>3</sup>/s a sedimentation basin of 30m<sup>3</sup> would be required and for a flow rate of 0.5m<sup>3</sup>/s the basin would be 150m<sup>3</sup>. Detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of works.</li> <li>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.</li> <li>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.</li> <li>Measures will be taken to minimise the ingress of site drainage</li> </ul>	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	<p>Water Pollution Control Ordinance (WPCO)</p> <p>ProPECC PN1/94</p> <p>EIAO-TM</p> <p>TM-Water Technical Memorandum on Effluent Discharge Standard (TM-DSS)</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>*</p>

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
	<p>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.</p> <ul style="list-style-type: none"> <li>• Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> will be covered with tarpaulin or similar fabric during rainstorms.</li> <li>• Measures will be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• Construction solid waste, debris and rubbish on site will be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>• All fuel tanks and storage areas will be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110%</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>



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
	<p>of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.</p> <ul style="list-style-type: none"> <li>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.</li> <li>Adopt Best Management Practices.</li> </ul>						<p>^</p> <p>^</p> <p>^</p>
S10.7.1 of Ref. 1; S10.7.1 of Ref. 3	<p><u>Tunnelling works</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>Uncontaminated discharge will pass through sedimentation tanks prior to off-site discharge.</li> <li>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.</li> <li>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.</li> </ul>	To minimize construction water quality impact from tunnelling works	Contractor	All tunnelling portion	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
S8.68 of Ref. 2; S10.7.1 of Ref. 1	<u>Operation of Barging Facilities</u> The following good practice shall apply for the barging facilities operations: <ul style="list-style-type: none"> <li>All barges should be fitted with tight bottom seals to prevent leakage of materials during transport;</li> <li>Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation;</li> <li>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</li> <li>Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water.</li> <li>Mitigation measures as outlined for control of <i>construction runoff and site drainage</i> provide above should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate.</li> </ul>	To minimize water quality impact from operation of barging facility	Contractor	All barging facilities	Construction stage	WPCO TM-EIA	N/A  N/A  N/A  N/A  N/A
S8.51 – 8.52 of Ref. 2	<u>Bentonite Slurries:</u> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	To minimize water quality impact from bentonite slurries	Contractor	All works area	Construction stage	WPCO TM-EIA	^      ^
S8.53 – 8.54 of Ref. 2	<u>Wastewater from Building Construction:</u> <ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>	To minimize water quality impact from building construction	Contractor	All construction sites where practicable	Construction stage	WPCO EIAO-TM	^      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
	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> <ul style="list-style-type: none"> <li>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.</li> </ul>	To minimize water quality impact from excavation activities	Contractor	All excavation works areas	Construction stage	WPCO EIAO-TM	^
S8.63 of Ref. 2	<u>Diaphragm Wall</u> <ul style="list-style-type: none"> <li>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.</li> </ul>	To minimize water quality impact from diaphragm walling	Contractor	All diaphragm walling works areas	Construction stage	WPCO EIAO-TM	^
S8.60 – 8.61 of Ref. 2; S10.7.1 of Ref. 3	<u>Sewage effluent</u> 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 TM-Water	^
S8.64 of Ref. 2; S10.7.1 of Ref. 3	<u>Groundwater seepage</u> 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 TM-Water EIAO-TM	^

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
S10.7.1 of Ref. 1; S8.57 – 8.59 of Ref. 2; S10.7.1 of Ref. 3	<u>Accidental spillage</u> To prevent accidental spillage of chemicals, the following is recommended: <ul style="list-style-type: none"> <li>• Proper storage and handling facilities will be provided.</li> <li>• 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.</li> <li>• 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.</li> <li>• Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.</li> </ul>	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	# ^  ^
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 WPCO ProPECC PN 1/94 TM-DSS WDO	^

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
<b>Waste Management (Construction Phase)</b>							
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&amp;D material</u> 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> <ul style="list-style-type: none"> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.</li> <li>• Carry out onsite sorting.</li> <li>• Make provisions in the Contract documents to allow and promote</li> <li>• The use of recycled aggregates where appropriate.</li> <li>• Adopt ‘selective demolition’ technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible.</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified.</li> <li>• 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&amp;D materials and to minimize their generation during the course of construction.</li> <li>• In addition, disposal of the C&amp;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</li> </ul>	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  Waste Disposal Ordinance  ETWB TCW Ref 19/2005	^ ^ ^ ^ ^ ^ ^

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
	implementation.						
S11.5.1 of Ref.1; S9.73 of Ref. 2; S11.5.1 of Ref.3	<u>C&amp;D waste</u> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication will be used as far as practicable in order to minimise the arising of C&amp;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.</li> <li>The contractor will recycle as much of the C&amp;D materials as possible onsite. Public fill and C&amp;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.</li> </ul>	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 Waste Disposal Ordinance ETWB TCW Ref 19/2005	<p>^</p> <p>^</p>
S11.5.1 of Ref.1; S9.100-9.102 of Ref.2; S11.5.1 of Ref. 3	<u>General refuse</u> <ul style="list-style-type: none"> <li>General refuse generated onsite will be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
S11.5.1 of Ref.1; S9.84 – 9.93 of Ref. 2	<u>Land-based sediment</u> <ul style="list-style-type: none"> <li>The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of sediments.</li> <li>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).</li> <li>In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated</li> </ul>	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 Dumping at Sea Ordinance (DASO) APCO WPCO	N/A  N/A       N/A          N/A          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
	<p>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.</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>						<p>N/A</p> <p>N/A</p>
S11.5.1 of Ref.1; S8.94 – 9.97 of Ref. 2; S11.5.1 of Ref. 3	<p><u>Chemical waste</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	<p>Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S9.98 – 9.99 of	<u>Asbestos wastes</u>	To ensure the asbestos	Contractor	All construction	Construction	Code of practice	



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
Ref 2	<ul style="list-style-type: none"> <li>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.</li> <li>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</li> </ul>	wastes are handled and disposed of in accordance with the statutory requirements		sites	stage	on the Handling, Transportation and Disposal of Asbestos Waste	<p>^</p> <p>N/A</p>



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
	<ul style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>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.</li> </ul>						N/A
							N/A
							N/A
S10.36 of Ref 2	<p>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:</p> <p>Set up a list of safety measures for site workers.</p> <p>Provide written information and training on safety for site workers.</p> <p>Keep a log-book and plan showing the contaminated zones and clean zones.</p> <p>Maintain a hygienic working environment.</p> <p>Avoid dust generation.</p> <p>Provide face and respiratory protection gear to site workers.</p> <p>Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers.</p> <p>Provide first aid training and materials to site workers.</p>	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	<p>"Guidance Note for Contaminated Land Assessment and Remediation"</p> <p>"Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management"</p> <p>"Occupation Safety and Health Ordinance (Chapter 509)"</p>	N/A
<b>EM&amp;A Project</b>							
S14.2 – 14.4 of Ref. 1; S13.2 – 13.4 of Ref. 3 1.	<ul style="list-style-type: none"> <li>An Environmental Team needs to be employed as per this EM&amp;A Manual.</li> <li>Prepare a systematic EMP to ensure effective implementation of the mitigation measures.</li> <li>An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in this EM&amp;A Manual are fully complied with.</li> </ul>	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	EIAO Guidance Note Ref4/2010 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
<b>Action level</b>				
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Inform the contractor, the IEC and the ER</li> <li>2. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>3. Monitor remedial actions until rectification has been completed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the contractor's working method</li> <li>3. Discuss with the ET, ER and the contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-conformity in writing</li> <li>2. Review and agree on the remedial measures proposed by the contractor</li> <li>3. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify source</li> <li>2. Inform the contractor, the IEC and the ER</li> <li>3. Increase inspection frequency</li> <li>4. Discuss remedial actions with the IEC, the ER and the contractor</li> <li>5. Monitor remedial actions until rectification has been completed</li> <li>6. If non-conformity stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the contractor's working method</li> <li>3. Discuss with the ET and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the contractor</li> <li>2. In consultation with the ET and IEC, agree with the contractor on the remedial measures to be implemented</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.</li> </ol>

## Event and Action Plan for Air Quality

EVENT	ET	IEC	ER	CONTRACTOR
<b>Action level</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER</li> <li>2. Discuss with the Contractor, IEC and ER on the remedial measures required</li> <li>3. Repeat measurement to confirm findings</li> <li>4. Increase monitoring frequency</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET</li> <li>2. Check Contractor's working method</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Implement remedial measures;</li> <li>3. Amend working methods agreed with the ER as appropriate</li> </ol>
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required</li> <li>3. Repeat measurements to confirm findings</li> <li>4. Increase monitoring frequency to daily</li> <li>5. If exceedance continues, arrange meeting with the IEC, ER and Contractor</li> <li>6. If exceedance stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET</li> <li>2. Check Contractor's working method</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Review and agree on the remedial measures proposed by the Contractor</li> <li>3. Supervise Implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance</li> <li>2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification</li> <li>3. Implement the agreed proposals</li> <li>4. Amend proposal as appropriate</li> </ol>

EVENT	ET	IEC	ER	CONTRACTOR
<b>Limit Level</b>				
1.Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, EPD, Contractor and ER</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency to daily</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. Review and agree on the remedial measures proposed by the Contractor</li> <li>4. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification</li> <li>4. Implement agreed proposals</li> <li>5. Amend proposal if appropriate.</li> </ol>
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, Contractor &amp; EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency to daily</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>4. Supervise the implementation of remedial measures</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification</li> <li>4. Implement the agreed proposals</li> <li>5. Revise and resubmit proposals if problem still not under control</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>



## Event and Action Plan for Construction Noise

EVENT	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and ER</li> <li>2. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> <li>3. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by Contractor.</li> <li>2. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. Review and agree on the remedial measures proposed by the Contractor</li> <li>4. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measure.</li> <li>2. Report the results of investigation to the IEC, ET and ER.</li> <li>3. Submit noise mitigation proposals to ER with a copy to ET and IEC within three working days of notification</li> <li>4. Implement noise mitigation proposal.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Notify IEC, Contractor &amp; EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency to daily</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances.</li> <li>7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>4. Supervise the implementation of remedial measures</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification</li> <li>4. Implement the agreed proposals</li> <li>5. Revise and resubmit proposals if problem still not under control</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

