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. 55

[Period from 1 to 31 March 2017]

(May 2017)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 31 May 17

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. 55

[Period from 1 to 31 March 2017]

(May 2017)

Certified by: Felice Wong

Position: Environmental Team Leader

Date: 31 May 2017

AECOM

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. 55

[Period from 1 to 31 March 2017]

	Name	Signature
Prepared & Checked:	Joanne Tsoi	
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Version:	A	Date:	31 May 2017

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1 INTRODUCTION

1.1 Background

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

1.1.2 Shatin to Central Link – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] 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) was subsequently applied for EP-438/2012 and the latest Environmental Permit (EP No: EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016.

1.2 Project Programme

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

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1101[(1)]	Ma On Shan Line Modification Works	December 2012	Sun Fook Kong Joint Venture (SFKJV)	ANewR Consulting Ltd. (ANewR)
1102	Hin Keng Station and Approach Structures	October 2013	Penta-Ocean Construction Co. Ltd.	Cinotech Consultants Ltd. (Cinotech)
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	Diamond Hill to Kai Tak Tunnels	May 2013	Chun Wo - SELI Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1108	Kai Tak Station and Associated Tunnels	June 2013	Kaden -Chun Wo Joint Venture	Environmental Pioneers & Solutions Ltd.

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1108A(2)	Kai Tak Barging Point Facilities	September 2012	Concentric – Hong Kong River Joint Venture (CCL-HKR JV)	Cinotech Consultants Ltd. (Cinotech)
1109	Stations and Tunnels of Kowloon City Section	September 2012	Samsung-Hsin Chong JV (SSHCJV)	ERM-Hong Kong Limited (ERM)
1111	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

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.

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 fifty-fifth 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 March 2017.

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 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
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 & EP-438/2012/K
1112	Hung Hom Station and Stabling Sidings	EP-437/2012 & EP-438/2012/K

2.1.2 The EM&A Reports for Works Contracts 1109, 1111, 1103, 1106, 1107, 1112, 1108, and 1102, prepared by the respective Contractor's ETs are provided in **Appendices A** to **H**, respectively.

The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.

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

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Site	Construction Activities
1102	Hin Keng Station and Approach Structures	• Soft Landscaping; • ABWF works at Hin Keng Station; • Modification of Retaining Wall and Installation of Noise Barrier; • Hard Landscape; and • E&M Works
1103	Diamond Hill Area	• Underground Remedial Works
	Hin Keng Area	• Tunnel Lining, Partition Walls, Dividing Slabs, Drains, Walkways and Site Formation
	Fung Tak Area	• Tunnels Connection, RC Concrete, ELS Work, Sheet piling for retaining wall and RRIW for PTT
	Ma Chai Hang Area	• Central Core, Ventilation Tunnel, C&S Works and ABWF Works
	Shui Chuen O	• Storage Area
1106	Diamond Hill Station Area	• Construction of Level U1 wall and structural steel erection; • ABWF works at SCL-DIH station area; • Foundation works, temporary road works, TTA for site access and temporary footpath diversion at Lung Cheung Road and Choi Hung Road; • Excavation and lateral support works at Lung Cheung Road; • Grouting works at MOE near Entrance B; and • Excavation and lateral support works at Entrance A2.
1107	Tunnel section next to Kai Tak Station	• Backfilling works at cut and cover tunnels; and • Reinstatement and Backfilling works of Drainage
1108	Kai Tak Station	• Open cut tunnel: DT and UT general cleaning and defect rectification. • Cut and cover tunnel: DT and UT general cleaning and defect rectification. • Station: Drainage work at all area, leveling to F.F.L. in Area 3, installation of roof cladding at Entrance A, B & D, EVA construction for the first 2 portion, completion of installation of glazed wall at Entrance A, B & D.
1109	Ma Tau Wai (MTW) Works Area	• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction

Works Contract	Site	Construction Activities
	To Kwa Wan (TKW) Works Area	• Olympic Garden – Construction of station entrance and new Pier 46; • TKW Station – Construction of TKW station, and batching plant decommissioning; • Tam Kung Road – Sump pit construction; and • Nam Kok Road – Roof and wall construction
1111	Mong Kok Freight Terminal (1)	• All construction activities were completed in May 2015
	Ho Man Tin	• Manhole construction, pipe laying, concreting works, EVA construction
	NSL 3 - 8	• Parapet modification works, ELS & decking removal work, concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying
	OB2	• Backfill, TB1 dismantling, watermain diversion, upstand wall modification, OB2 bridge jacking and bearing replacement and parapet wall construction
	OB2A	• Soil replacement, OB2A bridge reinstatement, precast parapet installation
	NSL 9 & Oi Sen Path	• Backfilling, drainage work, Scaffolding platform erection, dismantling of scaffolding, pre-split, lifting works, temporary working platform removal, ELS removal, tunnel works, rock breaking, rock cutting
	EWL 7 - 9	• Reinstatement, road diversion, backfilling, steel deck dismanting
1112	Hong Hom (HUH and HHS) Works Area	• Building services works at SAT • EVA Roadworks at SAT • Trough Structure along Track at SAT • Temporary works of bulkhead door adjacent to existing West Rail Stub Tunnel at SAT • Construction of tunnel structure at HUH, NAT • Construction of structure above ground at HUH • Platform ABWF and E&M works at HUH • Utility works at NAT • Noise Barrier Steel Structure Erection • Modification works at Concourse level, mid-level walkway

Note:
(1) Construction works were completed.

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

methodology and QA/QC procedures are presented in the EM&A Reports as provided in **Appendices A** to **H**.

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

2.1.6 An environmental complaint regarding dust emission under Works Contract 1109 was referred by EPD dated 1 March 2017. Another environmental complaint regarding general construction noise within restricted hours under Works Contract 1112 was received on 13 March 2017. Also, an environmental complaint regarding general construction noise within restricted hours under Works Contract 1103 was received on 24 March 2017. Investigations were conducted and reported in the respective EM&A Reports. No exceedance of action and limit levels was recorded during the reporting period. A notification of summon under Works Contract 1108 was issued on 20 February. The contractor attended to the court in March and the trial was scheduled in mid-April 2017. Log for environmental complaints, notification of summons and successful prosecutions are provided in **Table 2.4**.

2.1.7 Regular site inspections were conducted by the respective 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 (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1102 and 1103					
DMS-1	C.U.H.K.A.A. Thomas Cheung School	50.7-81.6	148.7	260	No
Works Contract 1103					
DMS-2	Price Memorial Catholic Primary School	47.5-79.4	167.4	260	No
Works Contracts 1103 and 1106					
DMS-3	Hong Kong S.K.H Nursing Home (1)	52.6-82.8	159.1	260	No
Works Contract 1106 and 1107					
DMS-4	Block 1, Rhythm Garden	53.4-69.4	160.4	260	No
Works Contract 1108 (5)					
Works Contract 1109					
DMS-6	Katherine Building (2)	54 – 67	156.8	260	No
DMS-7	Parc 22 (3)(10)	-	166.7	260	No
DMS-8	SKH Good Shepherd Primary School	56 – 68	152.2	260	No
DMS-9	No. 12 Pau Chung Street (4)(9)	62 – 74	160.9	260	No
DMS-10	Chat Ma Mansion	50 – 77	170.4	260	No
Works Contract 1111					
AM1(6)	No. 234 – 238 Chatham Road North (7)	46.9-95.2	183.9	260	No
Works Contract 1112					
AM2	Site Boundary of Finger Pier Adjacent To Harbourfront Horizon (8)	32.9 – 54.3	182	260	No

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) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road (alternative location of Lucky Building) 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 formally approved by EPD on 19 May 2014. Impact dust monitoring was resumed on 12 June 2014.
(10) 24-hour averaged dust monitoring at DMS-7 Parc 22 (alternative monitoring location of Skytower Tower 2) has been temporary suspended since 13 December 2016 due to request from the management office.

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

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected [7]		
Works Contract 1102 and 1103						
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School	52.4-56.9	57.0	< Baseline	70 (65 during examination period)	No
Works Contract 1103						
NMS-CA-2	Price Memorial Catholic Primary School	58.6-64.4	66.0	< Baseline	70 (65 during examination period)	No
Works Contracts 1103 and 1106						
NMS-CA-3	Hong Kong S.K.H Nursing Home [1]	71.0-72.5	73.0	< Baseline	70	No
Works Contract 1106 and 1107						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	66.4-73.0	71.0	< Baseline-68.7	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade)[2]	67.3-73.2	74.0	<Baseline	70 (65 during examination period)	No
Works Contract 1108 [6]						
Works Contract 1109						
NMS-CA-6	No. 16-23 Nam Kok Road [3]	62.9-63.7	76.1	< Baseline	75	No
NMS-CA-7	Skytower Tower 2	65.5-66.1	70.0	< Baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	71.7-73.9	75.4	< Baseline	70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring) [8]	No
NMS-CA-9	Kong Yiu Mansion [4]	68.7-69.3	69.2	< Baseline – 52.9	75	No
NMS-CA-10	Chat Ma Mansion	76.1-76.5	76.6	< Baseline	75	No
Works Contract 1111						

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected [7]		
NM1	Carmel Secondary School (South Block)	64.3-67.9	68.0	< Baseline	70 (65 during examination period) (68 during the period of conducting the continuous noise monitoring) [9]	No
NM2	No. 234 – 238 Chatham Road North [5]	68.7-70.2	79.0	< Baseline	75 (77) [10]	No
Works Contract 1112 [6]						

Notes:
(1) Alternative monitoring location to Shek On House.
(2) Alternative monitoring location to Canossa Primary School (San Po Kong).
(3) Alternative monitoring location to Prosperity House.
(4) Alternative monitoring location to Lucky Building.
(5) Alternative monitoring location to Wing Fung Building.
(6) No construction noise monitoring is required under this contract.
(7) The measured noise levels are corrected against the corresponding baseline noise levels.
(8) The Limit Level of 79 dB(A) was updated on 22 Aug 2013 as per the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) which were approved by EPD.
(9) The Limit of 68 dB(A) was updated on 20 Jan 2014 as per the latest CNMMP and CNMP which were approved by EPD.
(10) Daytime noise Limit Level of 77 dB(A) applies during the continuous noise monitoring period.

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
1102	0	0	0
1103	1	0	0
1106	0	0	0
1107	0	0	0
1108	0	0	0
1109	1	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 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 (1st submission) 31 Aug 2012 (2nd submission) 30 Nov 2012 (3rd submission)
Condition 2.7	Management Organisation of Main Construction Companies	27 Jul 2012 (1st submission) 21 Aug 2012 (2nd submission) 19 Dec 2012 (3rd submission) 22 Jan 2013 (4th submission) 30 Apr 2013 (5th submission) 21 May 2013 (6th submission)
Condition 2.8	Construction Programme and EP Submission Schedule	27 Jul 2012
Condition 2.9	Construction Noise Mitigation Measures Plan (CNMMP)	1 Aug 2012 (1st submission) 28 Sep 2012 (2nd submission) 30 Nov 2012 (3rd submission) 11 Jan 2013 (4th submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th 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 (1st submission) 28 Sep 2012 (2nd submission) 30 Nov 2012 (3rd submission) 11 Jan 2013 (4th submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th submission)

EP Condition (EP-438/2012/K)	Submission	Submission date
		26 Feb 2014 (Approved) 7 Oct 2014 (11th submission) 23 Oct 2014 (Approved)
Condition 2.11	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 10 Oct 2012 (Approved)
Condition 2.12	Sediment Management Plan	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 5 Oct 2012 (3rd submission) 10 Oct 2012 (Approved) 4 Mar 2013 (4th submission) 9 May 2013 (5th submission) 24 July 2013 (6th submission) 26 July 2013 (Approved)
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	6 Jul 2012 (1st submission) 30 Aug 2012 (2nd submission) 3 Oct 2012 (3rd submission) 13 Nov 2013 (Approved) 14 Nov 2012 (4th submission) 8 Feb 2013 (5th submission) 18 Mar 2013 (6th submission) 18 June 2013 (7th submission) 12 July 2013 (Approved) 23 Mar 2017 (8th submission)
Condition 2.14	Transplantation Proposal for Plant Species of Conservation Importance	22 Aug 2012 (1st submission) 5 Oct 2012 (2nd submission) 26 Nov 2012 (3rd submission) 4 Dec 2012 (Approved)
Condition 2.15	Conservation Plan	31 Jan 2013 (1st submission) 18 Mar 2013 (2nd submission) 24 Apr 2013 (Approved)
Condition 2.16	Archaeological Action Plan(s) (AAP(s)) for Works Contract 1109	10 Aug 2012 (1st submission) 3 Sep 2012 (2nd submission) 21 Sep 2012 (Approved) 11 Oct 2013 (3rd submission) 1 Nov 2013 (Approved)
Condition 2.16	Archaeological Action Plan(s) (AAP(s)) for Works Contract 1106	29 Jan 2013 (1st submission) 19 Mar 2013 (2nd 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 C submission)

EP Condition (EP-438/2012/K)	Submission	Submission date
		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)
Condition 2.30	As-built Drawings for Operational Air-borne Noise Mitigation Measures	4 Dec 2015 (1st submission) 28 Dec 2015 (2nd submission) 4 Feb 2016 (Approved)
Condition 2.33	As-built Drawings for Landscape and Visual Mitigation Measures	4 Dec 2015 (1st submission) 28 Dec 2015 (2nd submission) 4 Feb 2016 (Approved)
Condition 2.36	Contamination Assessment Plan (CAP) for the Temporary Magazine Site at TKO Area 137	23 Mar 2016 (1st submission) 20 Apr 2016 (2nd submission) 22 Apr 2016 (Approved)
Condition 2.36	Contamination Assessment Report (CAR) for the Temporary Magazine Site at TKO Area 137	19 May 2016 (1st submission) 3 Jun 2016 (2nd 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 3.3	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. 1-53 Monthly EM&A Report No. 54	Reported in previous Monthly EM&A Reports 14 Mar 2017

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

EP Condition (EP-437/2012)	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 (1st submission) 30 Apr 2013 (2nd 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 (1st submission) 8 Feb 2013 (Approved) 26 Apr 2013 (2nd submission) 11 Jun 2013 (3rd submission) 27 Aug 2013 (Approved) 20 Jan 2014 (4th submission) 28 Apr 2016 (Approved)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	30 Nov 2012 (1st submission) 11 Jan 2013 (2nd submission) 8 Feb 2013 (Approved) 20 Jan 2014 (3rd submission) 28 Apr 2016 (Approved)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 15 Oct 2012 (Approved)
Condition 2.10	Sediment Management Plan	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 5 Oct 2012 (3rd submission) 15 Oct 2012 (Approved)
Condition 2.11	Visual, Landscape, Tree Planting & Tree Protection Plan (VLTTP)	14 Nov 2012 (1st submission) 8 Feb 2013 (2nd submission) 4 Feb 2015 (3rd submission) 26 Jun 2015 (4th submission)
Condition 2.16	Operational Ground-borne Noise Mitigation Measures Plan	23 Mar 2017
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. 5-53 Monthly EM&A Report No. 54	Reported in previous Monthly EM&A Reports 14 Mar 2017

Appendix A

55th 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. 55

[Period from 1 to 31 March 2017]

Works Contract 1109 - Stations and Tunnels of Kowloon City Section

(12 April 2017)

Certified by:  Mandy To

Position: Environmental Team Leader

Date: 12 April 2017

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.55

March 2017

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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.55

March 2017

Reference 0171181

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed: 

Position: Partner

Date: 12 April 2017

CONTENTS

LIST OF ANNEXES

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 fifty-fifth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 March 2017 to 31 March 2017 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 Ma Tau Wai (MTW)
• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Works in To Kwa Wan (TKW)
• Olympic Garden – Construction of station entrance and new Pier 46; • TKW Station – Construction of TKW station, and batching plant decommissioning; • Tam Kung Road – Sump pit construction; and • Nam Kok Road – Roof and wall construction.

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* *0 time*
  - *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.

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. No inert C&D material was generated from the Project during the reporting month. 448 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 618 m^3 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. 77 kg of paper/cardboard packaging was generated and sent to recyclers for recycling during the reporting period. No chemical waste was generated during this reporting month.

Landscape and Visual

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 6 and 20 March 2017. 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 6, 13, 20 and 27 March 2017. The representative of the IEC joined the site inspection on 13 March 2017. 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.

One complaint was received on 1 March 2017. Investigation of complaints had been completed and the details of findings are presented in ***Annex L***.

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 Ma Tau Wai (MTW)
● Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Work in To Kwa Wan (TKW)
● Olympic Garden – Construction of station entrance and new Pier 46; ● Tam Kung Road – staircase construction; ● TKW Station – Construction of TKW station; and ● Nam Kok Road – Roof and wall construction.

1 INTRODUCTION

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

1.1 PURPOSE OF THE REPORT

This is the fifty-fifth EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 March to 31 March 2017.

1.2 STRUCTURE OF THE REPORT

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

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

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

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

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

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

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

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

Section 9 : **Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND

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

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

2.2 GENERAL SITE DESCRIPTION

For the Works Contract 1109, the alignment runs from TKW station below Ma Tau Chung Road/Ma Tau Wai Road towards the west, reaching the MTW station. After leaving MTW 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 TKW and HOM stations will be constructed by bored tunneling. Both the TKW and MTW stations will be constructed by cut-and-cover method.