**Note:**

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

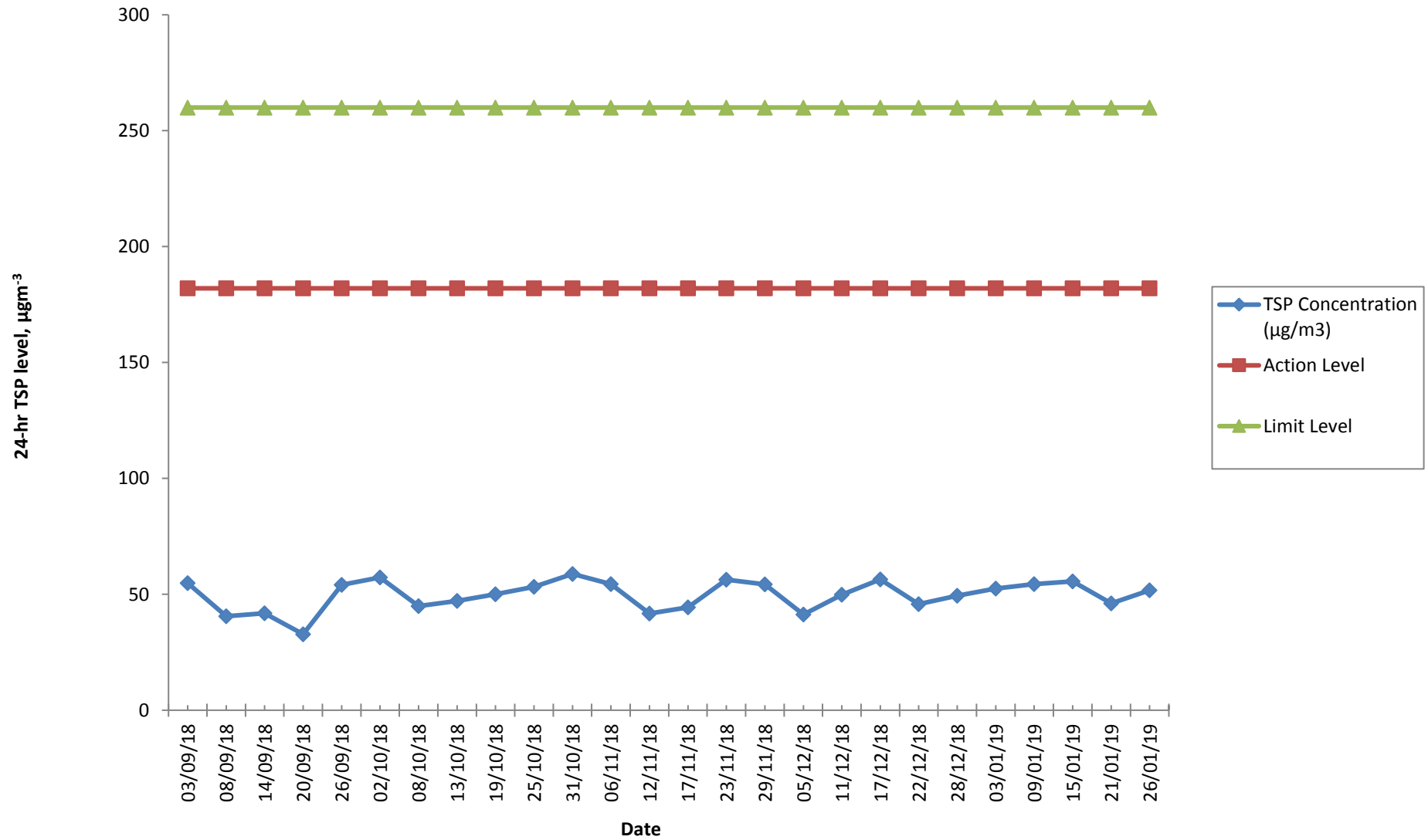
---

## **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 <sup>3</sup> )	TSP CONCENTRATION (MG/M3)	WEATHER	REMARK
	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate				
03/01/19	C553	2.8021	2.8877	0.0856	18201.30	18225.30	24.00	40	40	40.0	1631.05	52.4815	Sunny	-
09/01/19	C554	2.7737	2.8625	0.0888	18225.30	18249.30	24.00	40	40	40.0	1631.05	54.4434	Sunny	-
15/01/19	C555	2.8086	2.8993	0.0907	18249.30	18273.30	24.00	40	40	40.0	1631.05	55.6083	Sunny	-
21/01/19	C556	2.8107	2.8858	0.0751	18273.30	18297.30	24.00	40	40	40.0	1631.05	46.0440	Sunny	-
26/01/19	C557	2.7972	2.8816	0.0844	18297.30	18321.30	24.00	40	40	40.0	1631.05	51.7458	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 <sup>3</sup> )									(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 <sup>[Note1]</sup>	0	0.19	3.46	28.32	0.29	414.67	0	0	-	15.73
Mar-14	0	-	10.10	0	0	6.18 <sup>[Note2]</sup>	0	0.29	3.63	96.26	0.25	0	0	0	-	47.76
Apr-14	0	-	6.67	0	0	4.82 <sup>[Note3]</sup>	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 <sup>[Note4]</sup>	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 <sup>[Note5]</sup>	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 <sup>[Note6]</sup>	0	0.87	4.84	70.99	0	0	0	0	-	40.50
Aug-14	0.20	-	8.57	0	0	3.56 <sup>[Note7]</sup>	0	0.44	4.57	227.86	0	0	0	0	-	76.93
Sep-14	0.23	-	11.11	0	0	5.82 <sup>[Note8]</sup>	0	0.23	5.06	220.85	0.29	0	0	0	-	43.01
Oct-14	0.54	-	12.79	0	0	6.04 <sup>[Note9]</sup>	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 <sup>[Note10]</sup>	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 <sup>[Note11]</sup>	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 <sup>[Note12]</sup>	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 <sup>[Note13]</sup>	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 <sup>[Note14]</sup>	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 <sup>[Note15]</sup>	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 <sup>[Note16]</sup>	0	0	9.10	353.88	0.67	0	0	0	0	266.43
Jun-15	5.04	-	13.49	0	0	6.29 <sup>[Note17]</sup>	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 <sup>[Note18]</sup>	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 <sup>[Note19]</sup>	0	0	7.14	45.53	0.57	0	0	0	0	261.04
Sep-15	-	-	20.91	0	0	13.16 <sup>[Note20]</sup>	0	0	7.75	317.36	0.58	0	0	0.45	0	240.74
Oct-15	-	-	26.22	0	0	14.19 <sup>[Note21]</sup>	0	0	12.03	251.95	0.48	0	0	0	0	422.80
Nov-15	-	-	18.66	0	0	7.03 <sup>[Note22]</sup>	0	0	11.64	446.80	0.53	0	0	0	0	283.46
Dec-15	-	-	17.02	0	0	9.81 <sup>[Note23]</sup>	0	0	7.21	198.11	0.50	0	0	0	0	355.24
Jan-16	-	-	24.58	0	0	13.22 <sup>[Note24]</sup>	0	0	11.37	273.64	0.62	0	0	0	0	347.67
Feb-16	-	-	9.34	0	0	4.31 <sup>[Note25]</sup>	0	0	5.04	269.58	0.46	0	0	0	0	251.30
Mar-16	-	-	9.75	0	0	3.48 <sup>[Note26]</sup>	0	0	6.27	750.85	0	0	0	0	0	288.35
Apr-16	-	-	12.83	0	0	5.68 <sup>[Note27]</sup>	0	0	7.15	549.43	0.65	0	0	0.09	1.30	282.05
May-16	-	-	7.22	0	0	2.08 <sup>[Note28]</sup>	0	0	5.14	356.66	0.55	0	0	0	0	318.75
Jun-16	-	-	2.83	0	0	2.38 <sup>[Note29]</sup>	0	0	0.45	228.10	0.40	0	0	0	4.21	410.03
Jul-16	-	-	8.67	0	0	8.50 <sup>[Note30]</sup>	0	0.01	0.16	172.90	0.16	0	0	0	0	418.44
Aug-16	-	-	2.08	0	0	1.95 <sup>[Note31]</sup>	0	0	0.12	334.40	0.30	0	0	0	0	542.00
Sep-16	-	-	1.44	0	0	1.44 <sup>[Note32]</sup>	0	0	0	47.10	0.37	0	0	0	0	542.44
Oct-16	-	-	3.00	0	0	3.00 <sup>[Note33]</sup>	0	0	0	99.79	0.44	0	0	0	0	633.27
Nov-16	-	-	1.29	0	0	1.29 <sup>[Note34]</sup>	0	0	0	29.71	0.45	0	0	0	0	866.16
Dec-16	-	-	1.10	0	0	1.10 <sup>[Note35]</sup>	0	0	0	45.80	0.48	0	0	0	0	978.39
Jan-17	-	-	2.19	0	0	2.19 <sup>[Note36]</sup>	0	0	0	26.10	0.25	0	0	0	0	730.48
Feb-17	-	-	1.04	0	0	1.04 <sup>[Note37]</sup>	0	0	0	0	0.45	0	0	0	0	564.62
Mar-17	-	-	0.89	0	0	0.89 <sup>[Note38]</sup>	0	0	0	0	0.49	0	0.31	0	0	688.72
Apr-17	-	-	0.83	0	0	0.83 <sup>[Note39]</sup>	0	0	0	0	0.36	0	0	0	0	567.73
May-17	-	-	1.23	0	0	1.23 <sup>[Note40]</sup>	0	0	0	0	0.16	0	0	0	0	597.93
Jun-17	-	-	0.70	0	0	0.70 <sup>[Note41]</sup>	0	0	0	0	0.17	0	0	0	0	440.50
Jul-17	-	-	0.98	0	0	0.98 <sup>[Note42]</sup>	0	0	0	0	0.31	0	0	0	0	371.00
Aug-17	-	-	0.63	0	0	0.63 <sup>[Note43]</sup>	0	0	0	0	0.17	0	0	0	0	393.48
Sep-17	-	-	0.21	0	0	0.21 <sup>[Note44]</sup>	0	0	0	0	0.23	0	0.11	0	0	362.47

	WASTE FLOW TABLE															
Oct-17	-	-	0.25	0	0	0.25 <sup>[Note45]</sup>	0	0	0	0	0.10	0	0	0	0	377.69
Nov-17	-	-	0.66	0	0	0.66 <sup>[Note46]</sup>	0	0	0	11.77	0.35	0	0	0	0	788.65
Dec-17	-	-	0.91	0	0	0.91 <sup>[Note47]</sup>	0	0	0	0	0	0	0	0	0	446.48
Jan-18	-	-	0.83	0	0	0.83 <sup>[Note48]</sup>	0	0	0	0	0	0	0	0	0	571.95
Feb-18	-	-	0.35	0	0	0.35 <sup>[Note49]</sup>	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
TOTAL	40.35	0.09	456.62	0.00	0.42	239.63	4.86	3.43	208.94	9790.05	21.34	3790.76	3.18	6.74	8.11	20134.47

**Note:**

- 137 m<sup>3</sup> of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
- 267 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904; 3,998 m<sup>3</sup> 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<sup>3</sup> 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.
- 1,728 m<sup>3</sup> 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<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 184 m<sup>3</sup> of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904; and 1814 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 1,021 m<sup>3</sup> 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 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 2,894 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 575.5m<sup>3</sup> 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<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08; and 76.0 m<sup>3</sup> 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<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and 912.3 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904.
  9. 5,522.9 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL and 515.9 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904.
  10. 3,774.6 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL.
  11. 2,968.9 m<sup>3</sup> of the Inert C&D materials were reused in TM-CLKL (HY/2012/08).
  12. 9,988.1 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA) and 46.34 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904.
  13. 8,212.8 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA) and 200.9 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904.
  14. 11,757 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA), 23.41 m<sup>3</sup> of the Inert C&D materials were reused in SIL Project Contract 904 and 672.78 m<sup>3</sup> of the Inert C&D materials were reused in XRL822.
  15. 10,633 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA) and 0.61176 m<sup>3</sup> of the Inert C&D materials were reused in XRL822.
  16. 11,533 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA).
  17. 6,290 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA).
  18. 16,145 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA).
  19. 878 m<sup>3</sup> of the Inert C&D materials were reused in WENT (SITA) and 18,415 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  20. 13,163 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  21. 14,189 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  22. 7,030 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  23. 9,811 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  24. 13,218 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  25. 4,306 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  26. 3,478 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  27. 5,680 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  28. 2,080 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  29. 2,380 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  30. 8,500 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  31. 1,950 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  32. 1,440 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  33. 3,004 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  34. 1,290 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  35. 1,100 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  36. 2,190 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  37. 1,040 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  38. 890 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  39. 830 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  40. 1,230 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  41. 700 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  42. 980 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  43. 630 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.

- 
44. 210 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  45. 250 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  46. 660 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  47. 910 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  48. 830 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.
  49. 350 m<sup>3</sup> of the Inert C&D materials were reused in SCL1121.

	MARINE SEDIMENT FLOW TABLE					
Month	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 <sup>3</sup> )			(in '000m <sup>3</sup> )		
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	-
<b>TOTAL</b>	<b>31.69</b>	<b>42.67</b>	<b>38.11</b>	<b>2.22</b>	<b>22.57</b>	<b>6.54</b>

**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	<ul style="list-style-type: none"> <li>• Environmental performance at the site and implementation status of proposed noise mitigation measures were immediately reviewed by the Contractor on 8 January 2019.</li> <li>• No external works outside Hung Hom Concourse were carried out during the time of the complaint.</li> <li>• 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.</li> <li>• 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.</li> <li>• Investigation report submitted to EPD on 17 January 2019.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Environmental performance at the site and implementation status of proposed noise mitigation measures were immediately reviewed by the Contractor on 19 January 2018.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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</li> </ul>

	DATE RECEIVED	REFERENCE NO.	SUBJECT	LOCATION OF CONCERN	STATUS
					<p>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.</p> <ul style="list-style-type: none"> <li>• All works carried out by SCL Contract 1112 on 19 and 20 January 2018 were covered by valid CNPs.</li> <li>• Investigation report submitted to EPD on 26 January 2018.</li> </ul>
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	<ul style="list-style-type: none"> <li>• The Contractor immediately reviewed environmental performance at the site and implementation status of dust mitigation measures upon receipt of Notice of Complaint from EPD.</li> <li>• 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).</li> <li>• 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.</li> <li>• 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.</li> <li>• Investigation report submitted to EPD on 15 December 2017.</li> </ul>
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	<ul style="list-style-type: none"> <li>• ET conducted inspection to examine the environmental performance of the site on 13 April 2017.</li> <li>• The Contractor confirmed bulkhead wall demolition work using coring machine at SAT was carried out on 7 &amp; 8 April 2017 during 1 am – 5 am behind the door leaves and no machinery that would generate beeping sound was involved.</li> <li>• On the two nights from 6 to 8 April 2017, installation of</li> </ul>

	DATE RECEIVED	REFERENCE NO.	SUBJECT	LOCATION OF CONCERN	STATUS
					<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• On 6 &amp; 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.</li> <li>• All works carried out by SCL Contract 1112 in early April 2017 are covered by valid CNPs.</li> <li>• Investigation report submitted to EPD on 2 May 2017.</li> </ul>
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	<ul style="list-style-type: none"> <li>• ET conducted inspection to examine the environmental performance of the site on 16 March 2017.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>



	DATE RECEIVED	REFERENCE NO.	SUBJECT	LOCATION OF CONCERN	STATUS
					<ul style="list-style-type: none"> <li>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.</li> <li>Investigation report submitted to EPD on 21 March 2017.</li> </ul>
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	<ul style="list-style-type: none"> <li>ET conducted inspection to examine the environmental performance of the site on 14 April 2016.</li> <li>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.</li> <li>No diesel powered equipment was found at the concourse, as all of the powered mechanical equipment was powered by electricity.</li> <li>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.</li> <li>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.</li> <li>The source of strong diesel exhaust smell at the concourse, as mentioned by the complainant, could not be identified.</li> <li>Investigation report submitted to EPD on 26 April 2016.</li> </ul>
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	<ul style="list-style-type: none"> <li>Complaint confirmed to be irrelevant to the construction works of the Project, no follow up required.</li> </ul>

	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	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>Investigation report submitted to EPD on 20 April 2016.</li> </ul>
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	<ul style="list-style-type: none"> <li>A valid construction noise permit (CNP) (CNP no. GW-RN0969-15) was granted for such works from 25 September 2015 to 24 March 2016.</li> <li>Noise mitigation measures were implemented at the site.</li> <li>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.</li> <li>Investigation report submitted to EPD on 3 November 2015.</li> </ul>

	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 (near Exit B1)	Hung Hom Station, Tsim Sha Tsui	<ul style="list-style-type: none"> <li>ET conducted inspection to examine the environmental performance of the site on 12 Mar 2015</li> <li>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</li> <li>The source of malodour could not be identified</li> <li>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</li> <li>No noticeable malodour was observed and the air quality control was found to be satisfactory according to conversation between EPD and the Contractor</li> <li>Investigation Report submitted to EPD on 26 Mar 2015</li> </ul>

local people  
global experience

---

SMEC is recognised for providing technical excellence and consultancy expertise in urban, infrastructure and management advisory. From concept to completion, our core service offering covers the life-cycle of a project and maximises value to our clients and communities. We align global expertise with local knowledge and state-of-the-art processes and systems to deliver innovative solutions to a range of industry sectors.