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

2.3 CONSTRUCTION PROGRAMME AND ACTIVITIES

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

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

Construction Activities undertaken
Works in Ma Tau Wai (MTW)
• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Works in To Kwa Wan (TKW)
• Olympic Garden – Construction of station entrance and new Pier 46; • TKW Station – Construction of TKW station, and batching plant decommissioning; • Tam Kung Road – Sump pit construction; and • Nam Kok Road – Roof and wall construction.

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 TKW Garden*	*GW-RE1071-16*	*11 November 2016 – 10 May 2017*	-
- *PME at Kai Tak Storage Yard 1*	*GW-RE0923-16*	*18 September 2016 – 16 March 2017*	*Superceded by GW-RE0121-17*
-	*GW-RE0121-17*	*17 March 2017 – 15 September 2017*	
- *PME at Kai Tak New Land 2*	*GW-RE1258-16*	*26 january 2017 – 25 July 2017*	-
- *PME at MTW Road E1-E6*	*GW-RE1091-16*	*9 November 2016 – 8 May 2017*	-
- *PME at SUW works Area (TBM)*	*GW-RE0002-17*	*25 January 2017 – 24 April 2017*	-
- *PME at SUW works Area*	*GW-RE0994-16*	*15 October 2016 - 6 April 2017*	*Superceded by GW-RE0236-17*
-	*GW-RE0236-17*	*6 April 2017 - 5 October 2017*	-
- *PME at Olympic Garden*	*GW-RE1101-16*	*24 November 2016 - 23 May 2017*	*Superceded by GW-RE0203-17*
-	*GW-RE0203-17*	*24 March 2017 - 23 May 2017*	-
- *PME at Olympic*	*GW-RE1014-16*	*17 October 2016 - 16*	-

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Playground		*April 2017*	
- *PME at TKW Opening (1-8)*	*GW-RE0037-17*	*19 February 2017 – 18 May 2017*	-
- *PME at MTW Road TTMS (Inclinometer)*	*GW-RE0066-17*	*17 February 2017 - 16 May 2017*	-
- *PME at Lok Shan Road and Kiang Su Street*	*GW-RE1085-16*	*9 November 2016 - 8 May 2017*	-
- *PME at Kai Tak Storage Area 1*	*GW-RE0121-17*	*17 March 2017 – 15 September 2017*	-
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 2016
Billing Account for Disposal of Construction Waste	7015758	Throughout the Contract	-

3 ENVIRONMENTAL MONITORING REQUIREMENT

3.1 REGULAR CONSTRUCTION NOISE MONITORING

3.1.1 Monitoring Location

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

Table 3.1 Regular Construction Noise Monitoring Location

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

Notes:

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

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

3.1.2 Monitoring Parameter and Frequency

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

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

3.1.3 Monitoring Equipment and Methodology

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

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

Table 3.2 Noise Monitoring Equipment

Monitoring Stations	Monitoring Equipment (Sound Level Meter and Calibrator)
NMS-CA-6, NMS–CA-7, NMS–CA-8, NMS–CA-9 and NMS–CA-10	Calibrator: NC 73 (Serial No. 10997142) Sound Level Meter: NL 18 (Serial No. 00360030)

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

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

3.1.4 Action and Limit Levels

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

Table 3.3 Action and Limit Levels for Noise Monitoring

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

Notes:

(a) If works are to be carried out during restricted hours (ie, outside 0700 – 1900 from Monday to Saturday), the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

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

3.2 CONTINUOUS NOISE MONITORING

3.2.1 Monitoring Locations

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

Table 3.4 Proposed Continuous Noise Monitoring Locations

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

Note:

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

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

3.2.2 Monitoring Parameter and Frequency

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

3.2.3 Monitoring Equipment and Methodology

In accordance to the Technical Memorandum (TM) issued under the *Noise Control Ordinance* (NCO), sound level meters in compliance with the *International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1)* specifications will be used for carrying out the noise monitoring. Immediately prior to the noise measurement, the accuracy of the sound level meter will be checked using an acoustic calibrator, which generated a known sound pressure level at a known frequency. The accuracy of the sound level meter will also be checked on an annual-basis. Measurements will be accepted as valid only if the calibration level before and after the noise measurement agrees to be within 1.0 dB(A). Noise measurements will be made in accordance with standard acoustical principles and practices in relation to weather conditions.

3.2.4 Action and Limit Levels

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

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

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

Notes:

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

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

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

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

3.3 CONSTRUCTION DUST MONITORING

3.3.1 Monitoring Location

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

Table 3.7 Construction Dust Monitoring Location

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

Notes:

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

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

3.3.2 Monitoring Parameter and Frequency

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

Table 3.8 Construction Dust Monitoring Parameters and Frequency

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

3.3.3 Monitoring Equipment

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

Table 3.9 Construction Dust Monitoring Equipment

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

Note:

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

3.3.4 Monitoring Methodology

All HVSs were free-standing with no obstruction.

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

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

Preparation of Filter Papers

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

Field Monitoring

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

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

Maintenance and Calibration

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

Wind Data Monitoring

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

3.3.5 Action and Limit Levels

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

Table 3.10 Action and Limit Levels for Dust Monitoring

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

Notes:

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

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

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

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

3.4 CULTURAL HERITAGE

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

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

3.5 LANDSCAPE AND VISUAL MITIGATION MEASURES

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

4 IMPLEMENTATION STATUS OF THE ENVIRONMENTAL PROTECTION REQUIREMENTS

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

Table 4.1 Status of Required Submission under Works Contract 1109

EP Condition	Submission	Submission Date
Condition 3.4	Fifty-fourth Monthly EM&A Report	14 March 2017

5 MONITORING RESULTS

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 24 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, μgm^{-3} (a)		Action Level, μgm^{-3}	Limit Level, μgm^{-3}
	Average	Range		
DMS-6	60	54 – 67	156.8	260
DMS-7 (b)	-	-	166.7	260
DMS-8	63	56 – 68	152.2	260
DMS-9 (a)	70	62 – 74	160.9	260
DMS-10	66	50 – 77	170.4	260

Note:

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

(b) 24-hour averaged dust monitoring at DMS-7 Parc 22 was temporary suspended since 13 December 2016 due to request from the Management Office.

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

5.4 CULTURAL HERITAGE

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

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

5.5 WASTE MANAGEMENT

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

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	Inert C&D Materials [a] [b]	Chemical Waste [c]	Non-inert C&D Materials			
			General Refuse/Vegetative Waste	Recycled materials		
				Paper/card board	Plastics	Metals
March 2017	0 m^3	0 kg	618 m^3	77 kg	448 kg	0 kg

Notes:

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

(b) No 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 6 and 20 March 2017. Most of the mitigation measures given in ***Annex H*** have been implemented. Required Actions that were found are listed below:

6 March 2017

- No observation was reported during the site inspection.

20 March 2017

- 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 6, 13, 20 and 27 March 2017. The representative of the IEC joined the site inspection on 13 March 2017. No non-compliance was recorded during the site inspections.

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

6 March 2017

- There was no major observation during site inspection.

13 March 2017

- There was no major observation during site inspection.

20 March 2017

- There was no major observation during site inspection.

27 March 2017

- 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

One complaint was received on 1 March 2017. Investigation of complaint had been completed and the details of findings are presented in ***Annex L***. The cumulative environmental complaint log is shown in ***Annex M***.

7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

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

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE COMING MONTH

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

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

Construction Activities to be undertaken
Work in Ma Tau Wai (MTW)
● Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Work in To Kwa Wan (TKW)
● Olympic Garden – Construction of station entrance and new Pier 46; ● Tam Kung Road – staircase construction; ● TKW Station – Construction of TKW station; and ● Nam Kok Road – Roof and wall construction.

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

8.2 MONITORING SCHEDULE FOR THE NEXT MONTH

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

8.3 CONSTRUCTION PROGRAMME FOR THE NEXT MONTH

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

9 CONCLUSIONS

This 55th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 March 2017 to 31 March 2017 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.

One complaint was received on 1 March 2017. Investigation of complaints had been completed and the details of findings are presented in ***Annex L***.

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

TKW

MTW

N

Meters

0 100 200

Key

Proposed Alignment

Works Area

Proposed Station

Annex A

Alignment, Stations and Works Area of SCL Works Contract 1109

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

Environmental Resources Management

ERM

Annex B

Construction Programme for the Reporting Month and the Coming Month (1)

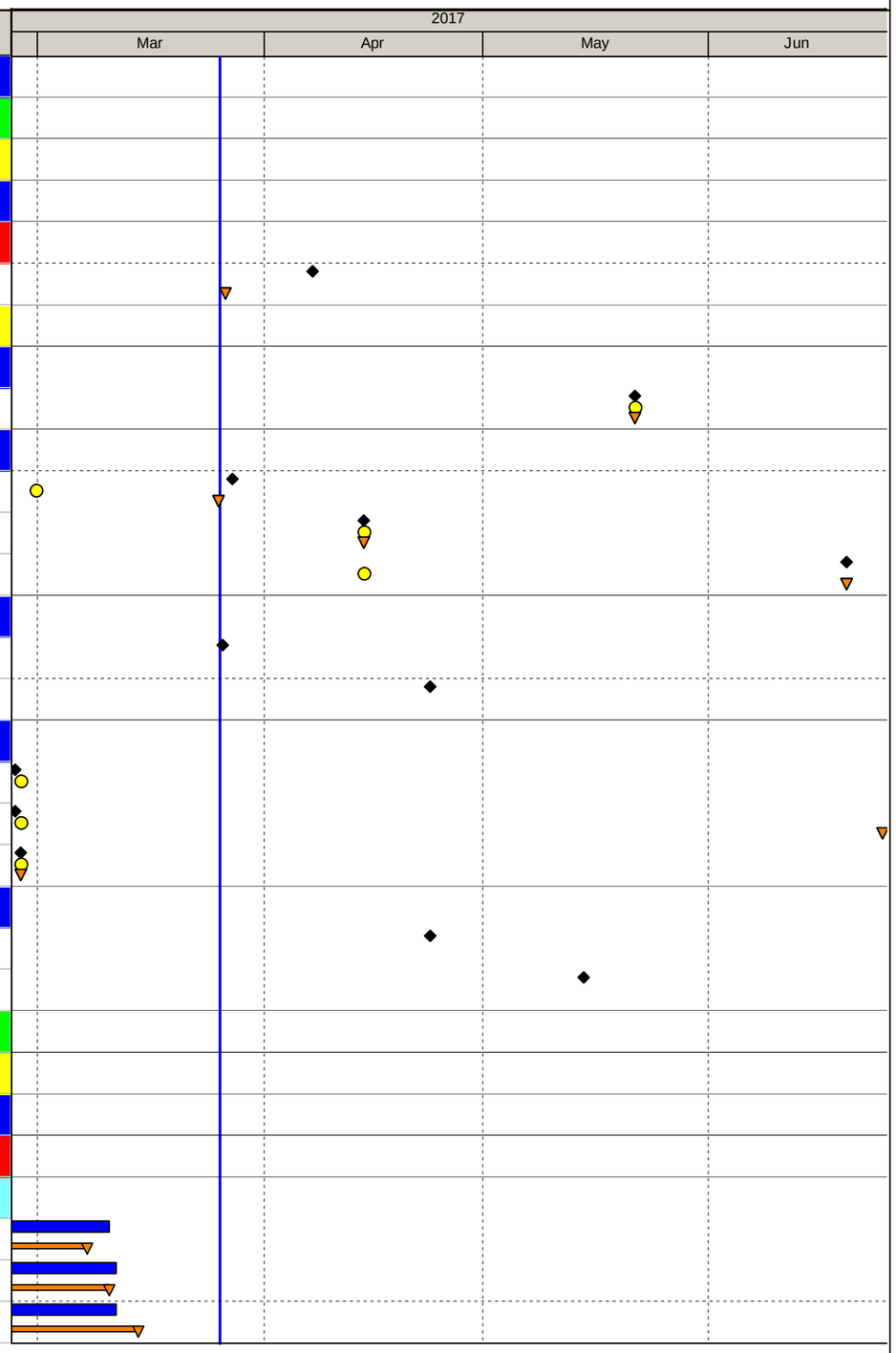
(1) Sung Wong Toi and To Kwa Wan Stations in the programme mean To Kwa Wan and Ma Tau Wai Stations in the Monthly EM&A Report respectively.

Data Date: 25-Mar-17

SAMSUNG - HSIN CHONG JOINT VENTURE

THREE MONTH ROLLING PROGRAMME - MARCH 2017

Activity ID	Activity Name	Physical % Complete	Start	Finish
1109 - SUW & TKW Stations and Tunnels Mar 2017 (MPR2)				
PROJECT DATES				
Table 4 - Specified Degrees of Completion				
Degree 1 Dates				
Track and tracside areas				
01109.CD1241	4V(ii) Deg 1 - TKW Lwr P/Fm Lvl - Trk & T/side Area (DRM: 15 Jan 17, 02/17)	0%		07-Apr-17*
Specified Milestone Dates (Revised)				
CC-A Milestones				
01109.MSA19-P	A19 - Engr's confirm satisfact implementation of Sys Ass & Risk Mgmnt & Des for Safety & Construct (21 May 2017)	0%		21-May-17*
CC-B Milestones				
01109.MSB17i-P	B17(i) - Concourse Level slab between gridlines 1 to 5 of SUW complete (26 Feb 2017)	0%		27-Mar-17*
01109.MSB18ii-P	B18(ii) - 95% structural works of Adit B & Entrances B1 to B3 of SUW complete(14 Apr 2017)	0%		14-Apr-17*
01109.MSB18i-P	B18(i) - All struct.of Ent.A CLP Trans Rms& 11kV Switchgear & Trnsfmr Rms of SUW comp (14 Apr 2017)	0%		19-Jun-17*
CC-C Milestones				
01109.MSC18-R1	C18 - 80% internal structural works for Lower platform level completed (19 Mar 2017)	0%		26-Mar-17*
01109.MSC19-R1	C19 - All structural works complete (12 Feb 2017)	0%		23-Apr-17*
CC-E Milestones				
01109.MSE04iii-P	E04(iii) - All civil and structural works for upgrading of existing subways KS33 & KS 34 complete (26 Feb 2017)	100%		26-Feb-17 A
01109.MSE04i-P	E04(i) - All civil and structural works and Sung Wong Toi playground complete (26 Feb 2017)	100%		26-Feb-17 A
01109.MSE04ii-P	E04(ii) - All Perm Wks Mtrl Ctrl Schedules (GS Cl G4.16.1) (26 Feb 2017)	100%		26-Feb-17 A
CC-I Milestones				
01109.MSI006-R1	I6-All structural works of TKW completed. (23 Apr 2017)	0%		23-Apr-17*
01109.MSI010-R	I10-All structural works of SUW completed (14 May 2017)	0%		14-May-17*
CC-B - SUW STATION, ENTRANCES AND ADITS				
SUW Station Construction Works				
Station - C&S Works (Concourse Level and Above)				
Concourse Slab				
GL 1 to 5				
01109.PDB7510A-10	Concourse Slab (Falsework & Formwork) GL 1 to 3 (A-D)	100%	16-Feb-17 A	10-Mar-17 A
01109.PDB7470A-20	Concourse Slab (Falsework & Formwork) GL 3 to 4 (A-D)	100%	23-Feb-17 A	11-Mar-17 A
01109.PDB7470A-30	Concourse Slab (Falsework & Formwork) GL 4 to 5 (A-D)	100%	24-Feb-17 A	11-Mar-17 A



SAMSUNG
SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

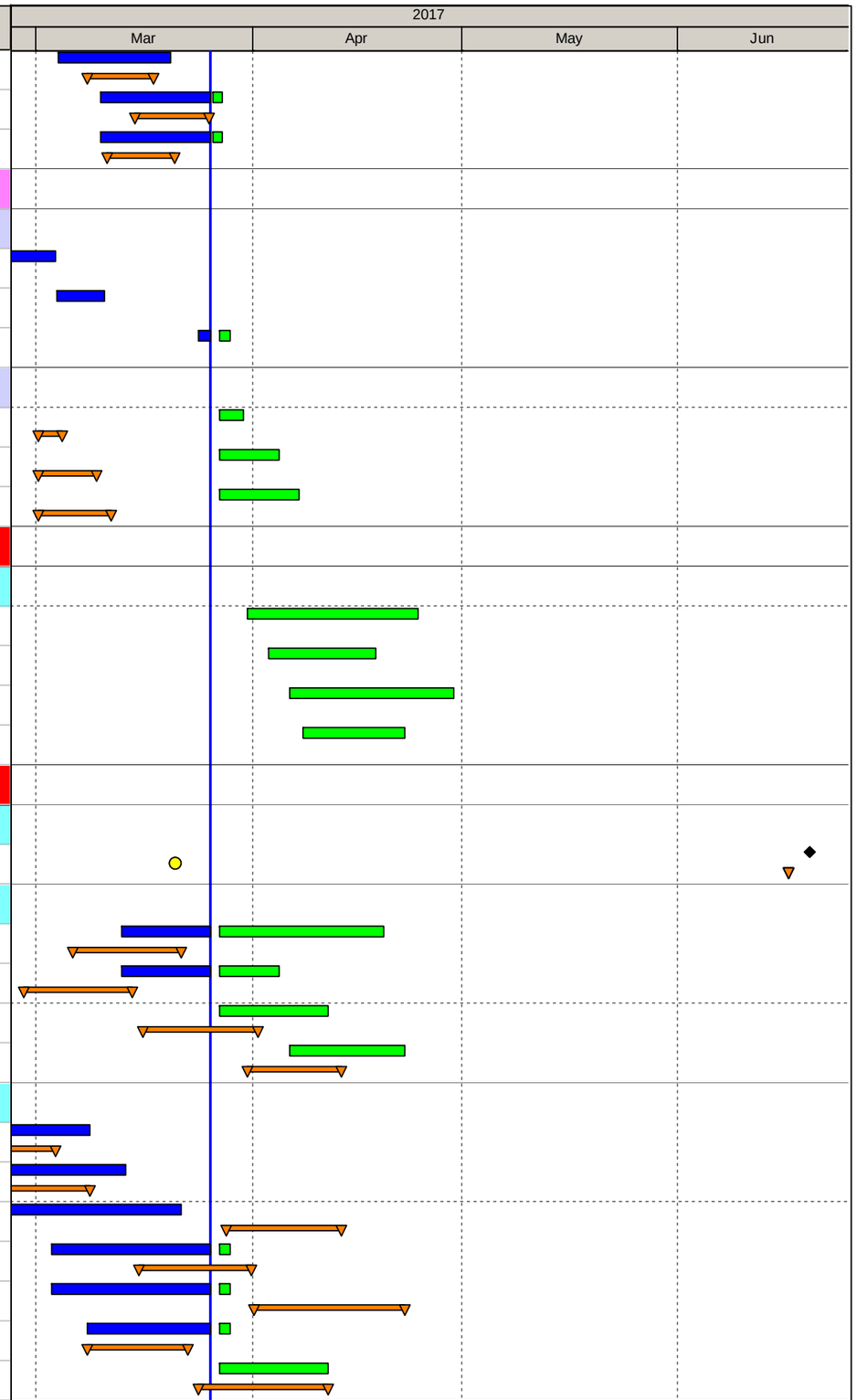
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Mar 17 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