[www.smec.com](http://www.smec.com)

---

## **Appendix F**

### **Final EM&A Review Report for Works Contract 1102 – Hin Keng Station and Approach Structures**

---

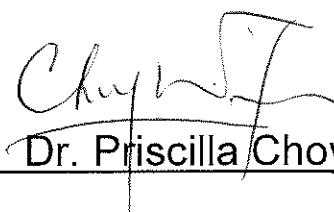
MTR Corporation Limited

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

Final EM&A Review Report

Works Contract 1102 –  
Hin Keng Station and Approach Structures

(February 2019)

Certified by:  Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 13<sup>th</sup> February 2019

**Penta-Ocean Construction Co. Ltd.**

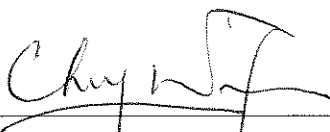
**Shatin to Central Link –  
Contract 1102  
Hin Keng Station and Approach  
Structures**

**Final Environmental Monitoring &  
Audit Review Report**

**(Version 1.0)**

**January 2019**

Approved By

  
(Contractor's Environmental Team Leader)

**REMARKS:**

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

WELLAB accepts no responsibility for changes made to this report by third parties

**WELLAB LTD**  
Room 1701, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong  
Tel: (852) 2898 7388 Fax: (852) 2898 7076  
Email: wellab@wellab.com.hk

## TABLE OF CONTENTS

	Page
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
Introduction .....	1
Summary of Construction Works undertaken in the Construction Period .....	1
Variation in Construction Method .....	2
Environmental Monitoring and Audit Works .....	2
Waste Management .....	3
Landscape and Visual .....	3
Environmental Site Inspection .....	3
Environmental Exceedance/Non-conformance/Complaint/Summons and Successful Prosecution .....	3
Conclusion .....	3
<b>1 INTRODUCTION .....</b>	<b>4</b>
Purpose of the Report .....	4
Structure of the Report .....	4
<b>2 PROJECT INFORMATION .....</b>	<b>5</b>
Background .....	5
General Site Description .....	5
Construction Programme and Activities .....	5
Project Organization .....	6
Summary of EM&A Requirements .....	6
<b>3 ENVIRONMENTAL MONITORING REQUIREMENTS .....</b>	<b>7</b>
Construction Noise Monitoring .....	7
Noise Monitoring Parameter and Frequency .....	7
Compliance Checking for Impact Monitoring .....	7
Construction Dust Monitoring .....	8
Monitoring Parameter and Frequency .....	8
Action and Limit Levels .....	8
Event and Action Plan .....	8
<i>Landscape and Visual</i> .....	8
<b>4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS .....</b>	<b>9</b>
<b>5 SUMMARY OF EM&amp;A WORKS .....</b>	<b>12</b>
Construction Noise Monitoring .....	12
Construction Dust Monitoring .....	12
<b>Waste Management</b> .....	13
<b>Landscape and Visual</b> .....	13
<b>Site Audit</b> .....	13
<b>6 ENVIRONMENTAL NON-CONFORMANCE .....</b>	<b>18</b>
Summary of Exceedances .....	18
Summary of Environmental Non-Compliance .....	18
Summary of Environmental Complaint .....	18
Summary of Environmental Summon and Successful Prosecution .....	18
<b>7 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>19</b>
Validity of EIA Predictions .....	19
Comments on Overall EM&A Programme .....	19
Overall EM&A Data .....	19
Recommendations and Conclusions .....	19



## **LIST OF TABLES**

Table 2.1	Summaries of Environmental Licences, Notification and Permits
Table 3.1	Construction Noise Monitoring Location
Table 3.2	Construction Noise Monitoring Parameters and Frequency
Table 3.3	Dust Monitoring Station
Table 3.4	Dust Monitoring Parameters and Frequency
Table 4.1	Status of Required Submissions under EP
Table 5.1	Summary Table of Noise Impact Monitoring Results
Table 5.2	Summary Table of Dust Impact Monitoring Results
Table 5.3	Quantities of Waste Generated from the Project
Table 5.4	Major Findings and Corresponding Recommendations given during Site Audits

## **LIST OF FIGURES**

Figure 1	The Alignment and Works Area of Works Contract 1102
Figure 2	Organization Chart and Key Contact of the Project
Figure 3	Location of Noise Monitoring Station
Figure 4	Location of Dust Monitoring Station

## **LIST OF APPENDICES**

Appendix A	Action and Limit Levels
Appendix B	Event and Action Plans
Appendix C	24-hour TSP Monitoring Graphical Presentations
Appendix D	Noise Monitoring Graphical Presentations
Appendix E	Updated Environmental Mitigation Implementation Schedule
Appendix F	Waste Generation in the Construction Period
Appendix G	Cumulative Log for Complaint Logs, Notification of Summons and Successful Prosecutions

## EXECUTIVE SUMMARY

### Introduction

1. This is the Final Environmental Monitoring and Audit (EM&A) Review Report prepared by Wellab Limited for MTR Shatin to Central Link (SCL) Works Contract 1102 – Hin Keng Station and Approach Structures. This report documents the findings of EM&A Works of the Project.
2. The major construction works for Contract 1102 commenced on 1<sup>st</sup> October 2013 and was completed in December 2018. Noise and dust monitoring works was conducted by SCL Works Contract 1103.

### Summary of Construction Works undertaken in the Construction Period

3. The major site activities undertaken in the construction period include:
  - Underground utilities detection works at Che Kung Miu Road;
  - Site clearance at Hin Tin Playground;
  - Construction of temporary EVA;
  - Pre-drilling works;
  - Pre-drilling works for bored piles;
  - Bored piling;
  - Pre-bored H-pile;
  - Trial pits excavation along footpath of roundabout area;
  - Trial pits;
  - Hoarding erection works;
  - Slope work with hoarding erection;
  - Slope improvement works;
  - Haul road construction;
  - King Post Piling;
  - Sheet piling;
  - ELS Construction;
  - Pipe pile wall;
  - Pile cap excavation;
  - Superstructure construction;
  - Diversion of underground utilities;
  - Tree transplantation;
  - Condition survey of existing drainage and sewer systems by CCTV;
  - Modification of hoarding;
  - Demolition of retaining wall;
  - Modification of retaining wall;
  - Erection of cover walkway;
  - Hoarding works;
  - Installation of noise barrier;
  - Pumping test;
  - Piling works of viaduct;
  - ELS structure installation & superstructure works at At-grade Box;
  - Pier and pile cap construction of viaduct;
  - Steel structure and ABWF works at Hin Keng Station;

- Superstructure works construction of viaduct;
- Superstructure works at viaduct;
- External wall tiling at viaduct & At-grade Box;
- Soft landscaping;
- Hard landscape;
- E&M works;
- Backfilling works; and
- Modification works.

### Variation in Construction Method

#### 4. Environmental Monitoring and Audit Progress:

As of the reporting month, an alignment section at HIK and Approach Structures under this Works Contract 1102 will be constructed by the viaduct method, instead of bored tunnelling and mining method as assessed in the approved Environmental Impact Assessment (EIA) Report of Shatin to Central Link - Stabling Sidings at Hung Hom Freight Yard (hereafter referred to as SCL (HHS)) [Register No.: AEIAR-164/2012] due to increased construction risk caused by potential left-in piles. Also, pile removal works would be conducted if reinforced bored piles are identified along the bored tunnelling section. Application for variation of Environmental Permit (VEP) was approved by the EPD for the varied construction method. The updated EP (EP No.: EP-438/2012/F) was issued by EPD on 15 July 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for including the installation and operation of a Mobile Batching Machinery Equipment at Diamond Hill during the construction of SCL (TAW-HUH). The updated EP (EP No.: EP-438/2012/G) was issued by EPD on 14 August 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for varying Figure 11 of the previous Environment Permit. The variation of EP (EP No.: EP-438/2012/H) was issued by EPD on 10 September 2014, and superseded by an updated EP (EP No.: EP-438/2012/I) issued by EPD on 14 October 2015. The variation of EP (EP No.: EP-438/2012/J) was issued by EPD on 29 February 2016 for including the decommissioning of temporary magazine site at Tseung Kwun O Area 137. The latest variation of EP (EP No.: EP-438/2012/K) was issued by EPD on 4 October 2016.

### Environmental Monitoring and Audit Works

#### 5. A summary of the baseline and impact monitoring activities is listed below and the monitoring works were undertaken by Contractor ET of Works Contract SCL 1103:

- Construction noise monitoring

Noise Monitoring Station ID

- |  |   |
|--|---|
| • C.U.H.K.A.A Thomas Cheung School                           |   |
| - Baseline Monitoring  | 27 <sup>th</sup> August – 10 <sup>th</sup> September 2012   |
| • NMS-CA-1 <sup>(1)</sup> (C.U.H.K.A.A Thomas Cheung School) |   |
| - Impact Monitoring  | 14 <sup>th</sup> February 2013 – 17 <sup>th</sup> July 2018 |

- Construction Dust (1-hour TSP) Monitoring

Dust Monitoring Station ID

- |                                    |  |
|------------------------------------|--|
| • C.U.H.K.A.A Thomas Cheung School |  |
| - Baseline Monitoring              | 27 <sup>th</sup> August – 9 <sup>th</sup> September 2012 |

- Construction Dust (24-hour TSP) Monitoring

Dust Monitoring Station ID

- C.U.H.K.A.A Thomas Cheung School
  - Baseline Monitoring
- DMS-1<sup>(1)</sup> (C.U.H.K.A.A Thomas Cheung School)
  - Impact Monitoring

27<sup>th</sup> August – 9<sup>th</sup> September 201215<sup>th</sup> February 2013 – 16<sup>th</sup> July 2018

## Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Waste Management

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix F**.

Landscape and Visual

7. Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted throughout the construction period. Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor.

Environmental Site Inspection

8. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET throughout the construction period. The representative of the IEC conducted the site inspection once per month.

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

9. No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the whole construction period.
10. No non-compliance event was recorded during the construction period.
11. 2 of Project related environmental complaints and notifications of summons/successful prosecutions were received in this construction period. The effectiveness of mitigation measures implemented by the Contractor for each complaint was observed to be satisfactory. The details of all received complaints are present in **Appendix G**.

**Conclusion**

12. The EM&A programme were found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers at the designated monitoring locations were brought about by the Project.
13. In conclusion the Project was environmentally acceptable in terms of air quality and noise impact.

## 1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Penta-Ocean Construction Co.Ltd. (POC) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL) Works Contract 1102 – Hin Keng Station and Approach Structures (hereafter referred to as the Project). The project was taken over by Wellab Limited (Wellab) starting from 1<sup>st</sup> January 2019.

### **Purpose of the Report**

- 1.2 This is the Final Environmental Monitoring and Audit (EM&A) Review Report prepared by Wellab Limited for **MTR Shatin to Central Link (SCL) Works Contract 1102 – Hin Keng Station and Approach Structures**. This report documents the findings of EM&A Works of the Project.

### **Structure of the Report**

- 1.3 The structure of the report is as follows:

Section 1: **Introduction** - details the scope and structure of the report.

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

Section 3: **Environmental Monitoring Requirement** - summarises the monitoring parameters, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

Section 4: **Implementation Status on Environmental Mitigation Measures** - summarises the implementation of environmental protection measures during the construction period.

Section 5: **Summary of EM&A Works** - summarises the EM&A works and results obtained in the construction period.

Section 6: **Environmental Non-conformance** - summarises any monitoring exceedance, environmental complaints and environmental summons within the construction period.

Section 7: **Comments, Conclusions and Recommendations**

## 2 PROJECT INFORMATION

### Background

- 2.1 The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an approximately 11 km long extension of the Ma On Shan Line and 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).
- 2.2 The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts. This Works Contract 1102 covers the construction of SCL Hin Keng Station (HIK Station) and its approach structures. This construction contract was awarded to Penta-Ocean Construction Co. Ltd. (POC) in July 2013 and the EM&A programme was commenced on 1<sup>st</sup> October 2013.

### General Site Description

- 2.3 For Works Contract 1102, the works area for the HIK Station is located next to Hin Keng Estate and Che Kung Miu Road. The alignment and works area for the Works Contract 1102 are shown in **Figure 1**.

### Construction Programme and Activities

- 2.4 A summary of the major construction activities undertaken in the construction period is shown as follows.
- Underground utilities detection works at Che Kung Miu Road;
  - Site clearance at Hin Tin Playground;
  - Construction of temporary EVA;
  - Pre-drilling works;
  - Pre-drilling works for bored piles;
  - Bored piling;
  - Pre-bored H-pile;
  - Trial pits excavation along footpath of roundabout area;
  - Trial pits;
  - Hoarding erection works;
  - Slope work with hoarding erection;
  - Slope improvement works;
  - Haul road construction;
  - King Post Piling;
  - Sheet piling;
  - ELS Construction;
  - Pipe pile wall;
  - Pile cap excavation;
  - Superstructure construction;
  - Diversion of underground utilities;
  - Tree transplantation;
  - Condition survey of existing drainage and sewer systems by CCTV;
  - Modification of hoarding;
  - Demolition of retaining wall;
  - Modification of retaining wall;

- Erection of cover walkway;
- Hoarding works;
- Installation of noise barrier;
- Pumping test;
- Piling works of viaduct;
- ELS structure installation & superstructure works at At-grade Box;
- Pier and pile cap construction of viaduct;
- Steel structure and ABWF works at Hin Keng Station;
- Superstructure works construction of viaduct;
- Superstructure works at viaduct;
- External wall tiling at viaduct & At-grade Box;
- Soft landscaping;
- Hard landscape;
- E&M works;
- Backfilling works; and
- Modification works.

### **Project Organization**

- 2.5 The project organization chart and contact details are shown in **Figure 2**.

### **Summary of EM&A Requirements**

- 2.6 The EM&A programme under Works Contract 1102 require regular dust and noise quality monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:
- All monitoring parameters;
  - Action and Limit levels for all environmental parameters;
  - Event / Action Plans;
  - Environmental mitigation measures, as recommended in the Project EIA study final report; and
  - Environmental requirements in contract documents.
- 2.7 This report presents the monitoring results, observations, locations of the required monitoring parameters, namely regular dust and noise quality monitoring as well as audit works for the Project in the construction period.

### 3 ENVIRONMENTAL MONITORING REQUIREMENTS

#### Construction Noise Monitoring

- 3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring station. The construction noise monitoring location is listed in **Table 3.1** and shown in **Figure 3**.

**Table 3.1 Construction Noise Monitoring Location**

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-1 <sup>(1)</sup>	C.U.H.K.A.A Thomas Cheung School	Façade

Note (1): NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

#### **Noise Monitoring Parameter and Frequency**

- 3.2 Baseline and impact construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual by the Contractor Environmental Team of Works Contract SCL 1103. 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 construction noise was monitored at the frequency and duration stated in **Table 3.2**.

**Table 3.2 Construction Noise Monitoring Parameters and Frequency**

Monitoring Period	Time Period	Parameters	Frequency	Duration, minute
Baseline Monitoring	Daytime: 0700-1900 hours on normal weekdays	$L_{eq}$ , $L_{10}$ & $L_{90}$	Continuously for 14 consecutive days	30 ( $L_{eq}$ (30min))
	Evening: 1900-2300 hours on normal weekdays			15 (Average of three consecutive $L_{eq}$ (5min))
	General Holidays and Sundays: 0700-2300 hours			
	Night-time: 2300-0700 hours on all days			
Impact Monitoring	Daytime: 0700-1900 hours on normal weekdays		Weekly	30 ( $L_{eq}$ (30min))

#### **Compliance Checking for Impact Monitoring**

- 3.3 Baseline noise monitoring at C.U.H.K.A.A Thomas Cheung School was conducted between 27<sup>th</sup> August and 10<sup>th</sup> September 2012. The Baseline noise monitoring results ( $L_{eq}$ (30min.) dB(A)) during the period without construction works on normal weekdays ranged from 54.5dB(A) to 61.9dB(A). Result of the monitoring (i.e. 57.0dB(A)) was used for correcting the measured noise level during the construction stage of the Project for normal weekdays by this formula:



Measured  $L_{eq}$  at C.U.H.K.A.A Thomas Cheung School – Baseline Noise Level (57.0 dB(A))

= Construction Noise Level at C.U.H.K.A.A Thomas Cheung School

### **Construction Dust Monitoring**

- 3.4 The proposed dust monitoring station for the construction phase of the Project, as recommended in the approved EM&A Manual, is listed in **Table 3.3** and shown in **Figure 4**.

**Table 3.3 Dust Monitoring Station**

<b>Regular Dust Monitoring Location</b>	<b>Description</b>
DMS-1 <sup>(1)</sup>	C.U.H.K.A.A. Thomas Cheung School

Note (1): ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

### **Monitoring Parameter and Frequency**

- 3.5 The dust baseline and impact monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring station 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 3.4**.

**Table 3.4 Dust Monitoring Parameters and Frequency**

<b>Monitoring Period</b>	<b>Duration</b>	<b>Parameter</b>	<b>Frequency</b>
Baseline Monitoring	Consecutive days of at least 2 weeks before commencement of major construction works	24-hour TSP	Daily
		1-hour TSP	Three times per day
Impact Monitoring <sup>(1)</sup>	Throughout the construction period	24-hour TSP <sup>(2)</sup>	Once per 6 days

Note:

- (1) 1-hour TSP shall be conducted when one documented valid complaint is received.  
(2) 24-hour TSP will be conducted when project-related construction activities are being undertaken within a radius of 500m from monitoring stations.

### **Action and Limit Levels**

- 3.6 The action and limit levels for air quality and noise monitoring are presented in **Appendix A**.

### **Event and Action Plan**

- 3.7 Should non-compliance of the criteria occur, action in accordance with the Event and Action Plan in **Appendix B** was carried out.

### **Landscape and Visual**

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

#### 4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

- 4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix E**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

**Table 4.1 Status of Required Submissions under EP**

EP Condition	Submission	Submission Date
Condition 2.1	Employment of Environmental Team	27 <sup>th</sup> August 2012
Condition 2.2	Employment of Independent Environmental Checker	1 <sup>st</sup> August 2012
	Replacement of Independent Environmental Checker	29 <sup>th</sup> May 2013
Condition 2.7	Management Organization of Main Construction Companies	30 <sup>th</sup> April 2013
Condition 2.8	Construction Programme and EP Submission Schedule	27 <sup>th</sup> July 2012
Condition 2.9	Construction Noise Mitigation Measures Plan	11 <sup>th</sup> June 2013
Condition 2.10	Continuous Noise Monitoring Plan	11 <sup>th</sup> June 2013
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	7 <sup>th</sup> March 2018
Condition 3.3	Baseline Monitoring Report (Noise and Air Quality)	19 <sup>th</sup> October 2012
Condition 3.4	Monthly EM&A Report (October 2013)	14 <sup>th</sup> November 2013
	Monthly EM&A Report (November 2013)	13 <sup>th</sup> December 2013
	Monthly EM&A Report (December 2013)	14 <sup>th</sup> January 2014
	Monthly EM&A Report (January 2014)	14 <sup>th</sup> February 2014
	Monthly EM&A Report (February 2014)	14 <sup>th</sup> March 2014
	Monthly EM&A Report (March 2014)	14 <sup>th</sup> April 2014
	Monthly EM&A Report (April 2014)	14 <sup>th</sup> May 2014
	Monthly EM&A Report (May 2014)	13 <sup>th</sup> June 2014
	Monthly EM&A Report (June 2014)	14 <sup>th</sup> July 2014
	Monthly EM&A Report (July 2014)	14 <sup>th</sup> August 2014
	Monthly EM&A Report (August 2014)	12 <sup>th</sup> September 2014
	Monthly EM&A Report (September 2014)	14 <sup>th</sup> October 2014

	Monthly EM&A Report (October 2014)	14 <sup>th</sup> November 2014
	Monthly EM&A Report (November 2014)	12 <sup>th</sup> December 2014
	Monthly EM&A Report (December 2014)	14 <sup>th</sup> January 2015
	Monthly EM&A Report (January 2015)	13 <sup>th</sup> February 2015
	Monthly EM&A Report (February 2015)	13 <sup>th</sup> March 2015
	Monthly EM&A Report (March 2015)	14 <sup>th</sup> April 2015
	Monthly EM&A Report (April 2015)	14 <sup>th</sup> May 2015
	Monthly EM&A Report (May 2015)	11 <sup>th</sup> June 2015
	Monthly EM&A Report (June 2015)	14 <sup>th</sup> July 2015
	Monthly EM&A Report (July 2015)	14 <sup>th</sup> August 2015
	Monthly EM&A Report (August 2015)	14 <sup>th</sup> September 2015
	Monthly EM&A Report (September 2015)	14 <sup>th</sup> October 2015
	Monthly EM&A Report (October 2015)	13 <sup>th</sup> November 2015
	Monthly EM&A Report (November 2015)	14 <sup>th</sup> December 2015
	Monthly EM&A Report (December 2015)	14 <sup>th</sup> January 2016
	Monthly EM&A Report (January 2016)	12 <sup>th</sup> February 2016
	Monthly EM&A Report (February 2016)	14 <sup>th</sup> March 2016
	Monthly EM&A Report (March 2016)	14 <sup>th</sup> April 2016
	Monthly EM&A Report (April 2016)	13 <sup>th</sup> May 2016
	Monthly EM&A Report (May 2016)	14 <sup>th</sup> June 2016
	Monthly EM&A Report (June 2016)	14 <sup>th</sup> July 2016
	Monthly EM&A Report (July 2016)	12 <sup>th</sup> August 2016
	Monthly EM&A Report (August 2016)	14 <sup>th</sup> September 2016
	Monthly EM&A Report (September 2016)	14 <sup>th</sup> October 2016
	Monthly EM&A Report (October 2016)	14 <sup>th</sup> November 2016
	Monthly EM&A Report (November 2016)	14 <sup>th</sup> December 2016
	Monthly EM&A Report (December 2016)	13 <sup>th</sup> January 2017
	Monthly EM&A Report (January 2017)	14 <sup>th</sup> February 2017
	Monthly EM&A Report (February 2017)	14 <sup>th</sup> March 2017

	Monthly EM&A Report (March 2017)	12 <sup>th</sup> April 2017
	Monthly EM&A Report (April 2017)	12 <sup>th</sup> May 2017
	Monthly EM&A Report (May 2017)	14 <sup>th</sup> June 2017
	Monthly EM&A Report (June 2017)	14 <sup>th</sup> July 2017
	Monthly EM&A Report (July 2017)	14 <sup>th</sup> August 2017
	Monthly EM&A Report (August 2017)	14 <sup>th</sup> September 2017
	Monthly EM&A Report (September 2017)	13 <sup>th</sup> October 2017
	Monthly EM&A Report (October 2017)	14 <sup>th</sup> November 2017
	Monthly EM&A Report (November 2017)	14 <sup>th</sup> December 2017
	Monthly EM&A Report (December 2017)	12 <sup>th</sup> January 2018
	Monthly EM&A Report (January 2018)	14 <sup>th</sup> February 2018
	Monthly EM&A Report (February 2018)	14 <sup>th</sup> March 2018
	Monthly EM&A Report (March 2018)	13 <sup>th</sup> April 2018
	Monthly EM&A Report (April 2018)	14 <sup>th</sup> May 2018
	Monthly EM&A Report (May 2018)	14 <sup>th</sup> June 2018
	Monthly EM&A Report (June 2018)	13 <sup>th</sup> July 2018
	Monthly EM&A Report (July 2018)	14 <sup>th</sup> August 2018
	Monthly EM&A Report (August 2018)	14 <sup>th</sup> September 2018
	Monthly EM&A Report (September 2018)	12 <sup>th</sup> October 2018
	Monthly EM&A Report (October 2018)	14 <sup>th</sup> November 2018
	Monthly EM&A Report (November 2018)	14 <sup>th</sup> December 2018
	Monthly EM&A Report (December 2018)	14 <sup>th</sup> January 2019

## 5 SUMMARY OF EM&A WORKS

### Construction Noise Monitoring

- 5.1 The Baseline noise monitoring was conducted by ET of SCL Works Contract 1103 between 27<sup>th</sup> August and 10<sup>th</sup> September 2012 at C.U.H.K.A.A. Thomas Cheung School. The Baseline Noise Level has been established accordingly. Action and Limit Levels for noise is summarised in **Appendix A**.
- 5.2 Impact construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1103.
- 5.3 Based on observation during the on-site monitoring, construction activities and weather condition were the major factors which might affect the monitoring result. Other than construction activities and weather condition, road traffic nearby is considered as a potential noise source that affects the monitoring results of the construction period. No other major factor which might affect the monitoring result was observed on-site.
- 5.4 The noise monitoring results together with their graphical presentations and statistical analysis of the trends over the course of the Project are presented in **Appendix D** and a summary of the noise monitoring results in the construction period is given in **Table 5.1**.

**Table 5.1 Summary Table of Noise Impact Monitoring Results**

Parameter <sup>(1)</sup>	Location	Range, dB(A), Leq (30 mins)	Limit Level, dB(A), Leq (30 mins)
NMS-CA-1 <sup>(1)</sup>	C.U.H.K.A.A Thomas Cheung School	46.8 - 61.5	75dB(A)

(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

- 5.5 With reference to the trends of monitoring parameters shown in **Appendix D**, the linear trends at the impact monitoring stations are steady and in line with the baseline noise level (at C.U.H.K.A.A Thomas Cheung School).
- 5.6 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the construction period. Therefore, it is considered that no adverse noise impact was brought to the nearby noise monitoring station by this Project.

### Construction Dust Monitoring

- 5.7 Baseline dust monitoring was conducted between 27<sup>th</sup> August and 9<sup>th</sup> September 2012. Action and Limit Levels for air quality monitoring have been established accordingly and summarised in **Appendix A**.
- 5.8 24-hour TSP monitoring were carried out at the designated monitoring station during normal weekdays of the construction period by ET of SCL Works Contract 1103. The monitoring results together with their graphical presentations and statistical analysis of the trends over the course of the Project are presented in **Appendix C** and a summary of the dust monitoring results in the construction period is given in **Table 5.2**.

**Table 5.2 Summary Table of Dust Impact Monitoring Results**

Parameter	Minimum $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Average $\mu\text{g}/\text{m}^3$	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
DMS-1 <sup>(1)</sup>	0.3	147.4	45.7	149	260

Remarks:

(2) Station ID as identified in approved EM&amp;A Manual / EIA Report for SCL(TAW-HUH).

- 5.9 The trends (linear) of the monitoring parameter at the monitoring stations are slightly increasing yet no exceedance of the Action and Limit Levels of the 24-hour TSP was recorded by the end of the construction period. Construction activities and weather condition were the major factors which might affect the monitoring result. It is considered that no adverse air quality impact was brought to the nearby air quality monitoring station by this Project.

### Waste Management

- 5.10 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 and recyclable wastes like plastics and paper/cardboard packaging materials. 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 construction are summarised in **Table 5.3**. Details of waste management data is presented in **Appendix F**.

**Table 5.3 Quantities of Waste Generated from the Project**

Whole Construction Period	Quantity					
	C&D Materials (inert) <sup>(a)</sup>	C&D Materials (non-inert) <sup>(b)</sup>				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
	71,033 m <sup>3</sup>	4,488 m <sup>3</sup>	0 kg	0 kg	0 kg	0 kg
Notes:						
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil,						
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.						

### Landscape and Visual

- 5.11 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. The observations and recommendations made during the audit sessions are summarized in each of the Monthly EM&A Report.

### Site Audit

- 5.12 Site audit was carried out by representatives of the Contractor, Engineer and Contractor's ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The representative of the IEC joined the site inspections once per month.
- 5.13 No non-compliance was recorded during the site inspections throughout the

construction period. Observations and recommendations recorded during the site inspections were summarized in each of the Monthly EM&A Reports.

- 5.14 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix E**.
- 5.15 The major findings and the corresponding recommendations given during the site audits are summarized in **Table 5.4**.