Printed:06-Apr-17

Actual Work
Remaining Work
Master Programme Rev.2
Last Month Update
Milestone
MP Rev.2 Milestone
Last Month Milestone

Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB7510A-11	Concourse Slab (Rebar and Casting) GL 1 to 3 (A-D)	100%	04-Mar-17 A	20-Mar-17 A
01109.PDB7470A-31	Concourse Slab (Rebar and Casting) GL 4 to 5 (A-D)	100%	10-Mar-17 A	27-Mar-17
01109.PDB7470A-21	Concourse Slab (Rebar and Casting) GL 3 to 4 (A-D)	100%	10-Mar-17 A	27-Mar-17
Removal of S3, S2 and S1				
S3				
01109.PDB7517A-1	Removal of S3 above Concourse Slab GL 3 to 4/F-F2	100%	24-Feb-17 A	03-Mar-17 A
01109.PDB7477A-2	Removal of S3 above Concourse Slab GL 4 to 5/A-F	100%	03-Mar-17 A	10-Mar-17 A
01109.PDB7517A-2	Removal of S3 above Concourse Slab GL 3 to 4/A-F	0%	24-Mar-17 A	28-Mar-17
S2				
01109.PDB7445	Removal of S2 above Concourse Slab GL 1 to 2	0%	27-Mar-17*	30-Mar-17
01109.PDB7465	Removal of S2 above Concourse Slab GL 2 to 3	0%	27-Mar-17*	04-Apr-17
01109.PDB7515	Removal of S2 above Concourse Slab GL 3 to 4	0%	27-Mar-17*	07-Apr-17
External Walls & Columns; From Concourse Slab to Roof Slab (C/S-R/S)				
GL 1 to 5				
01109.PDB7720A	Columns; C/S to R/S GL 1 to 2 (C1 & C2), 24 Apr 2017	0%	31-Mar-17	24-Apr-17
01109.PDB7780A	Columns; C/S to R/S GL 4 to 5 (C7 & C8), 18 Apr 2017	0%	03-Apr-17	18-Apr-17
01109.PDB7740A	Columns; C/S to R/S GL 2 to 3 (C3 & C4), 29 Apr 2017	0%	06-Apr-17	29-Apr-17
01109.PDB7750A	Columns; C/S to R/S GL 3 to 4 (C5 & C6), 22 Apr 2017	0%	08-Apr-17	22-Apr-17
Roof Slabs & Water Tanks (C/S-R/S)				
GL 1 to 5				
01109.PDB18201	Area Almost Ready for Deg 1 Works to Concourse Level, e.g. Construct blockwork, partition walls, & etc	0%		19-Jun-17
GL 6 to 13				
01109.PDB7280A-20	Roof Slab GL 09 to 10 (GL 9.5-10.5/F-F2), Bay 16	0%	13-Mar-17 A	19-Apr-17
01109.PDB7230-A20	Roof Slab GL 11 to 12 (GL 10.5-12.5/F-F1), Bay 17	0%	13-Mar-17 A	04-Apr-17
01109.PDB7240A-20	Roof Slab GL 08 to 09 (G.L 8.5-9.5/F-F2), Bay 15	0%	27-Mar-17*	11-Apr-17
01109.PDB7190-A20	Roof Slab GL 06 to 07 (GL 5.5-7.5/F-F2), Bay 14	0%	06-Apr-17*	22-Apr-17
GL 13 to 19				
01109.PDB7310-A30	Roof Slab GL 14 to 15 (GL 14.5 to 15.5/A-F), Bay 9	100%	14-Feb-17 A	08-Mar-17 A
01109.PDB7340-A20	Roof Slab GL 15 to 16 (GL 15.5 to 16.5/B-10), Bay 10	100%	21-Feb-17 A	13-Mar-17 A
01109.PDB7340-A10	Roof Slab GL 15 to 16 (GL 15.5 to 16.5/F-F1), Bay 20	100%	21-Feb-17 A	21-Mar-17 A
01109.PDB7380-A10	Roof Slab GL 17 to 18 (GL 16.5-18.5/A2-A), Bay 22, Ent A	0%	03-Mar-17 A	28-Mar-17
01109.PDB7360-A10	Roof Slab GL 16 to 17 (GL 15.5 to 17.5/A2-A), Bay 21, Ent A	0%	03-Mar-17 A	28-Mar-17
01109.PDB7380-A20	Roof Slab GL 17 to 18 (GL 16.5-18.5/A-F), Bay 24	0%	08-Mar-17 A	28-Mar-17
01109.PDB7310-A20	Roof Slab GL 14 to 15 (GL 14.5 to 15.5/F-F1), Bay 19	0%	27-Mar-17*	11-Apr-17



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

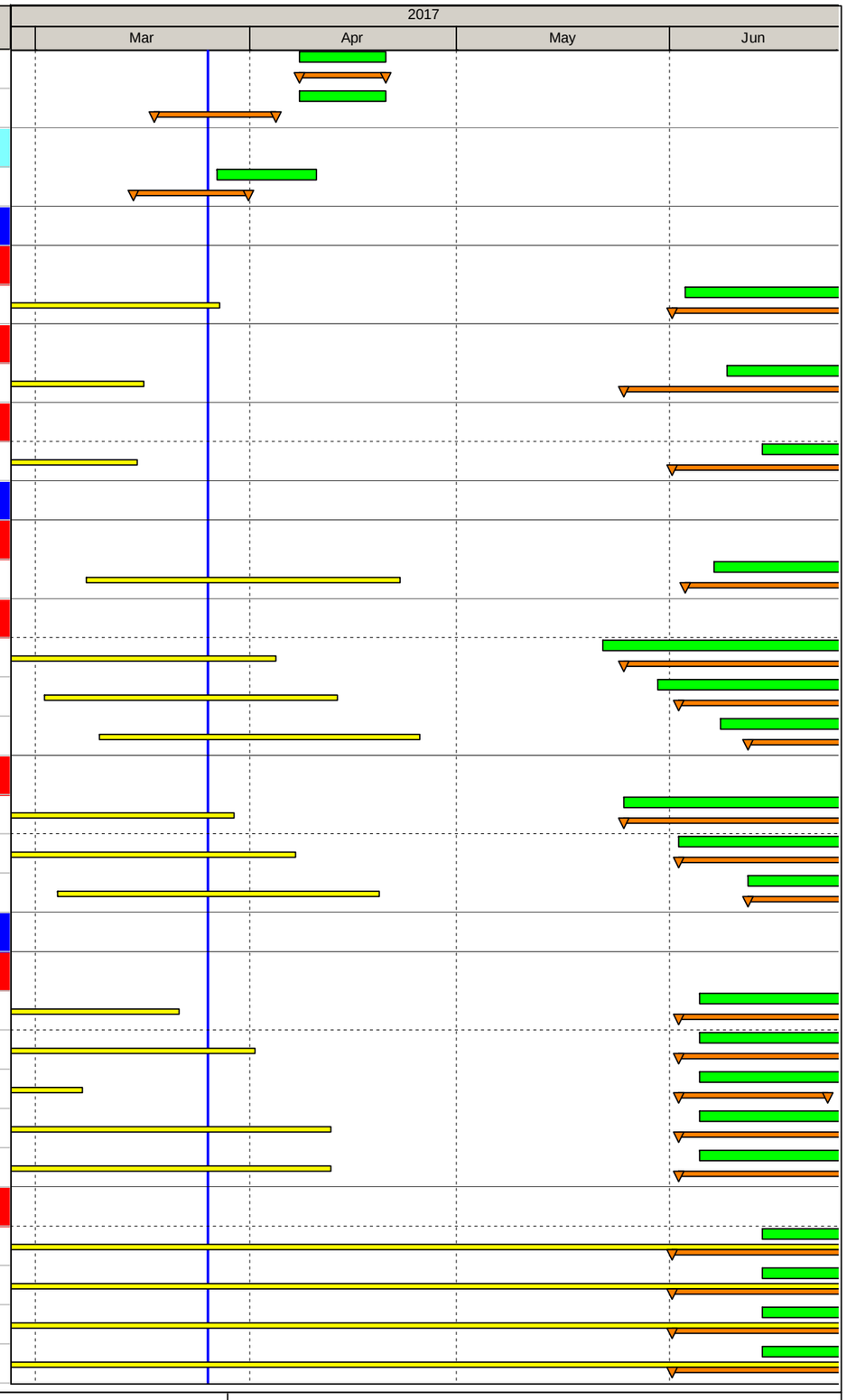
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Mar 17 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

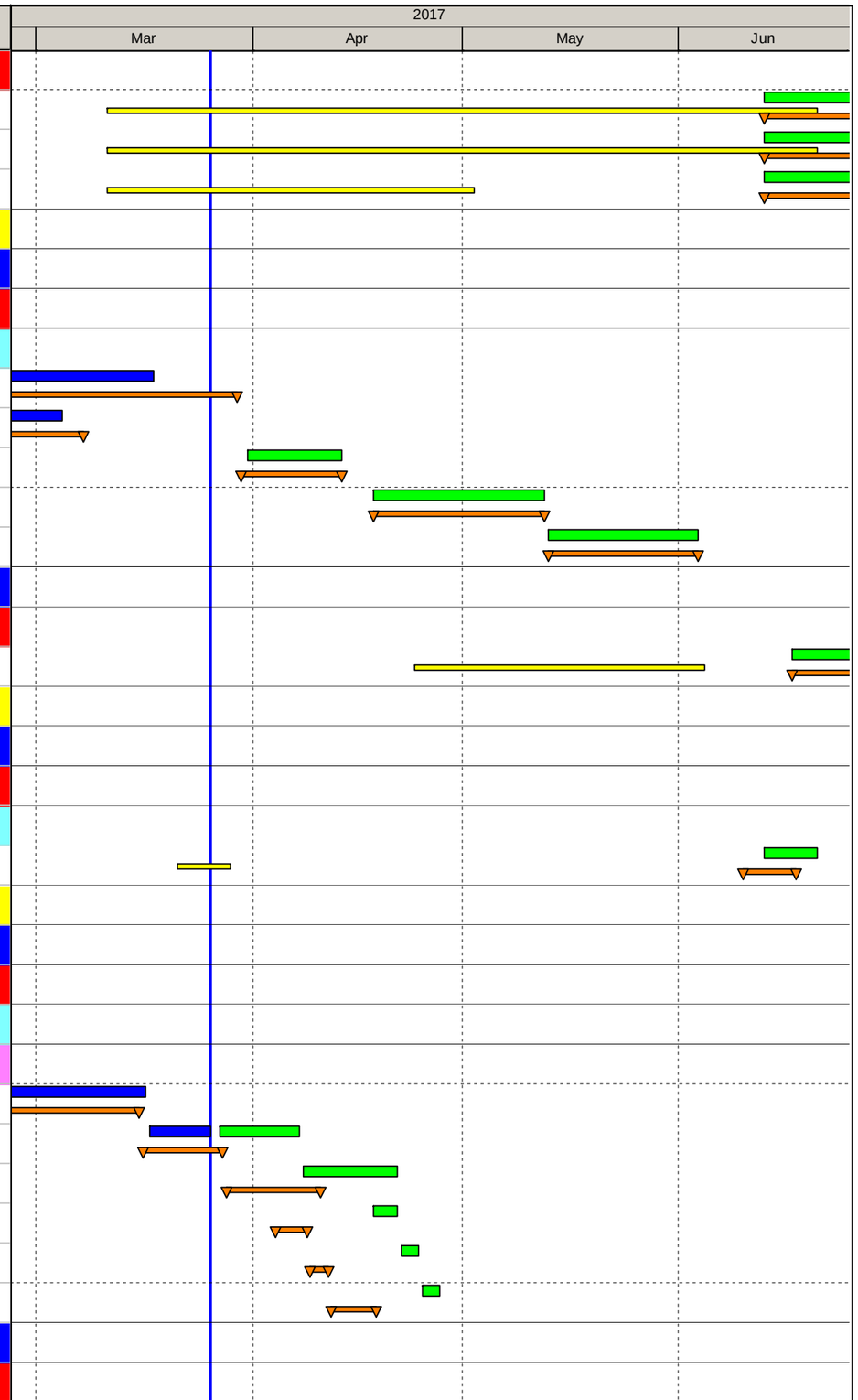
Printed:06-Apr-17

Actual Work
Remaining Work
Master Programme Rev.2
Last Month Update
Milestone
MP Rev.2 Milestone
Last Month Milestone