**Table 5.4 Major Findings and Corresponding Recommendations given during Site Audits**

Parameters	Observations / Reminders	Corresponding Recommendations
<b>Water Quality</b>	Exposed slope should be covered by tarpaulin to reduce the generation of runoff during rainstorm.	The exposed slope was covered by tarpaulin.
	Access to sedimentation tank should be provided for regular maintenance and inspection.	The access to sedimentation tank was provided.
	Gullies should be surrounded by sand bags to prevent any surface runoff getting in it.	Sand bags were provided to surround the gullies next the work area.
	To provide precautionary measures to prevent site runoff leak from U-channel.	Sand bags were provided in the U-channel as precautionary measures.
	The mud trail near to the gully should be cleared.	The mud trail was cleared.
	Sediment and silt/debris were observed in the U-channel. The Contractor was reminded to clear it regularly to prevent blockage of drainage system.	Sediment and silt/debris were cleared.
	To provide cover on the exposed and unpaved slope to reduce generation of runoff.	The exposed and unpaved slope was covered by tarpaulin and the gap between the barriers was sealed by sand bags.
	Provide adequate wastewater mitigation measure to confine wastewater within site area.	Water pump has been provided and stand water was not observed.
	Water sediment filter tank was observed to indicate acidic content. The contractor was reminded to check the calibration of the water sediment filter tank and proper maintenance should be provided.	The water sedimentation filter tank was found to indicate a pH value is within the range (6-10) stated in the discharge license.
	Properly implement wheel washing practices and make sure all trucks are washed before leaving the site.	Wheel washing was observed.
	Anonymous effluent discharge was observed at discharge point. The Contractor should ensure all effluent treated before discharge.	Anonymous effluent discharge at two discharge points were blocked and directed to de-silting facilities.
	Stagnant liquid and sediment should be properly cleared from the drain. The Contractor should ensure proper capacity for drain to prevent overflow.	The drain was removed by concreting.
	Pipe for runoff should be well-connected to wastewater treatment facility.	The pipe was improved to direct runoff to wastewater treatment facility.
	Accessible pathway to aquasud should be provided for inspection.	Paved pathway was provided.
	The Contractor was reminded to ensure enough capacity for sedimentation tank for wastewater treatment in rainy season.	Additional sedimentation tank was provided for wastewater treatment.
	The contractor was reminded to clear the residual paint to avoid milky water generation during the rainy day.	The residual paint on ground was removed.
	Accumulated water should be properly	Accumulated water was removed.



	pumped to treatment facilities and to prevent flowing out of site boundary.	
	pH meter or wastewater treatment facility within the site should be repaired or maintained.	pH meter or wastewater treatment facility was functioning properly.
	To set up stand-by pump and make sure no ponding water discharge outside the site during rain events.	Stand-by pump was set up.
<b>Noise</b>	Noise mitigation measures should be provided for operating equipment.	Noise barrier has been set up around potentially noisy equipment.
	Provide noise barriers to reduce noise impact to NSRs nearby.	Noise barrier has been provided.
	Noise barriers should be replaced for sheet piling work to reduce construction noise.	Sheet piling work was not observed.
	Noise blanket coverage for breaker head should be provided to reduce noise.	Breaker head was covered by noise blanket.
	The noise emission label should be displayed/labelled for the hand held breaker if necessary.	The noise emission label was displayed for the hand held breaker.
<b>Landscape and Visual</b>	To remove the metal fencing and other materials in the tree protection zone for better tree protection.	The metal fencing and other materials were removed from the tree protection zone.
	The stockpile and construction materials placed next to tree should be removed for better tree protection and tree protection fence should be provided for new work areas.	The stockpile and construction materials were removed by the Contractor and the erecting of the tree protection fence was in progress.
	The setting up of hoarding next to new possession area was in progress. The Contractor was reminded to keep up the set up.	Hoarding had been set up at the new possession area.
	Tree protection fence for remaining tree in site for better tree protection.	Tree protection fence was erected.
	Properly fence off the tree to protect it.	The tree has been fenced off properly.
<b>Air Quality</b>	To enhance water spraying for unpaved area to reduce dust generation in dry season.	Unpaved area with water sprayed was observed.
	Muddy trail was observed on the road outside site entrance. The contractor was reminded to make sure the trucks leaving the site were fully enclosed.	The muddy trail has been cleared.
	Provide water spray for rock breaking works and properly provide enclosures.	Water spray was provided for rock breaking works to avoid dust generation.
	Cover the exposed stockpile by tarpaulin sheet to avoid dust generation.	Tarpaulin sheet was provided for the stockpile.
	Short pulse of black smoke was observed to emit from an operating equipment. The contractor was reminded to keep good maintenance of equipment.	The identified equipment was not operated.
	Blower should be provided to reduce smoke impact generated from welding work.	Blowers were provided for welding work.
	Proper mitigation measure should be	Exposed slope was paved with cement to

	implemented for exposed slope at pit-by-pit.	suppress dust emission.
	Efficiency for wheel washing should be improved to keep site entrance clean and tidy.	Site entrance was kept clean and water jet was provided for vehicle wheel washing.
	3-side coverage for cement mixing facilities should be properly implemented.	The coverages for cement mixing facilities were provided with top and 3 sides.
	Stock of cement should be properly covered.	The cement bags were covered.
	The NRMM should be displayed on the excavator near the park.	Referring to the model (SK30UR-3E) of this excavator, the rated engine power output is 18.9kW which is lower than 19kW that is exempted to apply the NRMM.
<b>Waste/Chemical Management</b>	To properly store the construction waste at designated area.	The identified construction waste was cleared by the Contractor.
	To plug the drain-hole of identified drip tray to prevent chemical leakage, if any.	The drain-hole was plugged.
	Oil leakage was observed. The Contractor was reminded to provide better maintenance to equipment and to clear oily water in the blocked U-channel.	The oil leakage from identified equipment was rectified.
	Drip tray should be provided to contain the oil drums to avoid leakage.	The oil drum was removed by the contractor.
	Provide tarpaulin sheets to bedcover the leaking equipment.	The leaking equipment was removed from the site.
	Good housekeeping should be kept and waste should be recycled where possible.	Receptacle was provided to collect construction waste.
	To provide the drip tray for oil/chemical containers.	The containers were removed.
	The oil stain / oil mixture should be properly removed and cleared as chemical waste.	The oil stain / oil mixture was removed and cleared.
	General refuse and waste in station area should be properly and regularly removed.	The general refuse and waste were removed.
	Accumulated water in drip should be properly cleared.	The accumulated water in drip tray was removed.
	Fencing and proper measures should be provided to temporary chemical storage area to prevent leakage.	The temporary chemical storage area was covered and fenced off.
	General refuse skips/refuse bins within the Site should be maintained frequently to avoid the accumulation of waste.	General refuse skips/refuse bins were maintained and cleared regularly.
<b>Permits/Licenses</b>	To display EP at the new site entrance.	EP was displayed at the new site entrance.

## **6 ENVIRONMENTAL NON-CONFORMANCE**

### **Summary of Exceedances**

- 6.1 No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the construction period.

### **Summary of Environmental Non-Compliance**

- 6.2 No environmental non-compliance was recorded in the construction period.

### **Summary of Environmental Complaint**

- 6.3 2 of environmental Project-related complaints were received in the construction period.

### **Summary of Environmental Summon and Successful Prosecution**

- 6.4 There was no successful environmental prosecution or notification of summons received since the Project commencement.

## **7 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS**

### **Validity of EIA Predictions**

- 7.1 It is predicted in the EIA Report that with the implementation of the recommended mitigation measures, there would be no unacceptable or residual air quality and noise impacts arising from the Project-related construction works. The impact monitoring data obtained was in-line with the predictions as no Action/Limit Level exceedance was caused by the Project.

### **Comments on Overall EM&A Programme**

- 7.2 The mitigation measures detailed in the Environmental Permit, the EM&A Manual and the EIA report were implemented throughout the whole project period. With the environmental monitoring and site inspection to directly ensure the timely implementation of mitigation measures during the Project, the environmental performance of the Project was acceptable. Analysis of all EM&A data collected throughout the construction periods also demonstrated the environmental acceptability of the Project.
- 7.3 The overall performance of the monitoring methodology adopted and environmental management system in this Project was effective.

### **Overall EM&A Data**

- 7.4 Baseline and impact air quality and noise monitoring were carried out according to the requirements in the EM&A Manual. No exceedance of the Action and Limit Levels of air quality and noise monitoring was recorded at the designated monitoring stations during the whole construction period.

### **Recommendations and Conclusions**

- 7.5 The EM&A programme was found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers were brought about by the Project. In conclusion the Project was environmentally acceptable in terms of air quality and noise.
- 7.6 With the success of the overall EM&A programme, the deterioration of the environment caused by the Project was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

---

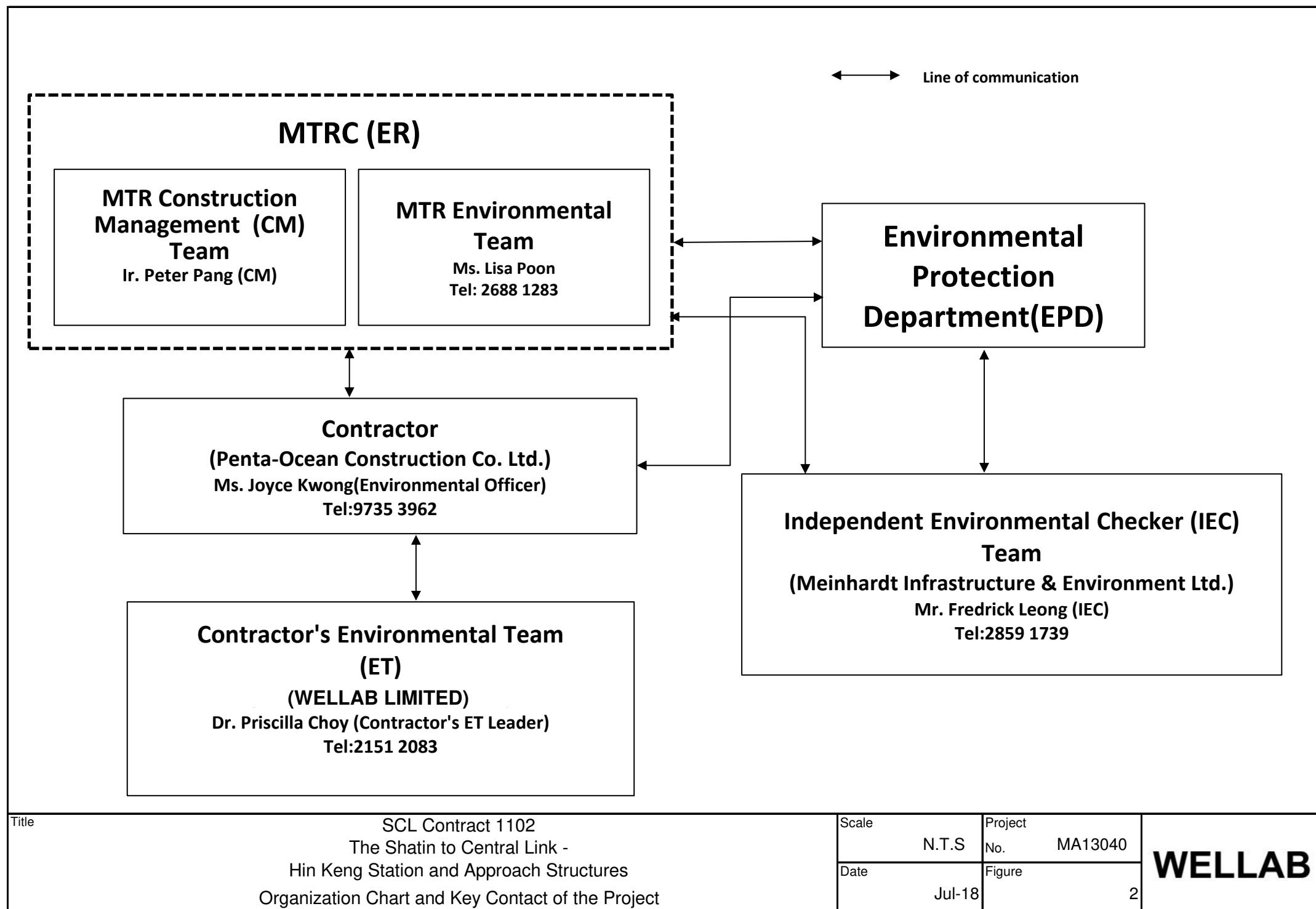
---

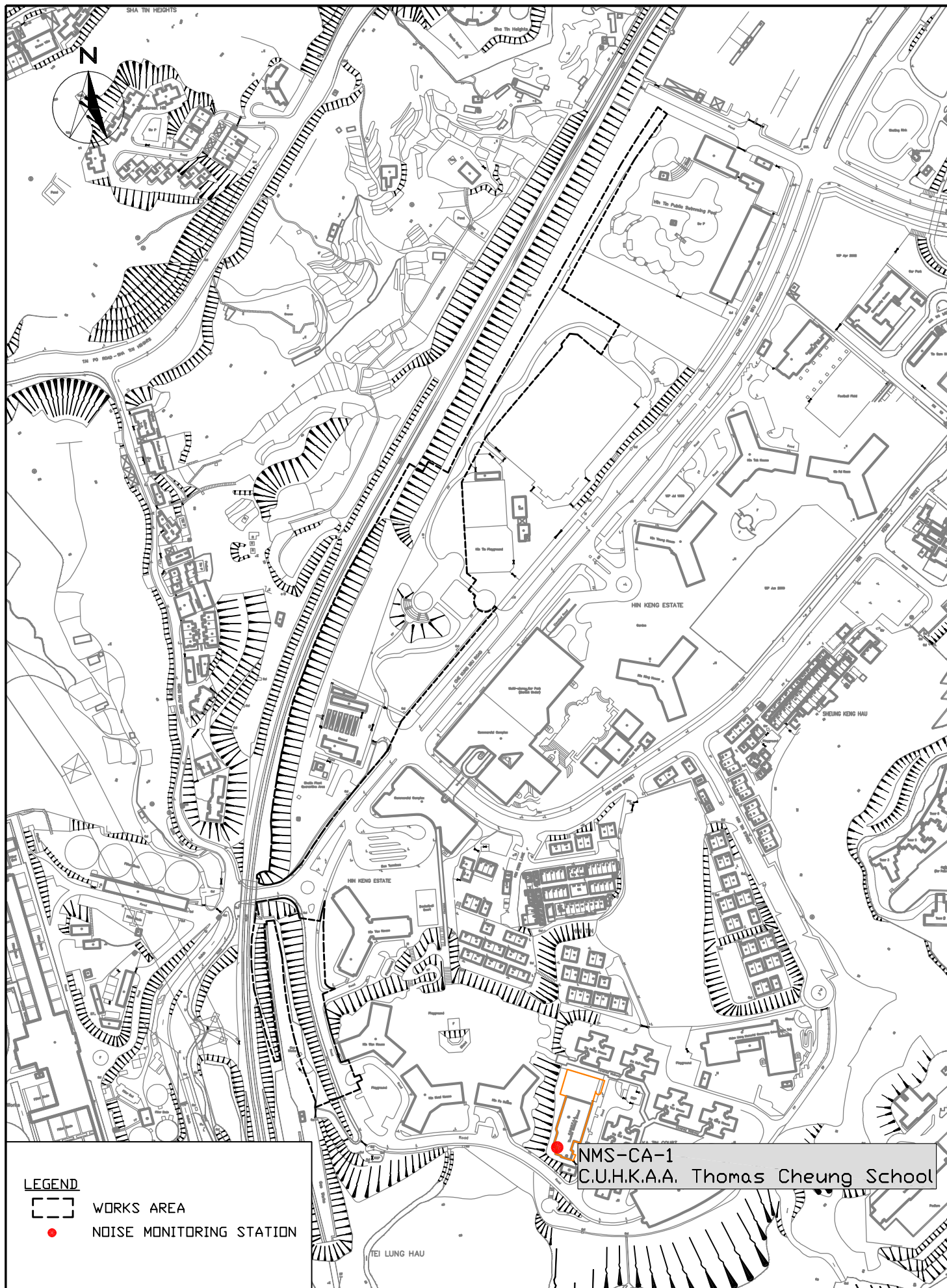
## FIGURES

---

---





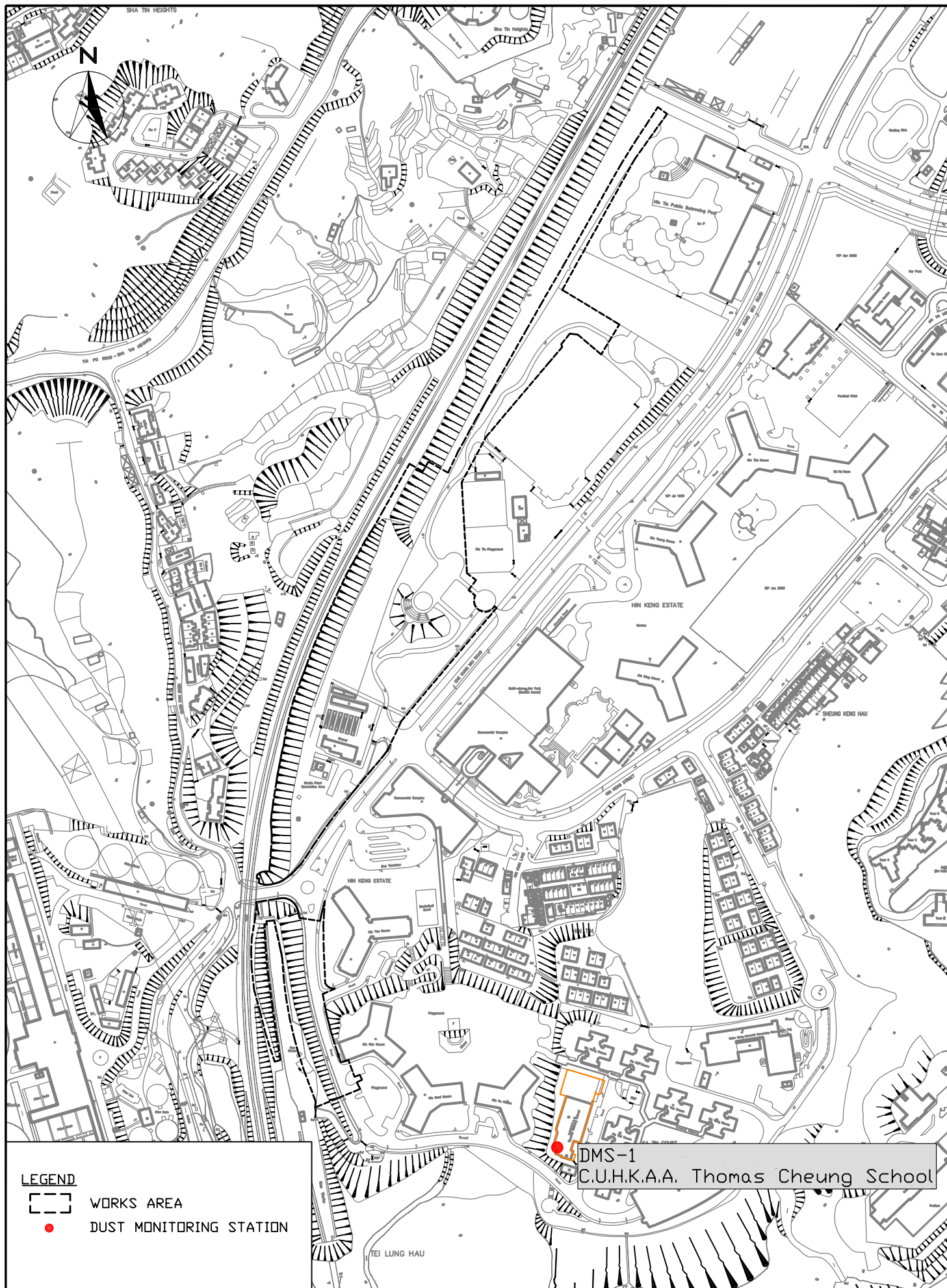


**WELLAB**

SCL CONTRACT 1102  
THE SHATIN TO CENTRAL LINK -  
HIN KENG STATION AND APPROACH STRUCTURES  
LOCATION OF NOISE MONITORING STATION

SCALE	1:10000@A4	DATE	OCT 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 3
		REV	-





**WELLAB**

SCL CONTRACT 1102  
THE SHATIN TO CENTRAL LINK -  
HIN KENG STATION AND APPROACH STRUCTURES  
LOCATION OF DUST MONITORING STATION

SCALE	1:10000@A4	DATE	OCT 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 4
		REV	-

---

---

**APPENDIX A**  
**ACTION AND LIMIT LEVELS**

---

---

**APPENDIX A – Action and Limit Levels****24-Hour TSP**

<b>Regular Dust Monitoring Station</b>	<b>Description</b>	<b>Action Level, <math>\mu\text{g}/\text{m}^3</math></b>	<b>Limit Level, <math>\mu\text{g}/\text{m}^3</math></b>
DMS-1 <sup>(1)(2)</sup>	C.U.H.K.A.A. Thomas Cheung School	148.7	260

Note:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).  
 (2) Dust monitoring is carried out by Environmental Team of SCL Works Contract 1103.

**Construction Noise**

<b>Regular Construction Noise Monitoring Station</b>	<b>Description</b>	<b>Time Period</b>	<b>Action Level</b>	<b>Limit Level</b>
NMS-CA-1 <sup>(1)(2)</sup>	C.U.H.K.A.A. Thomas Cheung School	0700-1900 hrs on normal weekdays	When one documented complaint is received	65 / 70 dB(A) <sup>(3)</sup>

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).  
 (2) Construction Noise monitoring is carried out by Environmental Team of SCL Works Contract 1103.  
 (3) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

---

---

**APPENDIX B**  
**EVENT AND ACTION PLAN**

---

---

## Appendix B - Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and ER</li> <li>2. Discuss with the ER, IEC and Contractor on the remedial measures required</li> <li>3. Increase monitoring frequency to check mitigation effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the contractor;</li> <li>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measures</li> <li>2. Report the results of investigation to the IEC, ET and ER</li> <li>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement noise mitigation proposals</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Notify the IEC, Contractor and EPD</li> <li>2. Repeat measurement to confirm findings</li> <li>3. Increase monitoring frequency</li> <li>4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances</li> <li>7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ER, ET and Contractor on the potential remedial measures</li> <li>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> <li>2. Notify the Contractor, IEC and ET</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>4. Supervise the implementation of remedial measures</li> <li>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</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance</li> <li>2. Take immediate action to avoid further exceedance</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification.</li> <li>4. Implement the agreed proposals</li> <li>5. Revise and resubmit proposals if problem still not under control</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated</li> </ol>

## Appendix B - Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Discuss with the Contractor, IEC and ER on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Implement remedial measures; 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; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 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; 2. Notify the Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

## Appendix B - Event and Action Plan for Air Quality Monitoring during Construction Phase

LIMIT LEVEL				
1.Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the IEC, Contractor and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. Review and agree on the remedial measures proposed by the Contractor;</li> <li>4. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Amend proposal if appropriate.</li> </ol>
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, Contractor and EPD;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken;</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures;</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify the Contractor, IEC and ET;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

## Appendix B - Event and Action Plan for Landscape and Visual during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	IEC	ER	CONTRACTOR
Non-conformity on one occasion	<ol style="list-style-type: none"> <li>1. Inform the Contractor, the IEC and the ER</li> <li>2. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>3. Monitor remedial actions until rectification has been completed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET, ER and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of non-conformity in writing</li> <li>2. Review and agree on the remedial measures proposed by the Contractor;</li> <li>3. Supervise implementation of remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement</li> </ol>
Repeated Non-conformity	<ol style="list-style-type: none"> <li>1. Identify Source</li> <li>2. Inform the Contractor, the IEC and the ER</li> <li>3. Increase inspection frequency</li> <li>4. Discuss remedial actions with the IEC, the ER and the Contractor</li> <li>5. Monitor remedial actions until rectification has been completed</li> <li>6. If non-conformity stops, cease additional monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inspection report</li> <li>2. Check the Contractor's working method</li> <li>3. Discuss with the ET and the Contractor on possible remedial measures</li> <li>4. Advise the ER on effectiveness of proposed remedial measures</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify the Contractor</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify Source and investigate the non-conformity</li> <li>2. Implement remedial measures</li> <li>3. Amend working methods agreed with the ER as appropriate</li> <li>4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.</li> </ol>

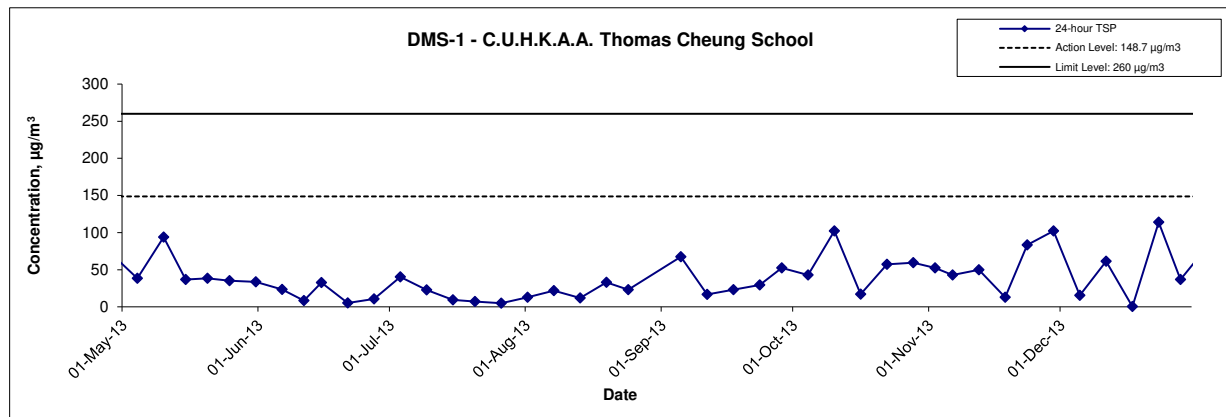


---

**APPENDIX C**  
**24-HOUR TSP MONITORING RESULTS**  
**AND GRAPHICAL PRESENTATIONS**

---

## 24-hour TSP Concentration Levels

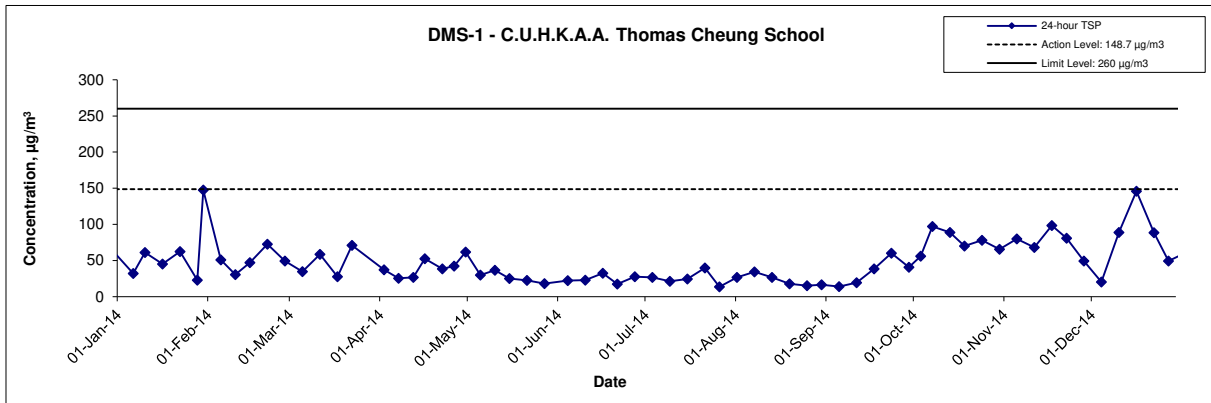


**Remarks:**

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of 24-hour TSP Monitoring Results		Date	Feb-19	Appendix	C	

## 24-hour TSP Concentration Levels

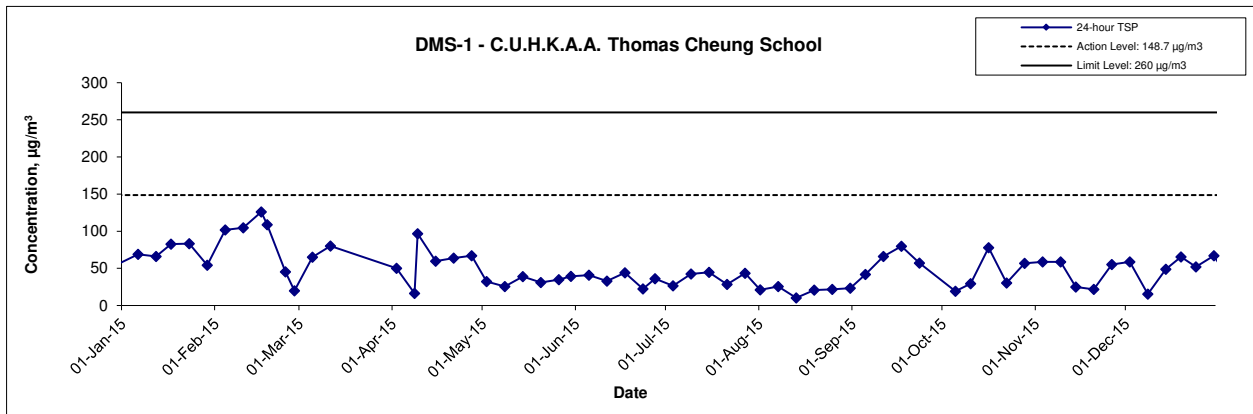


**Remarks:**

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

<b>Title</b> Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures  Graphical Presentation of 24-hour TSP Monitoring Results	<b>Scale</b> N.T.S	<b>Project No.</b> MA13040	<b>WELLAB</b>
	<b>Date</b> Feb-19	<b>Appendix</b> C	