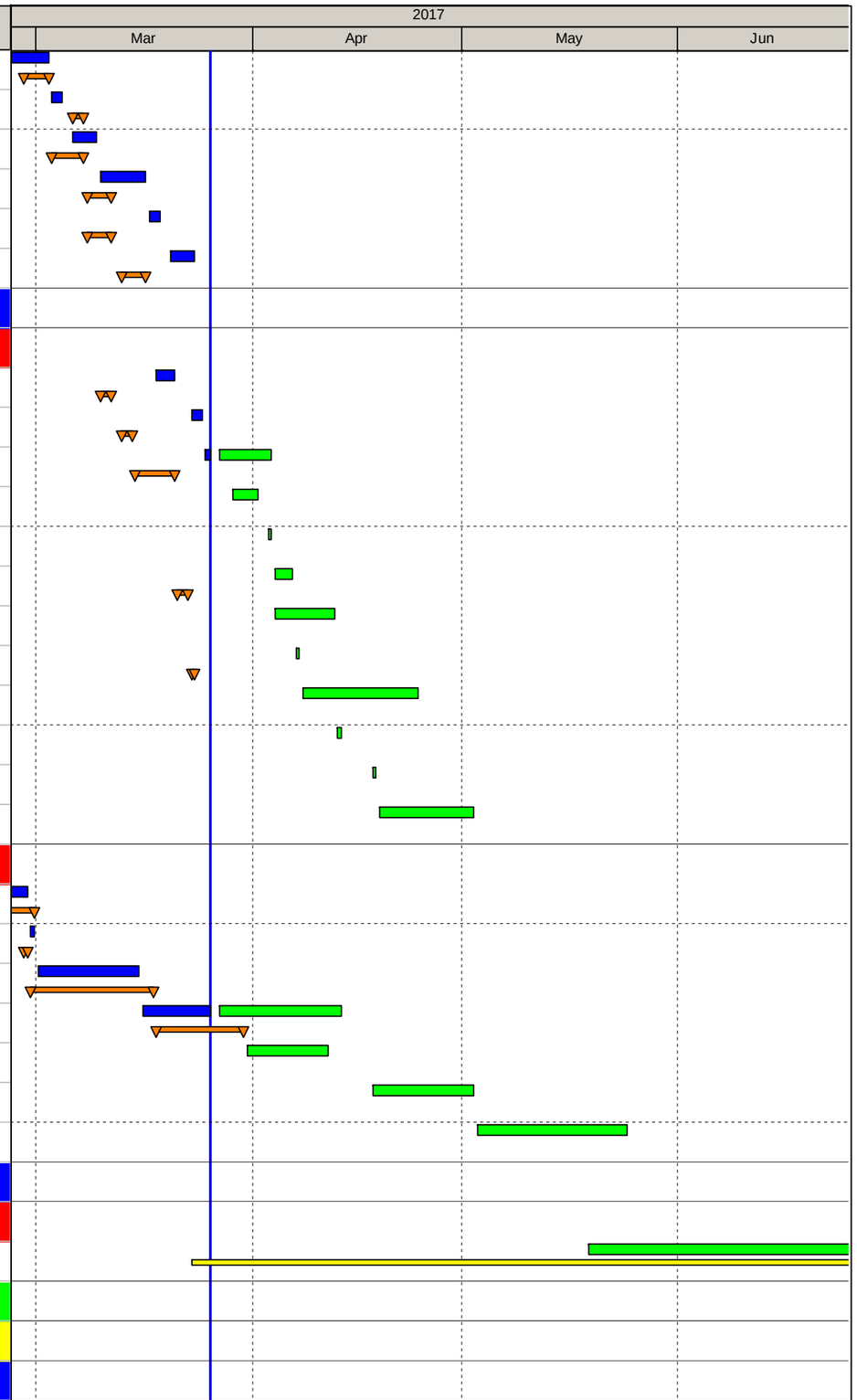
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB7380-A30	Roof Slab GL 17 to 18 (GL 16.5-18.5/F-F1), Bay 26	0%	08-Apr-17*	20-Apr-17
01109.PDB7290-A20	Roof Slab GL 13 to 14 (GL 13-14/F-F1), Bay 18	0%	08-Apr-17*	20-Apr-17
GL 19 to 23				
01109.PDB7270-A10	Roof Slab GL 19 to 20 (19 to 20.5/A-F), Bay 25	0%	27-Mar-17*	10-Apr-17
Station - ABWF Works - Platform Level				
GL 1 - 5 - Works to Degree 1				
01109.PDB17210	Deg 1 - Complete all necessary works etc. for CLP routing (BoH)	0%	03-Jun-17	17-Jul-17
GL 5 - 19 - Works to Degree 1				
01109.PDB17900	Deg 1 - Carry Out As Built survey (BoH + FoH)	0%	09-Jun-17	14-Jul-17
GL 19 - 23 - Works to Degree 1				
01109.PDB17901	Deg 1 - Carry Out As Built survey (BoH + FoH)	0%	14-Jun-17	19-Jul-17
Station - ABWF Works - Concourse Level				
GL 1 - 5 - Works to Degree 1				
01109.PDB18200	Deg 1 - Construct blockwork, partition walls, work to all plinths and upstands (BoH + FoH)	0%	07-Jun-17	19-Jul-17
GL 5 - 19 - Works to Degree 1				
01109.PDB18580	Deg 1 - ABWF to staircases, lift shafts, lift pits, escalator pits and escalator areas (FoH)	0%	22-May-17	04-Jul-17
01109.PDB18530	Deg 1 - Complete Civil & Building provision works for Des Cons (FoH + BoH)	0%	30-May-17	12-Jul-17
01109.PDB18570	Deg 1 - ABWF incl overhead ducting (FoH)	0%	08-Jun-17	20-Jul-17
GL 19 - 23 - Works to Degree 1				
01109.PDB18582	Deg 1 - ABWF to staircases, lift shafts, lift pits, escalator pits and escalator areas (FoH)	0%	25-May-17	07-Jul-17
01109.PDB18532	Deg 1 - Complete Civil & Building provision works for Des Cons (FoH + BoH)	0%	02-Jun-17	15-Jul-17
01109.PDB18572	Deg 1 - ABWF incl overhead ducting (FoH)	0%	12-Jun-17	24-Jul-17
Station - ABWF Works - Degree 2				
GL 1 - 5 - Works to Degree 2, Platform Level				
01109.PDB17010	Deg 2 - Install permanent door frames with temp doors/locks (BoH)	0%	05-Jun-17	11-Jul-17
01109.PDB17020	Deg 2 - Install metal staircases, cat-ladders and catwalks (BoH)	0%	05-Jun-17	22-Jul-17
01109.PDB17050	Deg 2 - Test water tanks (BoH)	0%	05-Jun-17	26-Jun-17
01109.PDB17060	Deg 2 - Complete all wall and ceiling finishes (BoH)	0%	05-Jun-17	01-Aug-17
01109.PDB17070	Deg 2 - Complete BoH fixing brackets for raised floor (BoH)	0%	05-Jun-17	01-Aug-17
GL 5 - 23 - Works to Degree 2, Platform Level				
01109.PDB17990	Deg 2 - Install structural steelwork & l/face brackets to lift shafts, P/form screen doors (FoH)	0%	14-Jun-17	16-Nov-17
01109.PDB18000	Deg 2 - Install louvres and grills (FoH)	0%	14-Jun-17	28-Nov-17
01109.PDB18040	Deg 2 - Install framework for wall panels and cladding (FoH)	0%	14-Jun-17	28-Nov-17
01109.PDB18060	Deg 2 - Complete brackets, hangers, framework etc for Designated Contractors (FoH)	0%	14-Jun-17	28-Nov-17



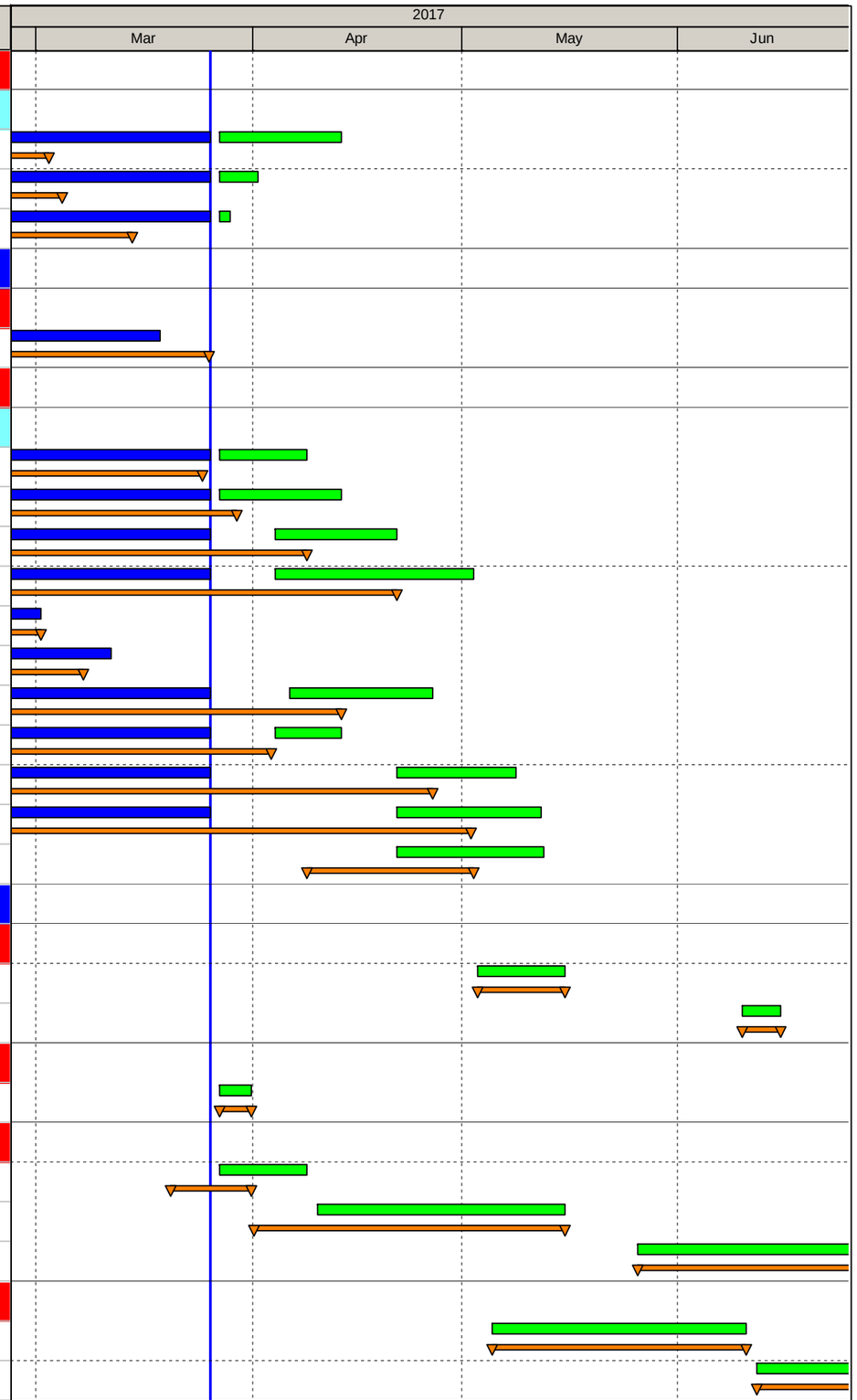
Activity ID	Activity Name	Physical % Complete	Start	Finish
GL 5 - 23 - Works to Degree 2, Concourse Level				
01109.PDB18660	Deg 2 - Complete all wall and ceiling finishes (BoH)	0%	13-Jun-17	15-Sep-17
01109.PDB18670	Deg 2 - Complete BoH fixing brackets for raised floor (BoH)	0%	13-Jun-17	15-Sep-17
01109.PDB18610	Deg 2 - Install permanent door frames with temp doors/locks (BoH)	0%	13-Jun-17	29-Jul-17
Entrance A				
Entrance A - Concrete Structural Works (GL 16-18/A1-D)				
Concrete Walls ,Staircases and Roof				
Concrete Walls ,Staircases M/F to G/F				
01109.PDB13630A-04	Construction of Internal and External Wall above Concourse Slab for Entrance A	100%	16-Feb-17 A	17-Mar-17 A
01109.PDB13630A-03	Construction of Column above Concourse Slab for Entrance A	100%	16-Feb-17 A	04-Mar-17 A
01109.PDB13630A-20	Construction of CLP Room Baseslab at Entrance A	0%	31-Mar-17	13-Apr-17
01109.PDB13630A-30	Construction of CLP Room Roof at Entrance A	0%	18-Apr-17	12-May-17
01109.PDB13630A-40	Construction of Top Roof Slab at Entrance A	0%	13-May-17	03-Jun-17
Entrance A - ABWF & E&M Works, Degree 1				
Entrance A - ABWF Works				
01109.PDB13731	For 4I(i) Deg 1 handover, Prepare SUW Entrance A - Tx Rooms & 11kV Switchgear & Tx Rm incl. HV..(DRM: 4 Jun 17, 22/17)	0%	17-Jun-17	31-Jul-17
Vent Shaft				
Vent Shaft - Concrete Structural Works (GL 1-4/A1-F1)				
Vent Shaft - Concrete Walls, Staircases and Roof				
Vent Shaft - Concrete Walls, Staircases M/F to G/F				
01109.PDB14010	Prepare area for concrete Works (incl - Transformer Room)	0%	13-Jun-17	20-Jun-17
Entrance B & Adit B				
Civil				
Portion 2				
Entrance B - Underpinning of KNEC Piers				
Pier P46				
01109.PDB12750A-20	Construction of New Pier 46 - Construction of New Pier 46	100%	20-Feb-17 A	16-Mar-17 A
01109.PDB12750A-30	Construction of New Pier 46 - Construction of New Crosshead	0%	17-Mar-17 A	07-Apr-17
01109.PDB12750A-40	Construction of New Pier 46 - Concrete Curing and Required Strength Achievement	0%	08-Apr-17	21-Apr-17
01109.PDB12750A-50	Construction of New Pier 46 - Installation of Bearing	0%	18-Apr-17	21-Apr-17
01109.PDB12750A-60	Construction of New Pier 46 - Grouting and Required Strength Achievement	0%	22-Apr-17	24-Apr-17
01109.PDB12750A-70	Construction of New Pier 46 - Load Transfer back to Pier (w/ 3days observation)	0%	25-Apr-17	27-Apr-17
Entrance B & Adit B - Excavation and lateral Support				
Portion 1				



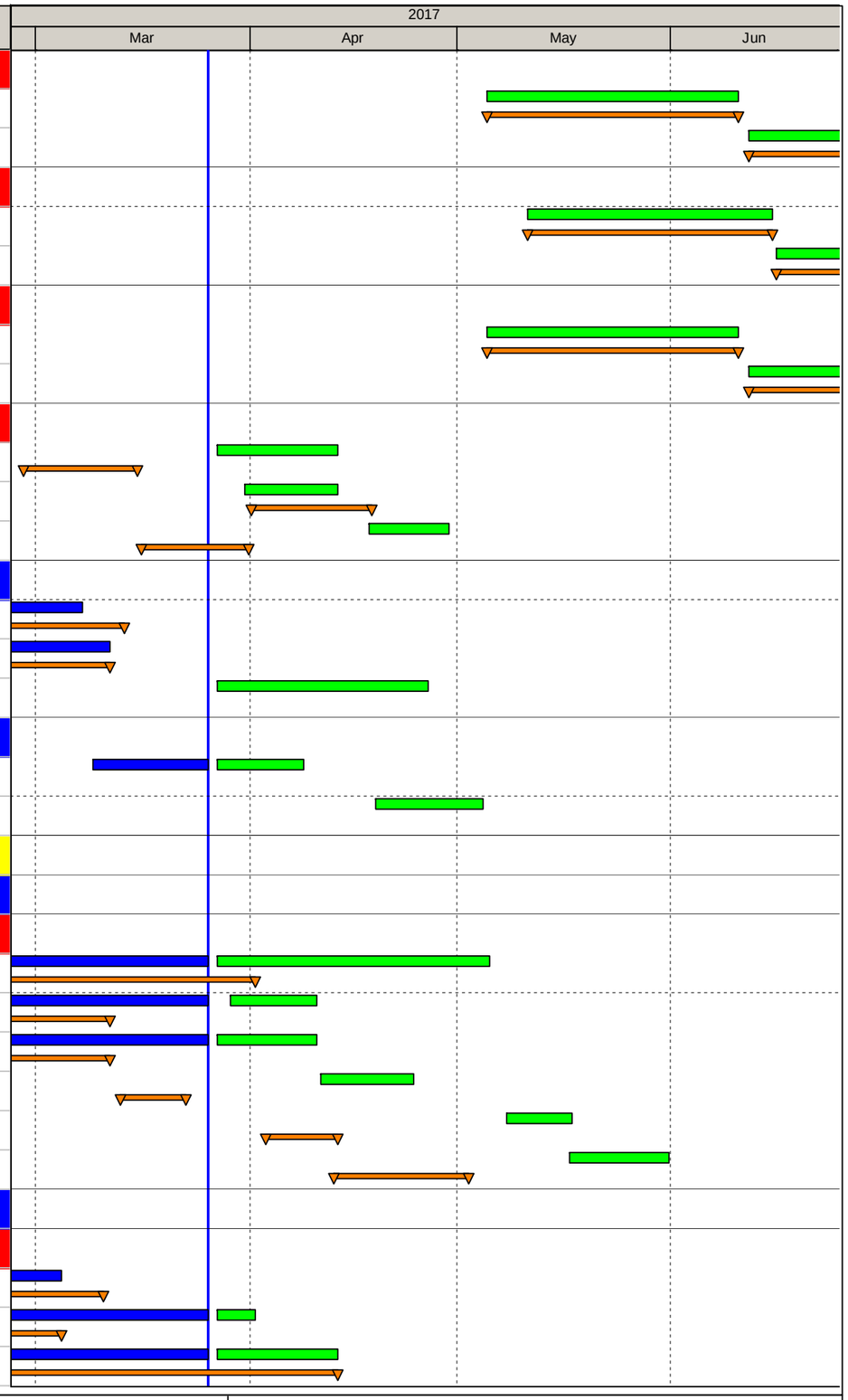
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB11831A42	S2 Installation at GL B1 to B5	100%	25-Feb-17 A	02-Mar-17 A
01109.PDB11831A61	Blinding for Capping plate installation	100%	03-Mar-17 A	04-Mar-17 A
01109.PDB11831A33	Excavation for S3 Installation at GL B1 to B5	100%	06-Mar-17 A	09-Mar-17 A
01109.PDB11831A43	S3 Installation at GL B1 to B5	100%	10-Mar-17 A	16-Mar-17 A
01109.PDB11831A62	Capping plate installation (20 nos, 5/day)	100%	17-Mar-17 A	18-Mar-17 A
01109.PDB11831A34	Excavation to FEL at GL B1 to B5	100%	20-Mar-17 A	23-Mar-17 A
Entrance B & Adit B - Concrete Structural Works				
Portion 1a				
01109.PDB13470A10	Concrete Structure GL B1.5 to B3 - Base slab construction - Single side formowrk	100%	18-Mar-17 A	20-Mar-17 A
01109.PDB13470A11	Concrete Structure GL B1.5 to B3 - Base slab construction - Waterproofing	100%	23-Mar-17 A	24-Mar-17 A
01109.PDB13470A12	Concrete Structure GL B1.5 to B3 - Base slab construction - Rebar fixing	0%	25-Mar-17 A	03-Apr-17
01109.PDB13480A10	Concrete Structure GL B3 to B4.5 - Base slab construction - Single side formwork	0%	29-Mar-17*	01-Apr-17
01109.PDB13480A20	Concrete Structure GL B3 to B4.5 - Base slab construction - Waterproofing	0%	03-Apr-17	03-Apr-17
01109.PDB13470A13	Concrete Structure GL B1.5 to B3 - Base slab construction - C.J. & kicker formwork	0%	04-Apr-17	06-Apr-17
01109.PDB13480A30	Concrete Structure GL B3 to B4.5 - Base slab construction - Rebar fixing	0%	04-Apr-17	12-Apr-17
01109.PDB13470A14	Concrete Structure GL B1.5 to B3 - Base slab construction - Concreting	0%	07-Apr-17	07-Apr-17
01109.PDB13471A	Concrete Structure GL B1.5 to B3, Wall	0%	08-Apr-17	24-Apr-17
01109.PDB13480A40	Concrete Structure GL B3 to B4.5 - Base slab construction - C.J. & kicker	0%	13-Apr-17	13-Apr-17
01109.PDB13480A50	Concrete Structure GL B3 to B4.5 - Base slab construction - Concreting	0%	18-Apr-17	18-Apr-17
01109.PDB13481A	Concrete Structure GL B3 to B4.5, Wall	0%	19-Apr-17	02-May-17
Portion 3				
01109.PDB13330A-14	Area 1 remaining (GL 19 - 21) - Sump pit construction (Upper slab) - Kicker formwork	100%	23-Feb-17 A	27-Feb-17 A
01109.PDB13330A-15	Area 1 remaining (GL 19 - 21) - Sump pit construction (Upper slab) - Concreting	100%	28-Feb-17 A	28-Feb-17 A
01109.PDB13330A-16	Area 1 remaining (GL 19 - 21) - Base slab construction	100%	01-Mar-17 A	15-Mar-17 A
01109.PDB13330A-17	Area 1 remaining (GL 19 - 21) - Wall construction	0%	16-Mar-17 A	13-Apr-17
01109.PDB13330A-28	GL B21-B23 - Roof Slab	0%	31-Mar-17*	11-Apr-17
01109.PDB13330A-18	Area 1 remaining (GL 19 - 21) - Plenum slab	0%	18-Apr-17	02-May-17
01109.PDB13330A-19	Area 1 remaining (GL 19 - 21) - Roof slab	0%	03-May-17	24-May-17
Entrance B & Adit B - ABWF & E&M Works, Degree 1				
Entrance B & Adit B - ABWF				
01109.PDB13521	For 4K Deg 1 handover, prepare SUW Adits B incl Ent, all rooms and vent shafts at Adit B (6 Aug 2017)	0%	19-May-17	28-Sep-17
CC-C - TKW STATION, ENTRANCES AND ADITS				
TKW Station				
Station - C&S Works (Upper Platform Level)				