## 24-hour TSP Concentration Levels

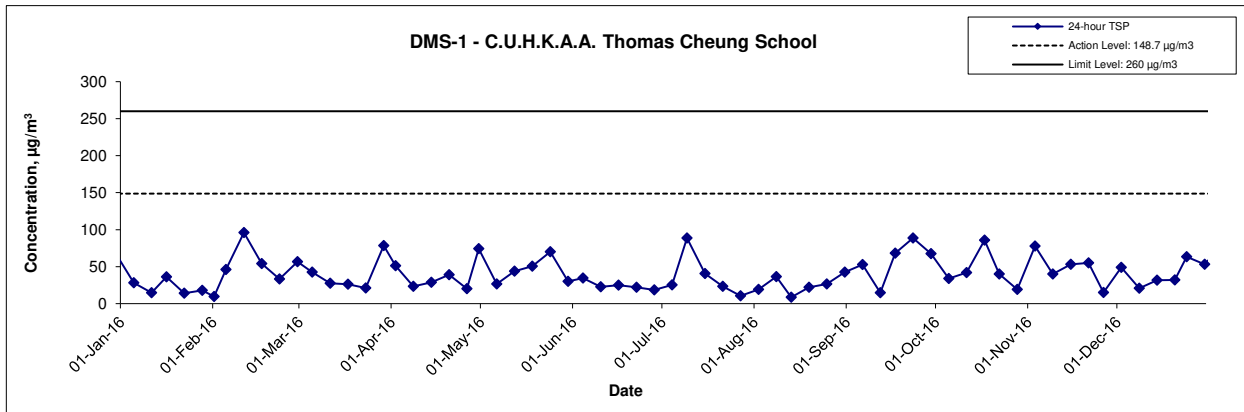


**Remarks:**

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of 24-hour TSP Monitoring Results		Date	Feb-19	Appendix	C	

## 24-hour TSP Concentration Levels

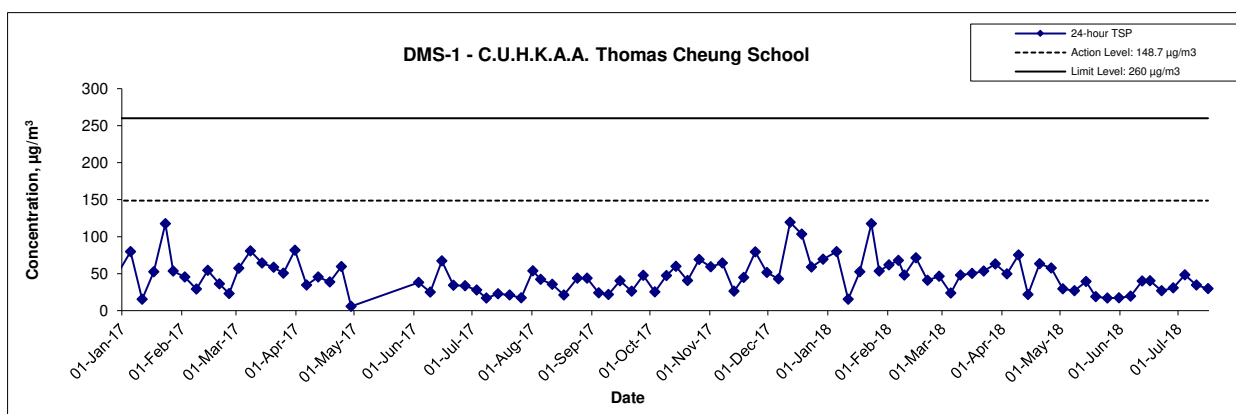


Remarks:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of 24-hour TSP Monitoring Results		Date	Feb-19	Appendix	C	

## 24-hour TSP Concentration Levels



### Remarks:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of 24-hour TSP Monitoring Results		Date	Feb-19	Appendix	C	

---

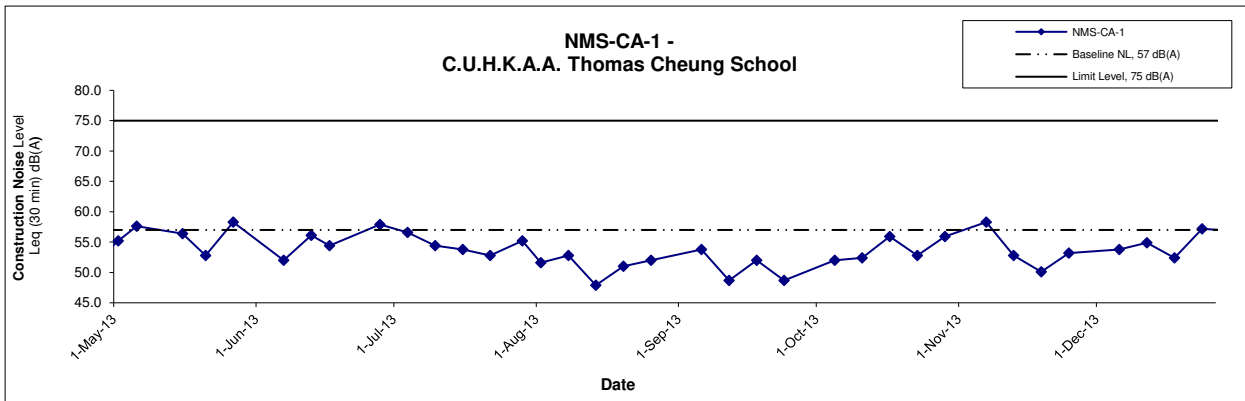
---

**APPENDIX D**  
**NOISE MONITORING RESULTS AND**  
**GRAPHICAL PRESENTATIONS**

---

---

## Noise Levels



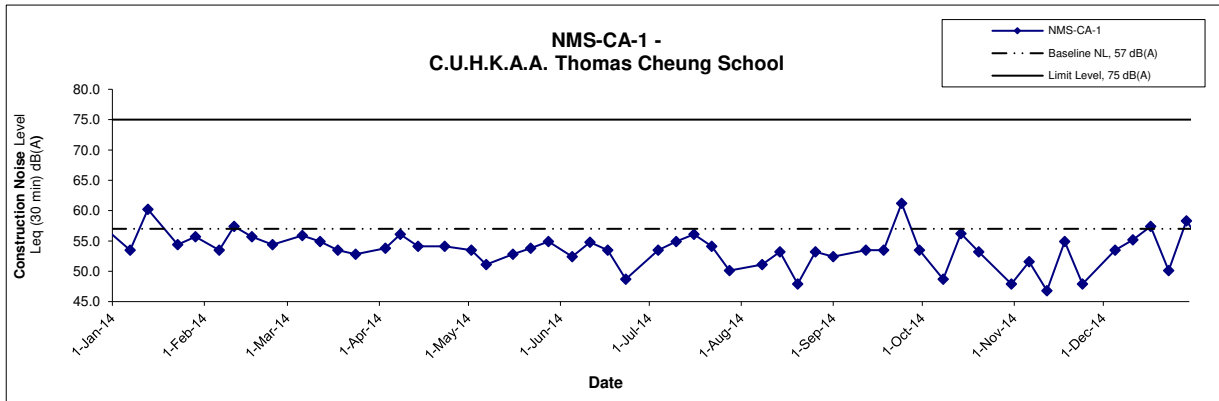
**Remarks:**

(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of Construction Noise Monitoring Results		Date	Feb-19	Appendix	C	



## Noise Levels

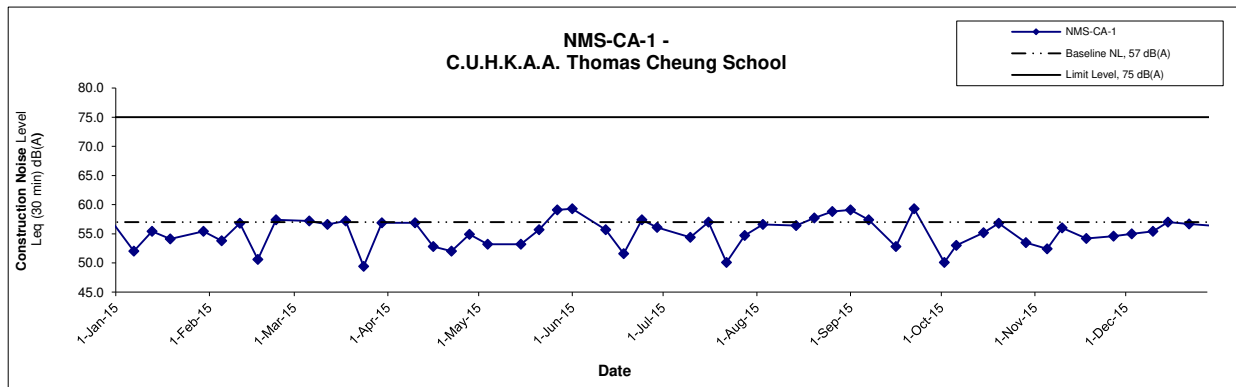


### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of Construction Noise Monitoring Results		Date	Feb-19	Appendix	C	

## Noise Levels

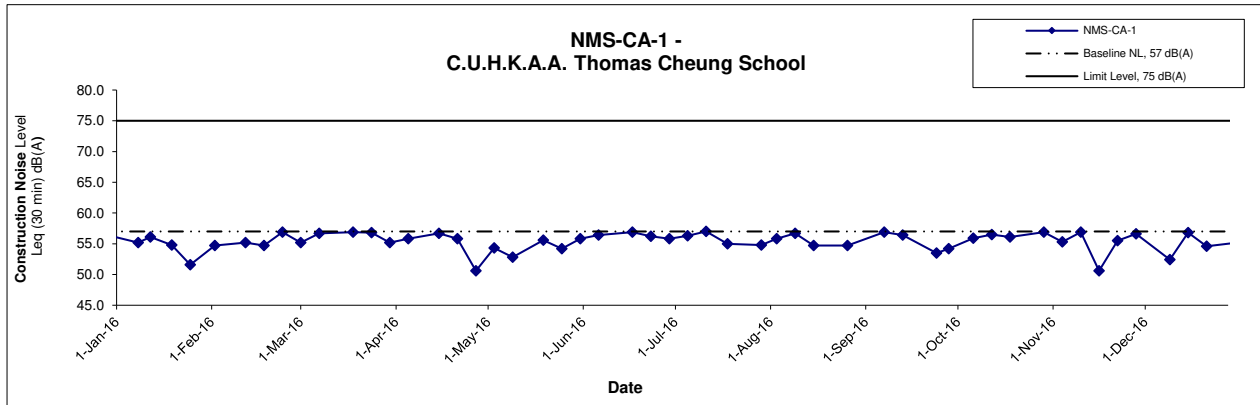


**Remarks:**

(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures	Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of Construction Noise Monitoring Results	Date	Feb-19	Appendix	C	

## Noise Levels

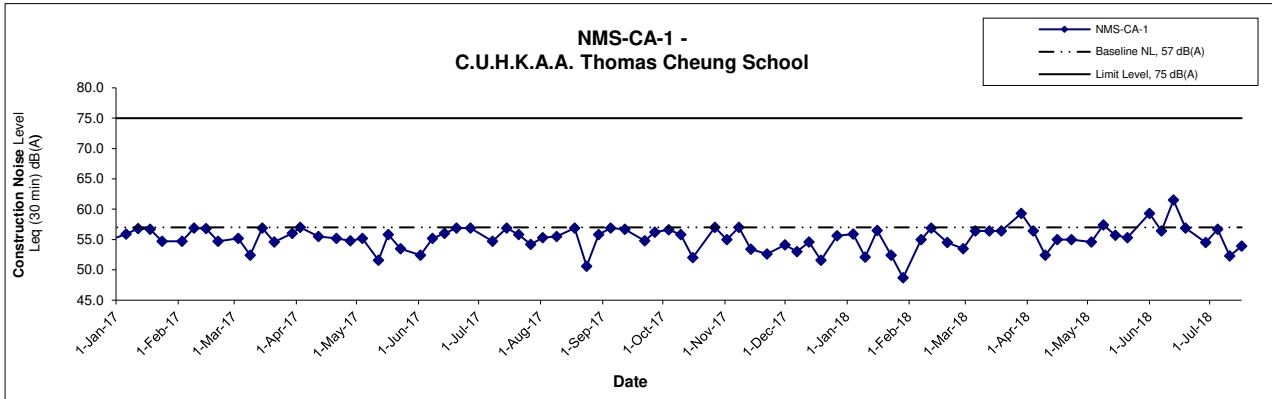


### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures	Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of Construction Noise Monitoring Results	Date	Feb-19	Appendix	C	

## Noise Levels



### Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

Title	Shatin to Central Link – Contract 1102 Hin Keng Station and Approach Structures		Scale	N.T.S	Project No.	MA13040	<b>WELLAB</b>
	Graphical Presentation of Construction Noise Monitoring Results		Date	Feb-19	Appendix	C	