Activity ID	Activity Name	Physical % Complete	Start	Finish
Upper Track OTE- GL 1 to 23				
Slabs				
01109.PDC27180A10	Completion of Upper Track Platform next to Trackway	80%	03-Nov-16 A	13-Apr-17
01109.PDC27180A30	Completion of Mass Concrete Walkway, Platform Side	95%	10-Nov-16 A	01-Apr-17
01109.PDC27180A70	Formwork, Rebar and Casting for OTE Slab Construction	95%	26-Nov-16 A	28-Mar-17
Station - C&S Works (Lower Platform Level)				
Lower Track Platform Works				
01109.PDC20370-2A10	Sump Pit Excavation	100%	01-Feb-17 A	18-Mar-17 A
Lower Track Mezzanine & OTE Duct Works				
Lower Track OTE Slabs				
01109.PDC27190A20	Completion of Mass Concrete Walkway, D Wall Side	81%	13-Dec-16 A	08-Apr-17
01109.PDC27190A10	Completion of Lower Track Platform next to Trackway	88%	05-Jan-17 A	13-Apr-17
01109.PDC27190A40	Completion of erection of supporting post on Walkway for OTE Construction	50%	18-Jan-17 A	21-Apr-17
01109.PDC27190A60	Falsework on supporting beam for OTE Construction	33%	18-Jan-17 A	02-May-17
01109.PDC20180A40	Tunnel collar/GL28	100%	02-Feb-17 A	01-Mar-17 A
01109.PDC20180A50	Tunnel collar/GL1	100%	06-Feb-17 A	11-Mar-17 A
01109.PDC27190A50	Completion of erectin of supporting beam on Walkway for OTE Construction	33%	13-Feb-17 A	26-Apr-17
01109.PDC27190A30	Completion of Mass Concrete Walkway, Platform Side	41%	16-Feb-17 A	13-Apr-17
01109.PDC27190A70	Formwork for OTE Slab Construction	33%	20-Feb-17 A	08-May-17
01109.PDC27190A80	Rebar for OTE Slab Construction	10%	22-Feb-17 A	12-May-17
01109.PDC27190A90	Casting for OTE Slab Construction	0%	21-Apr-17	12-May-17
Moling hole reinstatement				
Moling Hole Ent D A3				
01109.PDC27560-3A31	TKW Ent D Opening A3 closing at Upper Track Level	0%	03-May-17*	15-May-17
01109.PDC27560-3A21	TKW Ent D Opening A3 closing at Concourse Level	0%	10-Jun-17*	15-Jun-17
Moling Hole 1				
01109.PDC27560-3A10	TKW Opening 1 closing at Roof Level	0%	27-Mar-17*	31-Mar-17
Moling Hole 2				
01109.PDC27560A10	TKW Opening 2 closing at Roof Level	0%	27-Mar-17*	08-Apr-17
01109.PDC27560A30	Construction of TKW Stair Case at Opening 2 below Upper Track Level	0%	10-Apr-17	15-May-17
01109.PDC27560A20	Construction of TKW Stair Case at Opening 2 at Concourse Level	0%	26-May-17	30-Jun-17
Moling Hole 3				
01109.PDC27780A30	Construction of TKW Stair Case at Opening 3 at Upper Track Level	0%	05-May-17*	10-Jun-17
01109.PDC27780A20	Construction of TKW Stair Case at Opening 3 at Concourse Level	0%	12-Jun-17	30-Jun-17



Activity ID	Activity Name	Physical % Complete	Start	Finish
Moling Hole 4				
01109.PDC27790A30	Construction of TKW Stair Case at Opening 4 at Upper Track Level	0%	05-May-17*	10-Jun-17
01109.PDC27790A20	Construction of TKW Stair Case at Opening 4 at Concourse Level	0%	12-Jun-17	30-Jun-17
Moling Hole 5				
01109.PDC27800A30	Construction of TKW Stair Case at Opening 5 below Upper Track Level	0%	11-May-17*	15-Jun-17
01109.PDC27800A20	Construction of TKW Stair Case at Opening 5 at Concourse Level	0%	16-Jun-17	15-Jul-17
Moling Hole 6				
01109.PDC27810A30	Construction of TKW Stair Case at Opening 6 below Upper Track Level	0%	05-May-17	10-Jun-17
01109.PDC27810A20	Construction of TKW Stair Case at Opening 6 at Concourse Level	0%	12-Jun-17	30-Jun-17
Moling Hole 7				
01109.PDC27820A30	Construction of TKW Stair Case at Opening 7 below Upper Track Level	0%	27-Mar-17	13-Apr-17
01109.PDC27820A10	TKW Opening 7 closing at Roof Level	0%	31-Mar-17	13-Apr-17
01109.PDC27820A20	Construction of TKW Stair Case at Opening 7 at Concourse Level	0%	18-Apr-17	29-Apr-17
Station - ABWF Works (Concourse Level and Above)				
01109.PDC27990-11A10	Ceiling Bracket Installation (GL 6-14)	100%	15-Nov-16 A	07-Mar-17 A
01109.PDC27990-11A	Deg 3 - ABWF Works in CLP Room (Metal Works)	100%	22-Dec-16 A	11-Mar-17 A
01109.PDC27990-12A	Deg 1 - Aluminum Wall Panel Bracket Installation at Grid A	0%	27-Mar-17	26-Apr-17
Station - ABWF Works (Upper Platform Level)				
01109.PDC28001A	Deg 1 - I Beam installation at track area (BOH)	50%	09-Mar-17 A	08-Apr-17
01109.PDC28000A	Deg 1 - Screeding Works at GL12-14, 16.5-17.5 & 20-21 (BOH)	0%	19-Apr-17	04-May-17
Entrance A & Vent Shaft A				
Vent Shaft A				
Civil & Structure				
01109.PDC27430-3A70	1st Cutting Dwall and connection	50%	09-Jan-17 A	05-May-17
01109.PDC27430-4A20	Vent Shaft A - Concourse Slab Concrete (GL 16.5-17.5, 2nd pour)	0%	01-Feb-17 A	10-Apr-17
01109.PDC27430-3A60	Internal wall construction (-6.03 to +0.45) / 16.5-17.5	0%	01-Feb-17 A	10-Apr-17
01109.PDC27430-3A90	Installation of reprop at vent riser wall (GL16.5~17.5)	0%	11-Apr-17	24-Apr-17
01109.PDC27430-3A81	Dismantle S3	0%	08-May-17	17-May-17
01109.PDC27430-3A80	2nd Cutting Dwall and connection	0%	17-May-17	31-May-17
Entrance A				
Civil & Structure				
01109.PDC22646A10	Cutting Dwall and connection Portion 1,2,3,4	100%	09-Dec-16 A	04-Mar-17 A
01109.PDC22643A10	Form work, rebar fixing and for internal wall	90%	09-Dec-16 A	01-Apr-17
01109.PDC22646A20	Cutting Dwall and connection Portion 5,6,7,8	40%	17-Jan-17 A	13-Apr-17



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

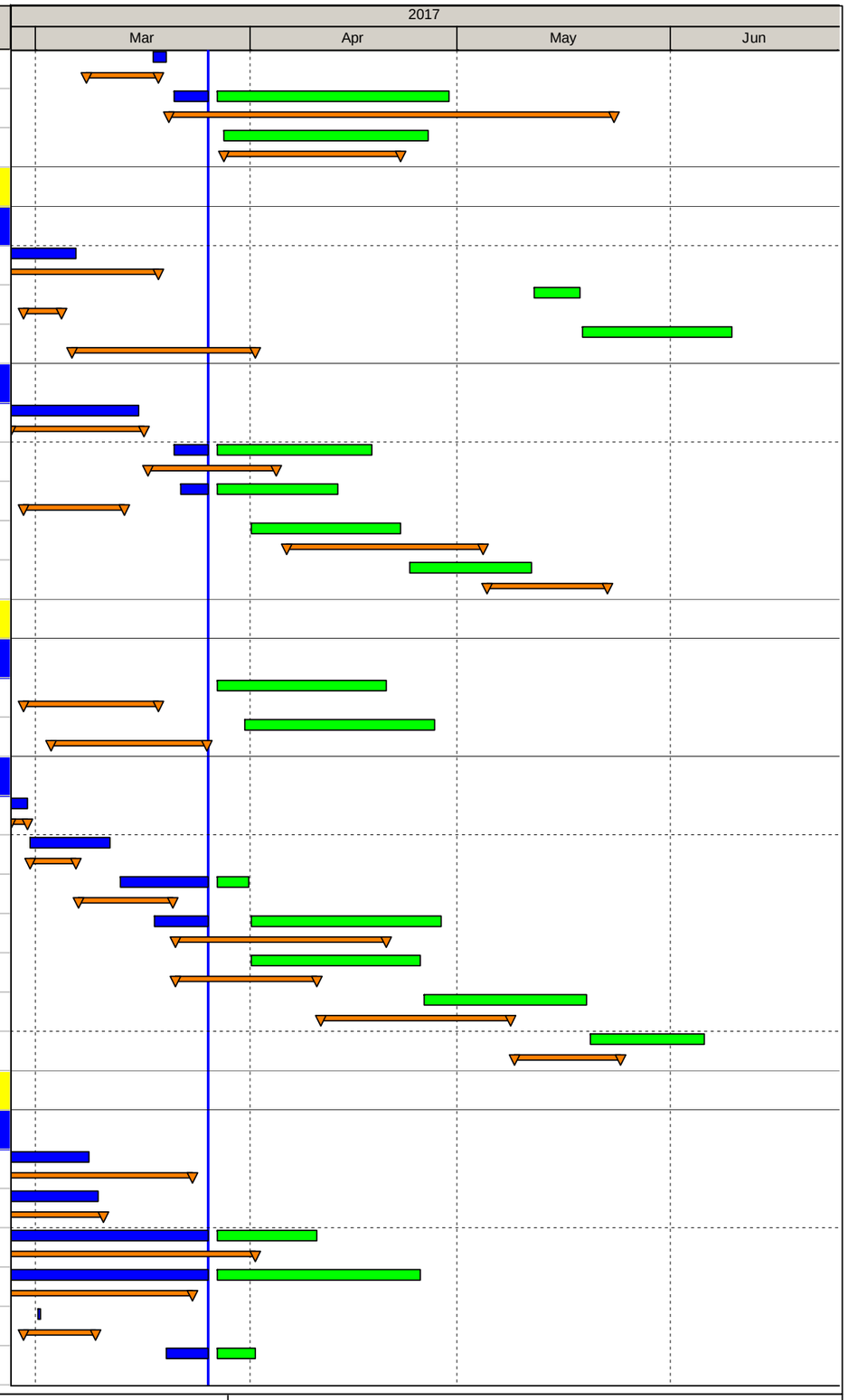
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Mar 17 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

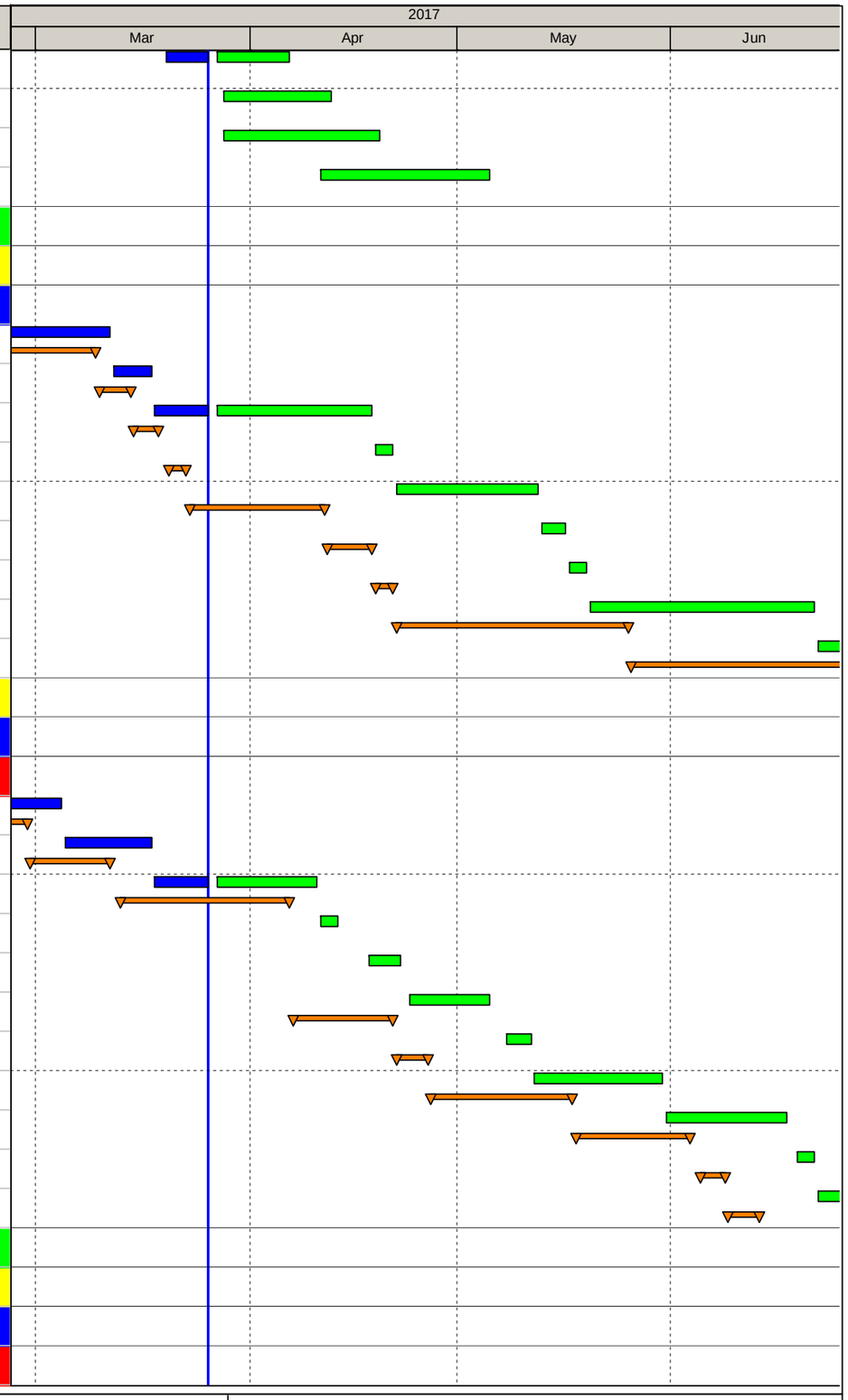
Printed:06-Apr-17

Actual Work
Remaining Work
Master Programme Rev.2
Last Month Update
Milestone
MP Rev.2 Milestone
Last Month Milestone