---

---

**APPENDIX E  
UPDATED ENVIRONMENTAL  
MITIGATION IMPLEMENTATIONS  
SCHEDULE**

---

---

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<b>Ecology (Construction Phase)</b>								
S5.4	E1	Engineering works should not encroach into country park boundary, Tei Lung Hau Stream and secondary woodland near the portal at Hin Keng	Minimise ecological impacts	Contractor	Lion Rock Country Park, Tei Lung Hau Stream	Detailed design and construction stage	<ul style="list-style-type: none"> <li>• AFCD's requirements</li> <li>• EIAO</li> <li>• Country Parks Ordinance</li> </ul>	^
S5.7	E5	<p><u>Good Site Practices</u></p> <p>Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the 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.</p> <p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> <li>• Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses in particular the Tei Lung Hau stream;</li> <li>• Avoidance of soil storage against trees or close to</li> </ul>	Minimise ecological impacts	Contractor	All construction sites	During construction	<ul style="list-style-type: none"> <li>• ProPECC PN 1/94</li> </ul>	<p>^</p> <p>^</p> <p>N/A</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>waterbodies in particular the Tei Lung Hau stream;</p> <ul style="list-style-type: none"> <li>Delineation of works site by erecting hoardings to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value e.g. Tei Lung Hau Stream and the adjoining secondary woodland, tunnel on hill at top of slope stabilisation works;</li> <li>No on-site burning of waste;</li> <li>Waste and refuse in appropriate receptacles.</li> </ul>						<p>N/A</p> <p>^</p> <p>^</p>
S5.7	E7	<p><u>Water Quality and Hydrology</u></p> <ul style="list-style-type: none"> <li>Implement water control measures (ETWB TCW No. 5/2005, Protection of natural streams/ rivers from adverse impacts arising from construction works to avoid direct or indirect impacts on the Tei Lung Hau Stream) and good site practices.</li> </ul>	<ul style="list-style-type: none"> <li>Avoid indirect water impact to any wetland habitats or wetland fauna</li> <li>Minimize the drawdown of water table</li> </ul>	Contractor	Works area in Hin Keng	Construction stage	• TCW No. 5/2005	^
<b><i>Landscape &amp; Visual (Construction Phase)</i></b>								
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> <li>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</li> </ul>	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	TM-EIAO	^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>ground, gathering ground and mixing ground may be set up on-site as necessary.</p> <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> <li>To maximize 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 should closely monitor and restrict the site working staff from entering the “no-intrusion zone”, even for indirect construction activities and storage of equipment.</li> </ul> <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> <li>All retained trees should be recorded photographically 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 specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</li> <li>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,</li> </ul>						<p>*</p> <p>*</p> <p>^</p>



## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		including trees in contractor's works sites.						
S6.12	LV2	<ul style="list-style-type: none"> <li>• <u>Decorative Hoarding</u> Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context.</li> <li>• <u>Management of facilities on work sites</u> To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.</li> <li>• <u>Tree Transplanting</u> Trees of high to medium survival rate would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.</li> </ul>	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and Construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	<p>^</p> <p>^</p> <p>^</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<b><i>Air Quality (Construction Phase)</i></b>								
/	A1	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>All vehicles shall be shut down in intermittent use.</li> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)</li> </ul>	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^  *  ^
/	A2	Open burning shall be prohibited	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	• APCO	^
<b><i>Construction Dust Impact</i></b>								
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	• APCO  • To control the dust impact to meet HKAQO and TM-EIA criteria	^
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 road in the Kowloon area and once per 1.5hour at those in the Tai Wai 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	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO  • To control the dust impact to meet HKAQO and TM-EIA criteria	*

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m2 to achieve the dust removal efficiency						
S7.6.5	D3	<ul style="list-style-type: none"> <li>• Proper watering of exposed spoil should be undertaken throughout the construction phase:</li> <li>• Any excavated or stockpile of dusty material should 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>• 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</li> </ul>	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>• APCO</li> <li>• To control the dust impact to meet HKAQO and TM-EIA criteria</li> </ul>	<p>*</p> <p>*</p> <p>*</p> <p>^</p> <p>^</p> <p>*</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>point should be paved with concrete, bituminous materials or hardcores;</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;</li> <li>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</li> <li>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;</li> <li>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting</li> </ul>						<p>^</p> <p>*</p> <p>*</p> <p>^</p> <p>^</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</p> <p>Any skip hoist for material transport should be totally enclosed by impervious sheeting;</p> <ul style="list-style-type: none"> <li>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;</li> <li>• 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;</li> <li>• 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; and</li> <li>• 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</li> </ul>						<p>*</p> <p>*</p> <p>^</p> <p>*</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		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	• TM-EIA	N/A
<b>Construction Noise (Airborne)</b>								
S8.3.6	N1	<p>Implement the following good site practices:</p> <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to</li> </ul>	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	<p>^</p> <p>^</p> <p>*</p> <p>^</p> <p>*</p> <p>^</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		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	• Annex 5, TM-EIA	^
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	• Annex 5, TM-EIA	*
S8.3.6	N4	Use "Quiet plants"	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N5	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, TM-EIA	^
S8.3.6	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise	Construction stage	• TM-EIA	N/A

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
					monitoring station			
<b>Water Quality (Construction Phase)</b>								
S10.7.1	W1	<p>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:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> <li>At the start of site establishment (including the barging facilities), 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.</li> </ul> <p>Channels (both temporary and permanent drainage pipes and culverts), earthbunds 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.</p> <ul style="list-style-type: none"> <li>The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas.</li> </ul> <p>Temporary ditches should be provided to 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.</p>	<p>To minimize water quality impact from construction site runoff and general construction activities</p>	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN1/94</li> <li>TM-EIAO</li> <li>TM-Water</li> </ul>	<p>*</p> <p>*</p>



## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>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<sup>3</sup>/s a sedimentation basin of 30m<sup>3</sup> would be required and for a flow rate of 0.5 m<sup>3</sup>/s the basin would be 150 m<sup>3</sup>. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.</li> <li>All exposed earth areas should 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 should be covered by tarpaulin or other means.</li> <li>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 coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.</li> <li>All drainage facilities and erosion and sediment control</li> </ul>						<p>*</p> <p>*</p> <p>^</p> <p>*</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</p> <ul style="list-style-type: none"> <li>Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they 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.</li> <li>Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> 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.</li> <li>Manholes (including newly constructed 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.</li> <li>Precautions be taken at any time of year when rainstorms are</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>*</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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 runoff during storm events, especially for areas located near steep slopes.</p> <ul style="list-style-type: none"> <li>All vehicles and plant should 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 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 silty water to public roads and drains.</li> <li>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</li> </ul>						<p style="text-align: center;">*</p> <p style="text-align: center;">^</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>interceptors to prevent flushing during heavy rain.</p> <ul style="list-style-type: none"> <li>Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>All fuel tanks and storage areas should be provided with locks and sited on 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 water sensitive receivers nearby.</li> <li>All the earth works involving should 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.</li> <li>Adopt best management practices</li> </ul>						<p>*</p> <p>^</p> <p>*</p> <p>^</p>
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> <li>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 appropriate disposal and maintenance.</li> </ul>	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>TM-water</li> </ul>	^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.</li> </ul>	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> <li>Water Pollution Control Ordinance</li> <li>ProPECC PN1/94</li> <li>TM-EIAO</li> <li>TM-Water</li> </ul>	<p>*</p> <p>^</p> <p>*</p>
<b>Waste Management (Construction Waste)</b>								
S11.4.1.1	WM1	<p><u>On-site sorting of C&amp;D material</u></p> <ul style="list-style-type: none"> <li>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 at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant</li> </ul>	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	<ul style="list-style-type: none"> <li>DEVB TC(W) No. 6/2010</li> </ul>	^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		operator should 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 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 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) 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 Material</u> <ul style="list-style-type: none"> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> </ul>	Good site practice to minimize 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	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No. 19/2005</li> </ul>	^  ^  ^  ^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>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&amp;D materials and to minimize their generation during the course of construction.</li> <li>In addition, disposal of the C&amp;D materials onto 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 its approval before implementation</li> </ul>						<p>^</p> <p>^</p> <p>^</p>
S11.5.1	WM3	<u>C&amp;D Waste</u> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;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, as in other projects. Metal hoarding should 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.</li> </ul>	Good site practice to minimize 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	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No. 19/2005</li> </ul>	^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

[illegible]



## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.						
S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>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; have a capacity of less than 450 liters 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.</li> <li>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; 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; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction Stage	<ul style="list-style-type: none"> <li>Waste Disposal (Chemical Waste) General) Regulation</li> <li>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>	<p>^</p> <p>*</p> <p>*</p>

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> <li>Disposal of chemical waste should be via a licensed waste collector; 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.</li> </ul>						^
<b>Land Contamination</b>								

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S12.12	LC2	<u>Re-sampling at NTSAMC</u> <ul style="list-style-type: none"> <li>The soil re-sampling and analysis of cyanide (free) at Site L1 (NT South Animal Centre) should be conducted after the site is resumed and handed over to the Project Proponent.</li> <li>Following the completion of re-sampling and lab testing works of this site, a second Supplementary CAR and Supplementary RAP (if contamination is confirmed) shall be prepared and submitted to EPD for agreement.</li> <li>Supplementary Remediation Report (RR) shall also be prepared and submitted to EPD for endorsement prior to the commencement of any construction/ development works at Site L1 (NT South Animal Centre)</li> </ul>	To analyse cyanide (free) at Site L1 (NT South Animal Centre)	Contractor	Site L1 (NT South Animal Centre)	After the site is resumed and handed over to the Project Proponent	<ul style="list-style-type: none"> <li>Practice Guide (PG) for Investigation and Remediation of Contaminated Land</li> <li>GN/GM for land contamination</li> <li>Risk-Based Remediation Goals</li> </ul>	<p>^</p> <p>^</p> <p>^</p>
<b>Hazard to Life</b>								
Chapter 13.13	A13C.8	Installation of on-site gas monitors in all relevant SCL construction/operation areas;	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	Guardhouse next to Site Entrance (Opposite to Hin	Construction and operation		^

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
					Keng Street)	phases		
Chapter 13.13	A13C.8	Establishment of emergency response and evacuation plans (cooperation of various parties/departments required. For the operational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping of the SCL train traffic in order to prevent the trains moving into the affected areas.)	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
<b>EM&amp;A Project</b>								

## SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S 14.2	EM1	<ul style="list-style-type: none"> <li>An Independent Environmental Checker needs to be employed as per the EM&amp;A Manual.</li> </ul>	Control EM&A Performance	MTR Corporation	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>EIAO Guidance Note No.4/2010</li> <li>TM-EIAO</li> </ul>	^
S 14.2 – 14.4	EM2	<ul style="list-style-type: none"> <li>An Environmental Team needs to be employed as per the EM&amp;A Manual</li> <li>Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.</li> <li>An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&amp;A Manual are fully complied with.</li> </ul>	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> <li>EIAO Guidance Note No.4/2010</li> <li>TM-EIAO</li> </ul>	^  ^  ^

Remarks:    ^    Compliance of mitigation measure                      X    Non-compliance of mitigation measure

                 •    Non-compliance but rectified by the contractor

                 \*    Recommendation was made during site audit but improved/rectified by the contractor.

                 N/A    Not Applicable

---

**APPENDIX F**  
**WASTE GENERATION IN THE**  
**CONSTRUCTION PERIOD**

---

Name of Contractor: Penta-Ocean Construction Co. Ltd.

Yearly Summary Waste Flow Table for 2013-2018

Month	Actual Quantities of Inert C&D Materials Generated Yearly						Actual Quantities of C&D Wastes Generated Yearly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 1)	Disposed as Sorting Facility	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Year 2013	4.2424	0.0803	0	0.298	3.8011	0.0631	0	0	0	0	0.1227
Year 2014	33.4312	0	0	6.0372	27.2447	0.1494	0	0	0	0	0.4731
Year 2015	24.8929	0	0	5.7991	19.0391	0.055	0	0	0	0	1.5682
Year 2016	4.5085	0	0	0	4.5085	0	0	0	0	0	1.0502
Year 2017	3.7146	0	0	0	3.6993	0.4561	0	0	0	0	0.7609
Year 2018	0.2430	0	0	0	0.1313	0.012	0	0	0	0	0.5131
<b>Total</b>	<b>71.0326</b>	<b>0.0803</b>	<b>0.0000</b>	<b>12.1343</b>	<b>58.4240</b>	<b>0.7356</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>4.4882</b>

Note: (1) Inert C&D materials include excavated soil and rock. Inert C&D materials were delivered to Tuen Mun Area 38 Sorting Facility, Tuen Mun Area 38 Fill Bank and Tseung Kwan O Area 137 Fill Bank respectively during the construction period.

---

---

**APPENDIX G  
CUMULATIVE LOG FOR COMPLAINT  
LOGS, NOTIFICATION OF SUMMONS  
AND SUCCESSFUL PROSECUTIONS**

---

---



**Appendix G - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions****Cumulative Complaint Log**

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
SCL1102-05112014-C1	5 Nov 2014	A resident who lives near Keng Hau Road	The complainant complained about the noise from construction site near Keng Hau Road starting at 6a.m. from Sunday to Friday.	According to the information provided by the Contractor, no construction activity was conducted within the restricted hours. The measured noise levels in September and October 2014 were in full compliance with the construction noise limit level. A surprise check was conducted around 6:30a.m. to ensure no construction activity was conducted within restricted hours. The Contractor had been implementing appropriate noise mitigation measures including installing movable noise barriers for noisy plants and installing noise barrier on temporary hoarding located on the site boundaries between noisy construction activities and NSRs.	Closed
SCL1102-29062017-C1	27 June 2017	Public	The complainant complained about the noise from SCL construction site adjacent to Hin Keng Estate in the morning.	According to the information provided by the Contractor, major construction activities conducted 7:00 am – 7:00 pm in June 2017 are, soft Landscaping; ABWF works; Modification of Retaining Wall & Installation of Noise Barrier; Hard Landscape and E&M Works. The measured noise levels in April, May and June 2017 were in full compliance with the	Closed

				construction noise limit level, and recorded no exceedance in April, May and June 2017. The Contractor had been implementing appropriate noise mitigation measures including installing noise barriers, using sound absorbent to enclose and wrap the breaking tip, only operating well-maintained and environmental friendly plants, and maintaining the machines regularly.	
--	--	--	--	--	--

**Cumulative Log for Notifications of Summons**

Log Ref.	Date/Location	Subject	Status	Total no. Received since project commencement
--	--	--	--	--

**Cumulative Log for Successful Prosecutions**

Log Ref.	Date/Location	Subject	Status	Total no. Received since the commencement of the project
--	--	--	--	--