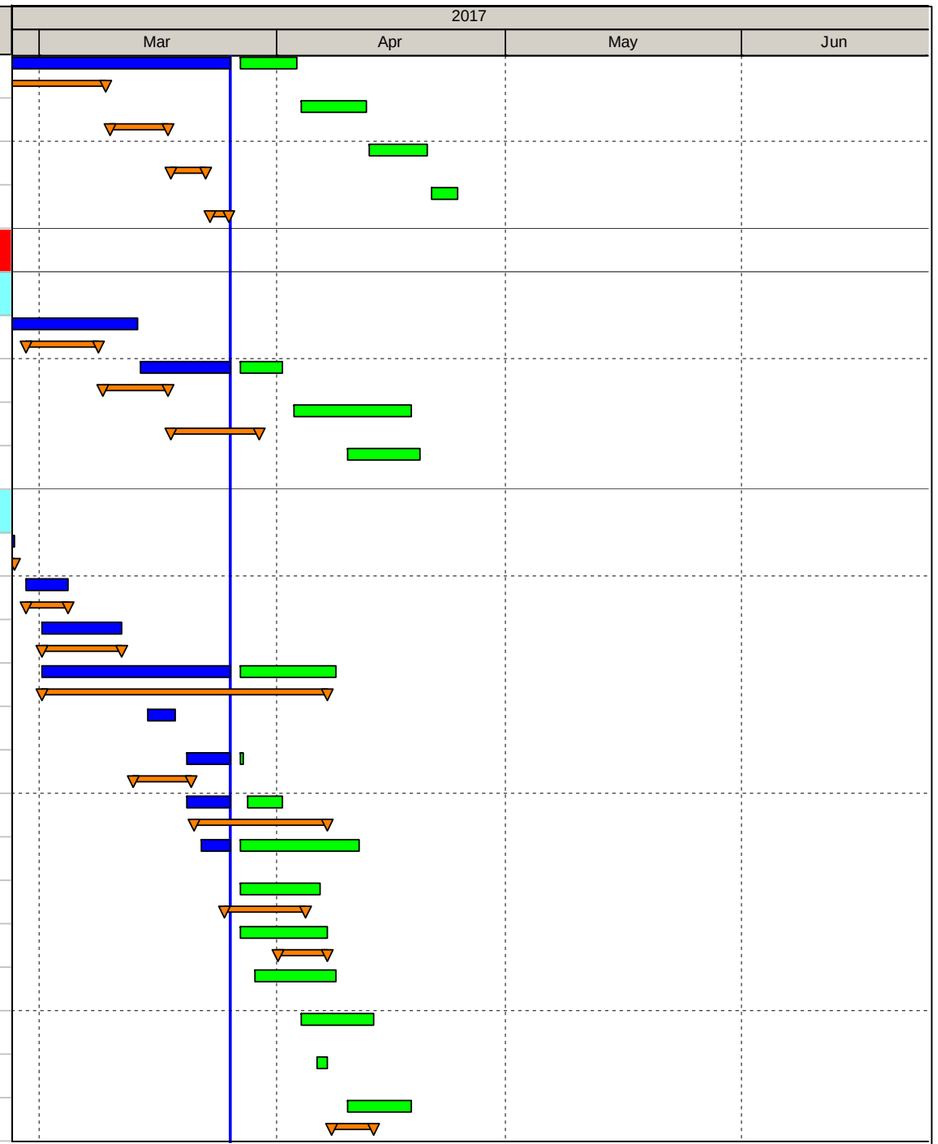
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC22644A	Ent A - Remove S5 (partial)	100%	18-Mar-17 A	20-Mar-17 A
01109.PDC22645A	Ent A - Internal Wall after S5 removal (+7.82MPD to +17.2mPD)	0%	21-Mar-17 A	29-Apr-17
01109.PDC22642A10	Ent A - Erect Tower Crane	0%	28-Mar-17	26-Apr-17
Entrance B				
Entrance B (Part A)				
01109.PDC16290-5A20	Ent B - Base slab and P wall construction (+11.95 to 14.13)	100%	05-Jan-17 A	06-Mar-17 A
01109.PDC16290-5A30	Ent B - Decking Removal and Strut S1	0%	12-May-17	18-May-17
01109.PDC16290-5A40	Ent B - Roof Slab and P wall construction (+14.189mPD)	0%	19-May-17	09-Jun-17
Entrance B (Part B)				
01109.PDC22750A	Ent B - S4 removal and wall construction below S3	100%	25-Feb-17 A	16-Mar-17 A
01109.PDC22750A10	Ent B - S3 removal and wall construction below S2	0%	21-Mar-17 A	18-Apr-17
01109.PDC22780-1A	Ent B - 1st Dwall cutting	0%	22-Mar-17 A	13-Apr-17
01109.PDC22760	Ent B - Roof slab Concrete	0%	01-Apr-17	22-Apr-17
01109.PDC22770	Ent B - Waterproof / Backfill	0%	24-Apr-17	11-May-17
Entrance C				
Entrance C (Part A)				
01109.PDC12210-20A-2	Roof and Wall Structure (GL A2 - C3/ +9 to 12.57mPD)	0%	27-Mar-17	20-Apr-17
01109.PDC12210-40A10	Structure Works (GL C3 - C5)	0%	31-Mar-17	27-Apr-17
Entrance C (Part B)				
01109.PDC22800A50	Excavation to formation level	100%	25-Feb-17 A	27-Feb-17 A
01109.PDC22810	Ent C - Lean concrete / Waterproof	100%	28-Feb-17 A	11-Mar-17 A
01109.PDC22820A	Ent C - Base Slab and Wall Structure to S4 & ELS Removal	70%	13-Mar-17 A	31-Mar-17
01109.PDC22860A	Ent C - Dwall Breakthrough	10%	18-Mar-17 A	28-Apr-17
01109.PDC22830A	Ent C - Wall Structure to S3 & ELS Removal	0%	01-Apr-17	25-Apr-17
01109.PDC22840A10	Ent C - Roof and Wall Structure to S2 & ELS Removal	0%	26-Apr-17	19-May-17
01109.PDC22840A	Ent C - Roof and Wall Structure to S1 & ELS Removal	0%	20-May-17	05-Jun-17
Entrance D & Vent Shaft				
Entrance D (Bottom Up)				
01109.PDC22930-5A	Ent D - Area A2-2 (1E to 1D/D-F) Wall & Slab at Ground Level	100%	08-Feb-17 A	08-Mar-17 A
01109.PDC22930-6A10	Ent D - Trimming D-Wall (Next to Mezzanine slab A3)	100%	09-Feb-17 A	10-Mar-17 A
01109.PDC22930-4A	Ent D - Area A1 Internal Structure & ELS Removal (-3.5mPD to +6.5mPD)	90%	09-Feb-17 A	10-Apr-17
01109.PDC22930-3A	Ent D - Area A2 Mezzanine Level Internal Structure	30%	13-Feb-17 A	25-Apr-17
01109.PDC22930-1A40	Ent D - Removal of S1 at A2 Area (Remaining 1 no.)	100%	01-Mar-17 A	01-Mar-17 A
01109.PDC22930-7A	Ent D - Area A2-2 slab at -4.05mPD (GL 1E-1C/D-E)	100%	20-Mar-17 A	01-Apr-17



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC22930-8A	Ent D - Area A2-2 slab at -6.05mPD (GL 1E-1C/D-E)	100%	20-Mar-17 A	06-Apr-17
01109.PDC22930-9A	Ent D - Area A2-2 slab at -6.05mPD (GL 1B/E-F)	0%	28-Mar-17*	12-Apr-17
01109.PDC22930-9A10	Ent D - Area A2-2 slab at +8.55mPD (GL 1C/D-F)	0%	28-Mar-17*	19-Apr-17
01109.PDC22930-4A10	Ent D - Area A1 Internal Structure (-5.5mPD to +10.0mPD)	0%	11-Apr-17	05-May-17
CC-D - BORED TUNNELS FROM SUW STATION TO HOM STATION				
EEP (EI No.52)				
EI 52 - EEP Shaft Structure (Revised)				
01109.PDDEI52033A-10	Cast Permanent EEP Structure below upper Adit (Pour 1 of 4)	100%	22-Feb-17 A	11-Mar-17 A
01109.PDDEI52033A-20	Cast Permanent EEP Structure below upper Adit (Pour 2 of 4)	100%	12-Mar-17 A	17-Mar-17 A
01109.PDDEI52033A-30	Cast Permanent EEP Structure below upper Adit (Pour 3 of 4)	0%	18-Mar-17 A	18-Apr-17
01109.PDDEI52033A-40	Cast Permanent EEP Structure below upper Adit (Pour 4 of 4)	0%	19-Apr-17	21-Apr-17
01109.PDDEI52036A-10	Cast Permanent EEP Structure above upper Adit (Pour 1 of 3), Pour 5	0%	22-Apr-17	12-May-17
01109.PDDEI52036A-20	Cast Permanent EEP Structure above upper Adit (Pour 2 of 3), Pour 6	0%	13-May-17	16-May-17
01109.PDDEI52036A-30	Cast Permanent EEP Structure above upper Adit (Pour 3 of 3), Pour 7	0%	17-May-17	19-May-17
01109.PDDEI52030A-10	Upper Adit excavation & Break concrete ringwalls	0%	20-May-17	21-Jun-17
01109.PDDEI52030A-20	Works for Adit Base	0%	22-Jun-17	29-Jul-17
To Kwa Wan Ancillary Building				
C&S Works (Below Ground Level)				
TKA Shaft Structure (Revised)				
01109.PDD3430A-10	Cast Permanent TKA Structure upto -22.153 mPD	100%	13-Feb-17 A	04-Mar-17 A
01109.PDD3430A-20	Cast Permanent TKA Structure upto -19.538 mPD	100%	05-Mar-17 A	17-Mar-17 A
01109.PDD3430A-21	UT Adit Drill Hole	0%	18-Mar-17 A	10-Apr-17
01109.PDD3430A-22	Drainage pipes installation	0%	11-Apr-17	13-Apr-17
01109.PDD3430A-23	Scaffold erection	0%	18-Apr-17	22-Apr-17
01109.PDD3430A-30	Cast Permanent TKA Structure upto -16.923 mPD	0%	24-Apr-17	05-May-17
01109.PDD3430A-40	Cast Permanent TKA Structure upto -14.380 mPD	0%	08-May-17	11-May-17
01109.PDD3430A-50	Cast Permanent TKA Structure upto -11.662 mPD	0%	12-May-17	30-May-17
01109.PDD3430A-60	Cast Permanent TKA Structure upto -9.571 mPD (last 7.234m dia pour)	0%	31-May-17	17-Jun-17
01109.PDD3430A-70	Cast Permanent TKA Structure upto -9.016 mPD	0%	19-Jun-17	21-Jun-17
01109.PDD3430A-80	Cast Permanent TKA Structure upto -6.37 mPD	0%	22-Jun-17	26-Jun-17
CC-E - REPROVISIONING, REMEDIAL AND IMPROVEMENT WORKS (RRIW)				
General C& S Works				
C&S Works for Subways KS33 & KS34				
KS33				



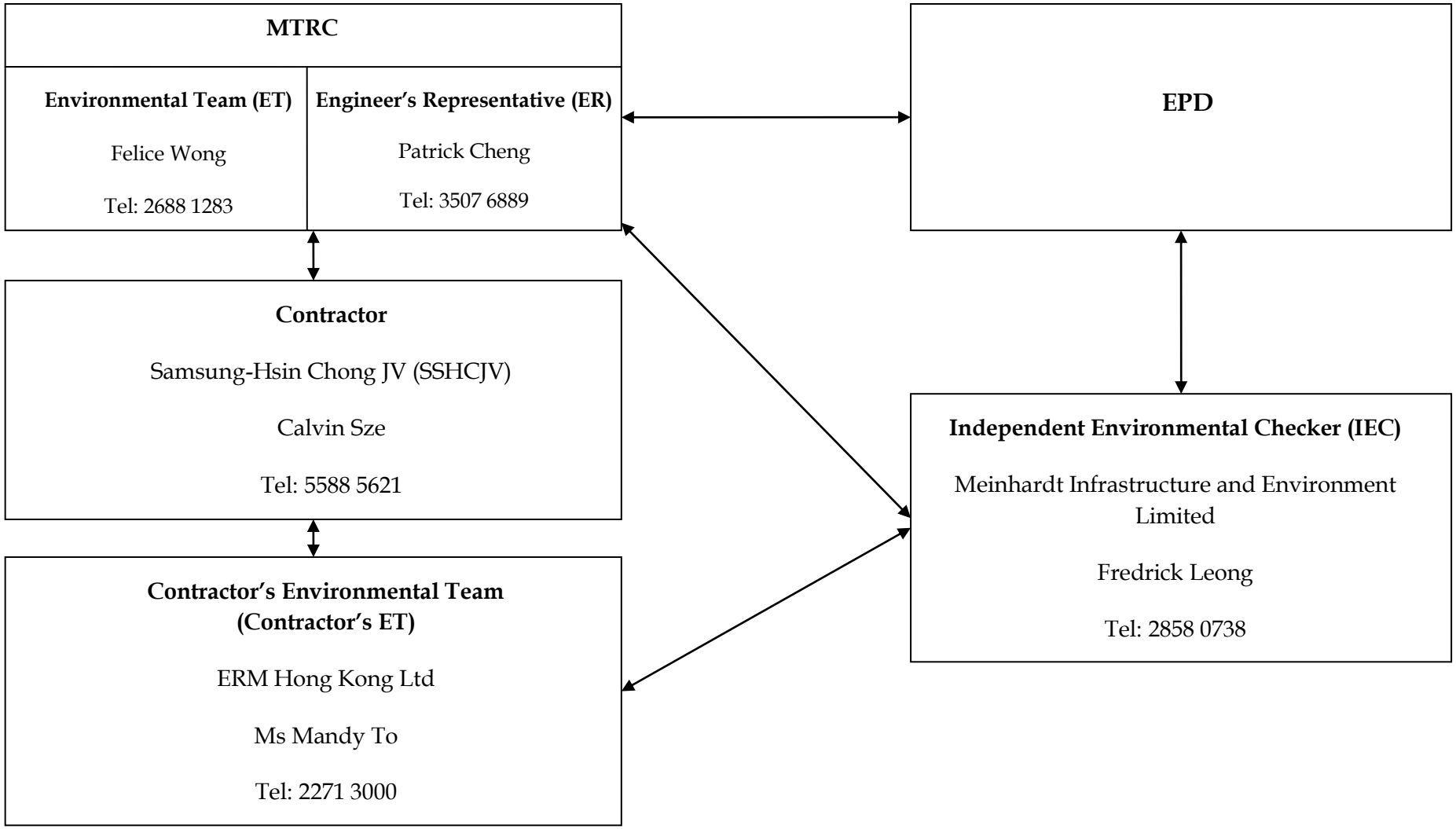
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDE1050-320A40	Lift installation at KS33 (LT08) - Low speed test	0%	22-Feb-17 A	03-Apr-17
01109.PDE1050-320A50	Lift installation at KS33 (LT08) - High speed test	0%	04-Apr-17	12-Apr-17
01109.PDE1050-320A35	Lift installation at KS33 (LT08) - CCTV system & supervisory panel installation	0%	13-Apr-17	20-Apr-17
01109.PDE1050-320A33	Lift installation at KS33 (LT08) - Push button box fixing and hall indicator installation	0%	21-Apr-17	24-Apr-17
KS34				
KS34-Civil				
01109.PDE1050-400A60	KS34 - Lift shaft & sump pit cover (up to +6.90)	100%	16-Feb-17 A	13-Mar-17 A
01109.PDE1050-400A70	KS34 - Lift shaft wall (up to +8.50)	0%	14-Mar-17 A	01-Apr-17
01109.PDE1050-400A80	KS34 - Lift shaft wall (up to roof slab soffit)	0%	03-Apr-17	18-Apr-17
01109.PDE1050-400A90	KS34 - Electrical Cabinet (up to Ground Level)	0%	10-Apr-17*	19-Apr-17
KS34-ABWF				
01109.PDE1050-410A21	Canopy Steel Frame Installation	100%	18-Feb-17 A	25-Feb-17 A
01109.PDE1050-410A22	Tesing of Canopy Steel Frame	100%	27-Feb-17 A	04-Mar-17 A
01109.PDE1050-410A32	Internal Wall Plastering	100%	01-Mar-17 A	11-Mar-17 A
01109.PDE1050-410A30	KS34 ABWF and Final Finishing for TTMS	0%	01-Mar-17 A	08-Apr-17
01109.PDE1050-410A36	Removal of Existing Ceiling included Plastering	100%	15-Mar-17 A	18-Mar-17 A
01109.PDE1050-410A33	Internal Ceiling Plastering	100%	20-Mar-17 A	27-Mar-17
01109.PDE1050-410A34	- Internal Wall Tile Installation	0%	20-Mar-17 A	01-Apr-17
01109.PDE1050-410A23	Seamless Roof Installation	0%	22-Mar-17 A	11-Apr-17
01109.PDE1050-410A31	Glass Balustrade Frame Installation	0%	27-Mar-17*	06-Apr-17
01109.PDE1050-410A35	- Floor Screeding & Tile Installation	0%	27-Mar-17	07-Apr-17
01109.PDE1050-410A37	- Floor Tile Installation at Staircase	0%	29-Mar-17*	08-Apr-17
01109.PDE1050-410A25	Glass Balustrade Frame Installation	0%	04-Apr-17*	13-Apr-17
01109.PDE1050-410A24	Glass Roof Installation	0%	06-Apr-17*	07-Apr-17
01109.PDE1050-410A40	TTMS - KS34 (Half Closure)	0%	10-Apr-17	18-Apr-17



Annex C

Project Organization Chart and Contact Detail

Annex C *Project Organization of SCL Works Contract 1109*



Annex D

Locations of Noise and Dust Monitoring Stations

NMS-CA-6

TKW

NMS-CA-7

NMS-CA-8

MTW

NMS-CA-9

NMS-CA-10

N

Meters

0 100 200

Key

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

Annex D1

Location of Regular Construction Noise Monitoring Stations

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

Environmental Resources Management

ERM

DMS-6

TKW

DMS-7

DMS-8

DMS-9

MTW

DMS-10

N

Meters

0 100 200

Key

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

Annex D2

Location of Dust Monitoring Stations

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

Environmental Resources Management

ERM

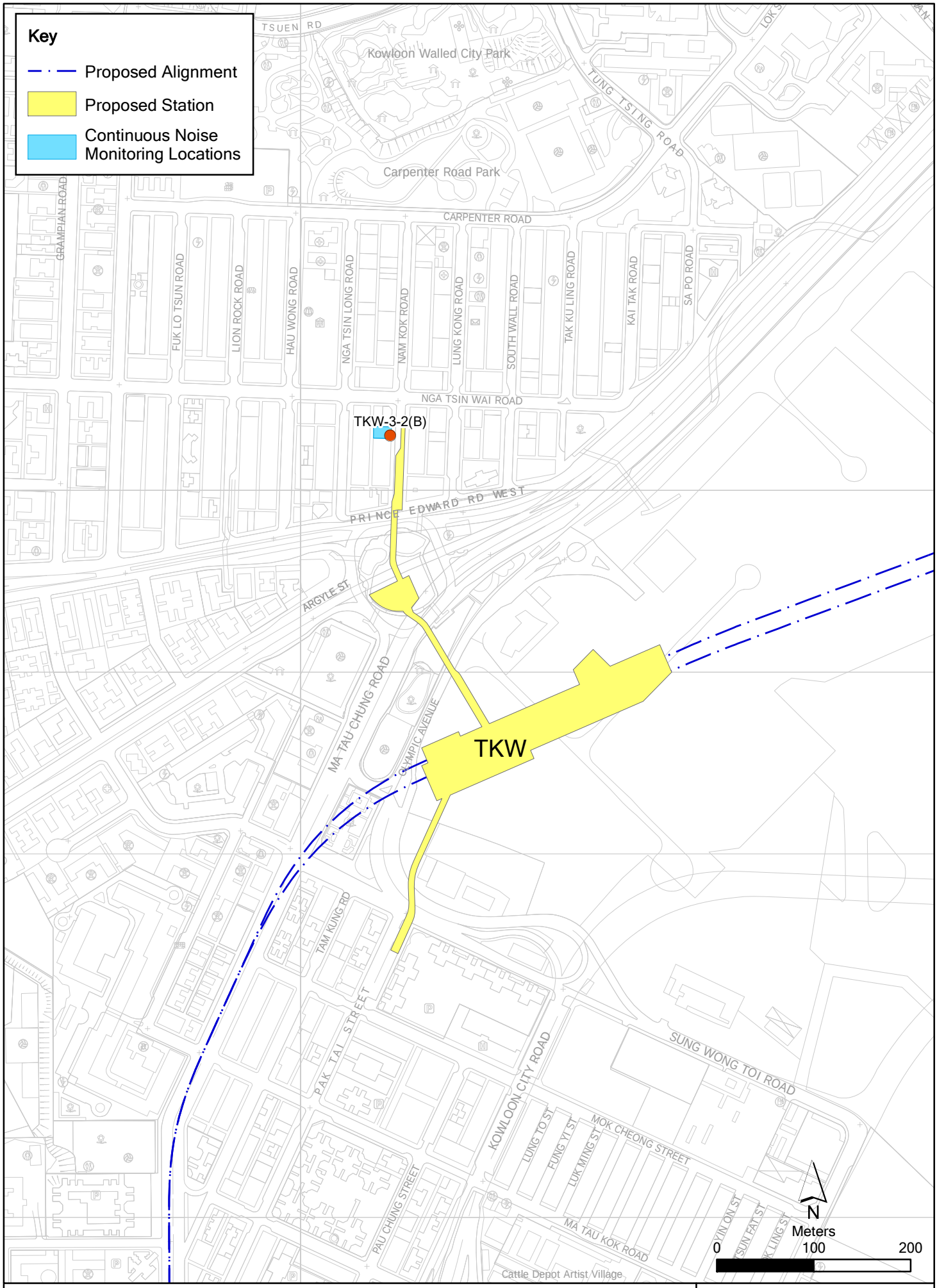


Figure 2.2a

Continuous Noise Monitoring Locations

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

Environmental Resources Management

ERM

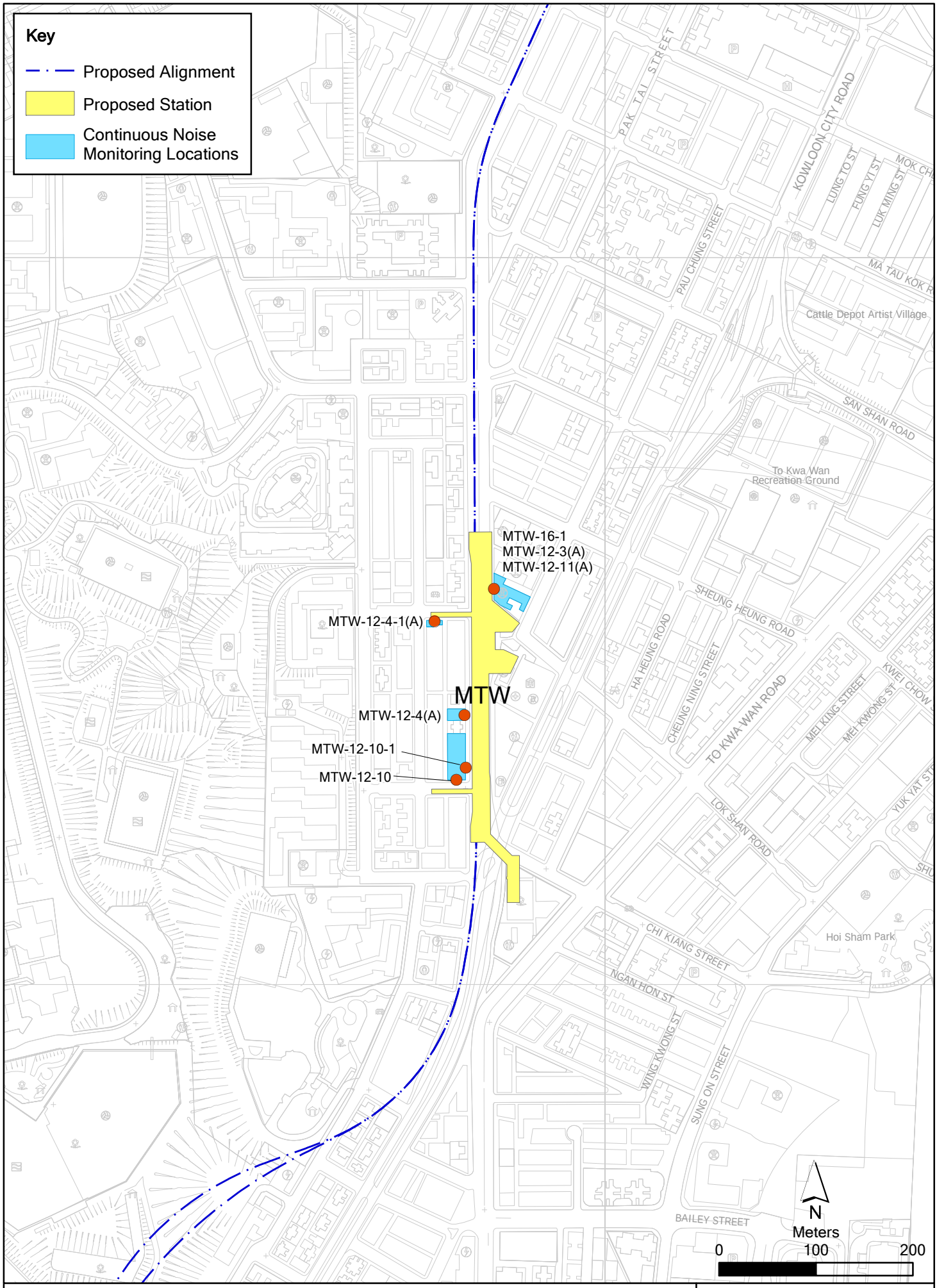


Figure 2.2b

Continuous Noise Monitoring Locations

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

Environmental Resources Management

ERM

Annex E

Monitoring Schedule of the Reporting Period and the Next Month

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

Noise Monitoring Stations:
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10
Monitoring Month : March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			01-Mar	02-Mar	03-Mar	04-Mar
			Noise Monitoring			
05-Mar	06-Mar	07-Mar	08-Mar	09-Mar	10-Mar	11-Mar
		Noise Monitoring				
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
	Noise Monitoring					
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
				Noise Monitoring		
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
			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 : April 2017

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

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: March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			01-Mar	02-Mar	03-Mar	04-Mar
			24-hr TSP Monitoring			
05-Mar	06-Mar	07-Mar	08-Mar	09-Mar	10-Mar	11-Mar
		24-hr TSP Monitoring				
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
	24-hr TSP Monitoring				24-hr TSP Monitoring	
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
				24-hr TSP Monitoring		
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
			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: April 2017

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

Annex F

Calibration Reports

Annex F Calibration Reports

Dust Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr TSP		**HVS**	**Calibrator**		
DMS-6	Katherine Building	TE-5170 (S/N 0107)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2016	5 May 2017
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2016	5 May 2017
DMS-8	SKH Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2016	5 May 2017
DMS-9	No. 12 Pau Chung Street	TE-5170 (S/N 0814)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2016	5 May 2017
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2016	5 May 2017

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 10997142)	15 June 2016	15 June 2017
	Sound Level Meter	Rion NL-18 (S/N 00360030)	29 July 2016	29 July 2017

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-6(Katherine Building)
Calibrated by	:	K.T.Ho
Date	:	05/11/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1019
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.554	1.722	52	52.07
2	13 holes	9.6	3.102	1.507	46	46.06
3	10 holes	7.4	2.724	1.327	39	39.05
4	7 holes	4.4	2.100	1.030	30	30.04
5	5 holes	2.8	1.675	0.828	24	24.03

Sampler Calibration Relationship (Linear Regression)

Slope(m):31.816 Intercept(b): -2.566 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 10/11/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-7(Parc 22)
Calibrated by	:	K.T.Ho
Date	:	05/11/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1019
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.497	1.695	63	63.08
2	13 holes	9.6	3.102	1.507	56	56.07
3	10 holes	6.6	2.572	1.255	48	48.06
4	7 holes	4.6	2.148	1.053	41	41.05
5	5 holes	2.8	1.675	0.828	34	34.04

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.403 Intercept(b):6.122 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 10/11/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-8(SHK Good Shepherd Primary School)
Calibrated by	:	K.T.Ho
Date	:	05/11/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1019
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.2	3.351	1.625	64	64.08
2	13 holes	8.8	2.970	1.444	56	56.07
3	10 holes	6.8	2.611	1.273	49	49.06
4	7 holes	4.8	2.194	1.075	40	40.05
5	5 holes	3.0	1.734	0.856	30	30.04

Sampler Calibration Relationship (Linear Regression)

Slope(m):44.155 Intercept(b): -7.541 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 10/11/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-9(No. 12 Pau Chung Street)
Calibrated by	:	K.T.Ho
Date	:	05/11/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1019
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.526	1.708	67	67.09
2	13 holes	9.8	3.134	1.522	58	58.07
3	10 holes	7.6	2.760	1.344	51	51.07
4	7 holes	4.6	2.148	1.053	40	40.05
5	5 holes	2.8	1.675	0.828	30	30.04

Sampler Calibration Relationship (Linear Regression)

Slope(m):41.227 Intercept(b): -3.989 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 10/11/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-10(Chat Ma Mansion)
Calibrated by	:	K.T.Ho
Date	:	05/11/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1019
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.410	1.653	60	60.08
2	13 holes	9.4	3.070	1.491	54	54.07
3	10 holes	7.2	2.687	1.309	48	48.06
4	7 holes	4.6	2.148	1.053	40	40.05
5	5 holes	2.0	1.416	0.705	29	29.04

Sampler Calibration Relationship (Linear Regression)

Slope(m):32.457 Intercept(b): 5.936 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 10/11/2016

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4020	3.2	2.00
2	NA	NA	1.00	1.0060	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8590	8.8	5.50
5	NA	NA	1.00	0.7090	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9866	0.7037	1.4078
0.9824	0.9765	1.9909
0.9803	1.0880	2.2259
0.9792	1.1399	2.3345
0.9738	1.3735	2.8155

Qstd slope (m) = 2.10326
intercept (b) = -0.06696
coefficient (r) = 0.99989

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

Va	(x axis) Qa	(y axis)
0.9957	0.7102	0.8896
0.9914	0.9855	1.2581
0.9893	1.0980	1.4066
0.9882	1.1504	1.4753
0.9828	1.3862	1.7792

Qa slope (m) = 1.31703
intercept (b) = -0.04232
coefficient (r) = 0.99989

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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. : C163248
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1307) Date of Receipt / 收件日期 : 10 June 2016

Description / 儀器名稱	:	Sound Level Calibrator
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NC-73
Serial No. / 編號	:	10997142
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 June 2016

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, Project Engineer

Date of Issue 簽發日期 : 17 June 2016

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
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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. : C163248
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	C153519
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	93.7	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.985	1 kHz ± 2 %	± 1

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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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. : C164166
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1465) Date of Receipt / 收件日期 : 20 July 2016

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

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 29 July 2016

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, Project Engineer

Date of Issue 簽發日期 : 1 August 2016

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 – 校正及檢測實驗所
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Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

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

2. Self-calibration was performed before the test.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.4	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	A	Fast	94.00	1	94.4 (Ref.)
				104.00		104.4
				114.00		114.4

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

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.4	Ref.
			Slow			94.4	± 0.1

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Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.1	-1.0 ± 1.0
	LA		Slow		Continuous	106.0	Ref.
	LAmx				500 ms	102.4	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LA	A	Fast	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.6	-8.6 ± 1.0
					500 Hz	91.1	-3.2 ± 1.0
					1 kHz	94.4	Ref.
					2 kHz	95.7	+1.2 ± 1.0
					4 kHz	95.5	+1.0 ± 1.0
					8 kHz	93.3	-1.1 (+1.5 ; -3.0)
					12.5 kHz	90.1	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LC	C	Fast	94.00	31.5 Hz	91.3	-3.0 ± 1.5
					63 Hz	93.5	-0.8 ± 1.5
					125 Hz	94.2	-0.2 ± 1.0
					250 Hz	94.4	0.0 ± 1.0
					500 Hz	94.5	0.0 ± 1.0
					1 kHz	94.4	Ref.
					2 kHz	94.3	-0.2 ± 1.0
					4 kHz	93.6	-0.8 ± 1.0
					8 kHz	91.4	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.1	-6.2 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C164166
證書編號

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
50 - 110	LAeq	A	10 sec.	4	1	1/10	110	100	100.1	± 0.5
						$1/10^2$		90	89.9	± 0.5
			60 sec.			$1/10^3$		80	79.6	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

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

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

- Uncertainties of Applied Value :

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

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

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

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Annex G

Summary of Event/ Action Plans

Annex G1 Event and Action Plan for Regular Construction Noise Monitoring

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

Annex G2 Event and Action Plan for Continuous Noise Monitoring

Event	Action			
	Works Contract 1109 ET	**IEC**	**ER**	**Contractor**
Exceeding Action/Limit Level	1. Identify source 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 6. Assess effectiveness of Contractor's remedial actions and keep IEC and ER informed of the results	1. Check monitoring data submitted by the Works Contract 1109 ET 2. Check the Contractor's working method 3. Discuss with the ER, Works Contract 1109 ET and Contractor on the potential remedial measures 4. Review and advise the Works Contract 1109 ET and ER on the effectiveness of the remedial measures proposed by the Contractor	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor and IEC 3. In consultation with the Works Contract 1109 ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Ensure the proper implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source with Works Contract 1109 ET 2. If exceedance is confirmed, investigate 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 7. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Annex G3 Event and Action Plan for Construction Dust Monitoring

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

Event	Action			
	Contractor's Environmental Team (Contractor's ET)	**Independent Environmental Checker (IEC)**	**Engineer Representative (ER)**	**The Contractor**
Limit Level				
Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Repeat measurement to confirm findings; 3. Increase the monitoring frequency to daily; 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.	1. Check the monitoring data submitted by the ET; 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. Notify the Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise the implementation of remedial measures.	1. Identify reason(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals of remedial measures to ER with a copy to the ET and IEC within three working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify the IEC, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Increase the 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, Contractor and ER to discuss the remedial measures to be taken; 6. Review the effectiveness of the Contractor's remedial measures and keep the IEC, EPD and ER informed of the results; 7. If exceedance stops, the monitoring frequency will return to normal.	1. Check the monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the 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. Notify the Contractor, IEC and ET; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify reason(s) and investigate the causes of exceedance; 2. Take immediate actions to avoid further exceedance; 3. Submit proposals of 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.

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

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

Annex H

Summary of Implementation Status of Environmental Mitigation

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

Note:

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

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
Cultural Heritage Impact							
S4.9	CH3	Submit an Archaeological Action Plan Conduct survey-cum-excavation and additional boreholes/trenches investigation at the Sacred Hill (North) Study Area prior to construction.	Salvage cultural remains at the Sacred Hill (North) Study Area	Contractor	Sacred Hill (North) Area	Prior to the Construction Phase of TKW and associated tunnels	√
Ecology (Construction Phase)							
S5.7	E5	Good Site Practices 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
		The following good site practices should also be implemented: • Erection of temporary geotextile silt or sediment fences/oil traps around earth-moving works to trap sediments and prevent them from entering watercourses; • Avoidance of soil storage against trees or close to water bodies; • 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; • No on-site burning of waste; • Store waste and refuse in appropriate receptacles.					
Landscape & Visual (Construction Phase)							
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing	Minimize visual & landscape impact	Contractor	Within Project Site	Construction Stage	√

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • 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. <u>Protection of Retained Trees</u> • 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. • The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		trees in Contractor's works sites.					
S6.12	LV2	<u>Decorative Hoarding</u> • 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. <u>Management of facilities on work sites</u> • 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). <u>Tree Transplanting</u> • Trees of high to medium survival rates that would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including the final locations for the transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.	Minimize visual & landscape impact	Contractor	Within Project Site	Construction Stage	√
Construction Dust							
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	√

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

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		sheeting to ensure that the dusty materials do not leak from the vehicle; • 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; • 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; • 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; • 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; • Any area that involves demolition activities should be sprayed with water or					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain an entirely wet surface • 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; • Any skip hoist for material transport should be totally enclosed by an impervious sheeting; • 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; • 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; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system;				

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

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

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		where practicable.	the same work site to reduce the construction airborne noise		construction sites where practicable		
S8.3.6	N6	Implement noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	√
Water Quality							
S10.7.1	W1	In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoffs and Site Drainage</u> • 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. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to	To minimise water quality impact from construction site runoffs and general construction activities	Contractor	All construction sites where practicable	Construction stage	√

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
		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. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s, a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the Contractor prior to the commencement of construction. • 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. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		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. • 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. • 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		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. • 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. • All vehicles and plant should be cleaned before leaving a construction site to ensure that no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		silty water to public roads and drains. • 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. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • 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. • 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. • Adopt best management practices					
S10.7.1	W2	<u>Tunnelling Works</u> • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge. • The wastewater with a high concentration	To minimize construction water quality impact from tunnelling works	Contractor	All tunnelling portion	Construction stage	N/A

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

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		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. • If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. total petroleum hydrocarbon (TPH)) to undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM Water and should be discharged into the foul sewers.					

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

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

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

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

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

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		should be considered by the Contractor.					
S11.5.1	WM7	<u>Chemical Waste</u> • 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. • 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. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides. It should also have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest. It should have adequate ventilation and be covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	√

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

Annex I

Regular Noise Monitoring Results

Annex I Regular Noise Monitoring Results

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

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
01-Mar-17	11:02	11:32	Cloudy	63.3	76.1	-(b)	-	Traffic noise	19	0.5	NL-18 00360030	NC-73 10997142
07-Mar-17	11:12	11:42	Cloudy	62.9	76.1	-(b)	-	Traffic noise	18	0.5	NL-18 00360030	NC-73 10997142
13-Mar-17	11:05	11:35	Cloudy	63.2	76.1	-(b)	-	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
23-Mar-17	11:10	11:40	Fine	63.7	76.1	-(b)	-	Traffic noise	20	0.5	NL-18 00360030	NC-73 10997142
29-Mar-17	11:10	11:40	Cloudy	63.2	76.1	-(b)	-	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-7 Skytower Tower 2

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
01-Mar-17	10:10	10:40	Cloudy	65.5	70.0	-(b)	-	Traffic noise	19	0.5	NL-18 00360030	NC-73 10997142
07-Mar-17	10:18	10:48	Cloudy	66.1	70.0	-(b)	-	Traffic noise	18	0.5	NL-18 00360030	NC-73 10997142
13-Mar-17	10:10	10:40	Cloudy	65.6	70.0	-(b)	-	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
23-Mar-17	10:15	10:45	Fine	65.7	70.0	-(b)	-	Traffic noise	20	0.5	NL-18 00360030	NC-73 10997142
29-Mar-17	10:10	10:40	Cloudy	66.0	70.0	-(b)	-	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-8 SKH Good Shepherd Primary School

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
01-Mar-17	8:00	8:30	Cloudy	73.9	75.4	-(b)	Crane operation	Traffic noise	19	0.5	NL-18 00360030	NC-73 10997142
07-Mar-17	8:00	8:30	Cloudy	71.8	75.4	-(b)	Crane operation	Traffic noise	18	0.5	NL-18 00360030	NC-73 10997142
13-Mar-17	8:00	8:30	Cloudy	71.7	75.4	-(b)	Crane operation	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
23-Mar-17	8:00	8:30	Fine	72.2	75.4	-(b)	Crane operation	Traffic noise	20	0.5	NL-18 00360030	NC-73 10997142
29-Mar-17	8:00	8:30	Cloudy	71.7	75.4	-(b)	Crane operation	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-9 Kong Yiu Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
01-Mar-17	9:25	9:55	Cloudy	69.3	69.2	52.9	Crane operation	Traffic noise	19	0.5	NL-18 00360030	NC-73 10997142
07-Mar-17	9:25	9:55	Cloudy	69.1	69.2	-(b)	Crane operation	Traffic noise	18	0.5	NL-18 00360030	NC-73 10997142
13-Mar-17	9:28	9:58	Cloudy	69.0	69.2	-(b)	Crane operation	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
23-Mar-17	9:28	9:58	Fine	68.7	69.2	-(b)	Crane operation, breaker	Traffic noise	20	0.5	NL-18 00360030	NC-73 10997142
29-Mar-17	9:25	9:55	Cloudy	68.8	69.2	-(b)	Crane operation	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

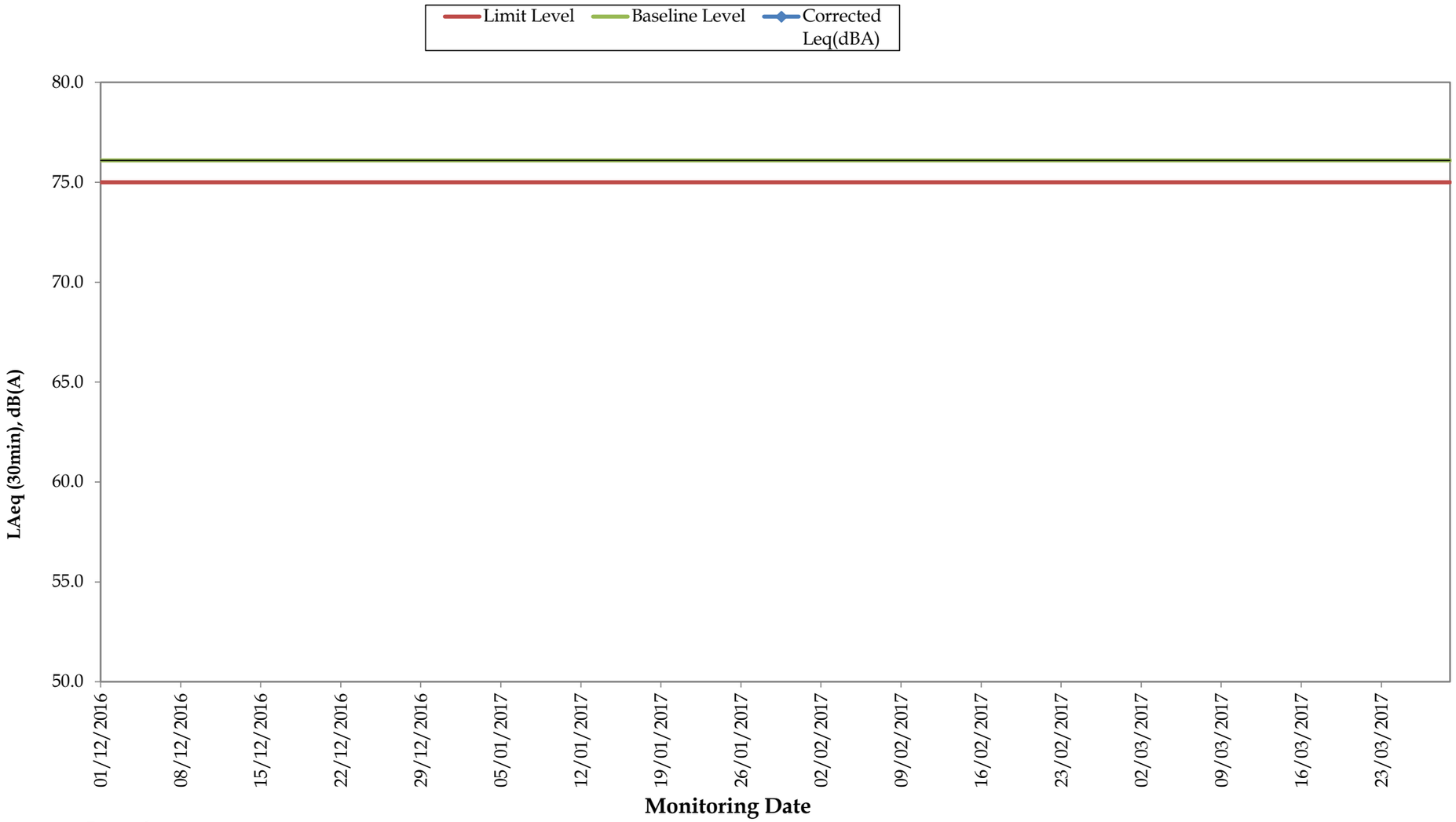
Station NMS-CA-10 Chat Ma Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)[(c)]	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
01-Mar-17	8:42	9:12	Cloudy	76.4	76.6	-(b)	Crane operation	Traffic noise	19	0.5	NL-18 00360030	NC-73 10997142
07-Mar-17	8:42	9:12	Cloudy	76.3	76.6	-(b)	Crane operation	Traffic noise	18	0.5	NL-18 00360030	NC-73 10997142
13-Mar-17	8:42	9:12	Cloudy	76.1	76.6	-(b)	Crane operation	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
23-Mar-17	8:45	9:15	Fine	76.5	76.6	-(b)	Breaker	Traffic noise	20	0.5	NL-18 00360030	NC-73 10997142
29-Mar-17	8:42	9:12	Cloudy	76.1	76.6	-(b)	Crane operation, breaker	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

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 1, 7, 13, 23 and 29 March 2017 are higher than the daytime construction noise criterion. However, those results are not considered as exceedances as they are below the limit level after deducting the baseline noise level.

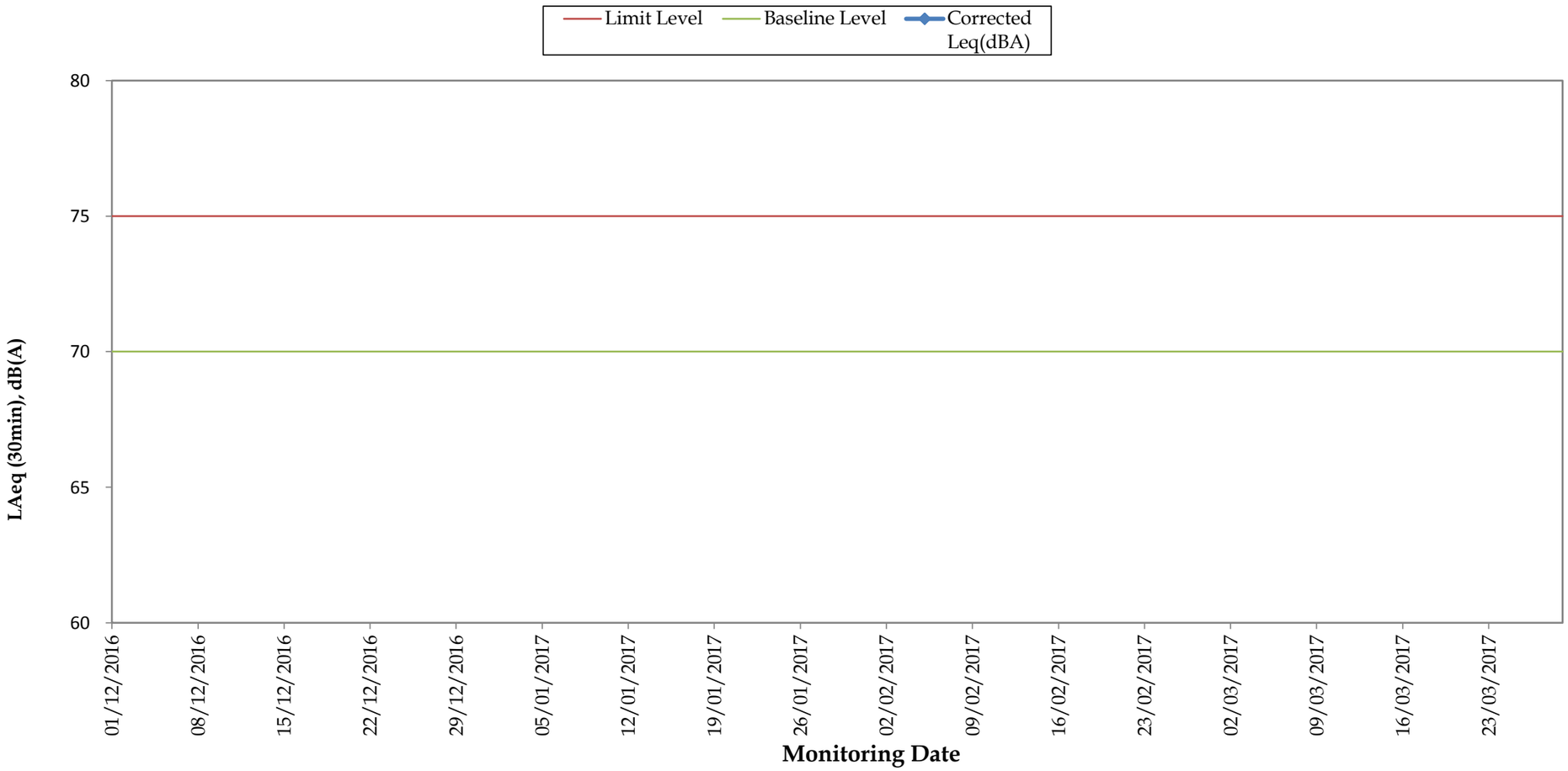
Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months



Remarks:

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

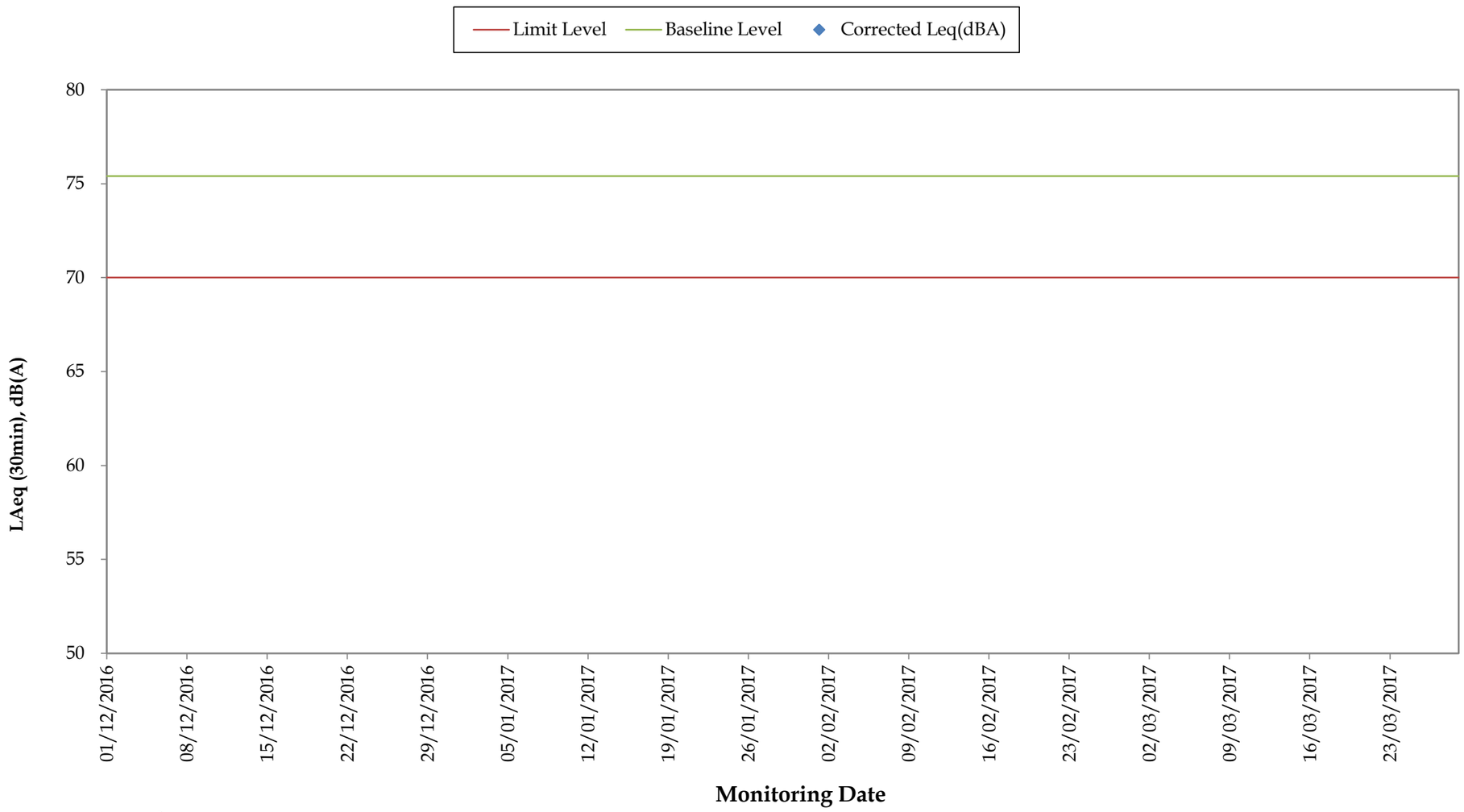
Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min) for the Past 4 Months



Remarks:

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

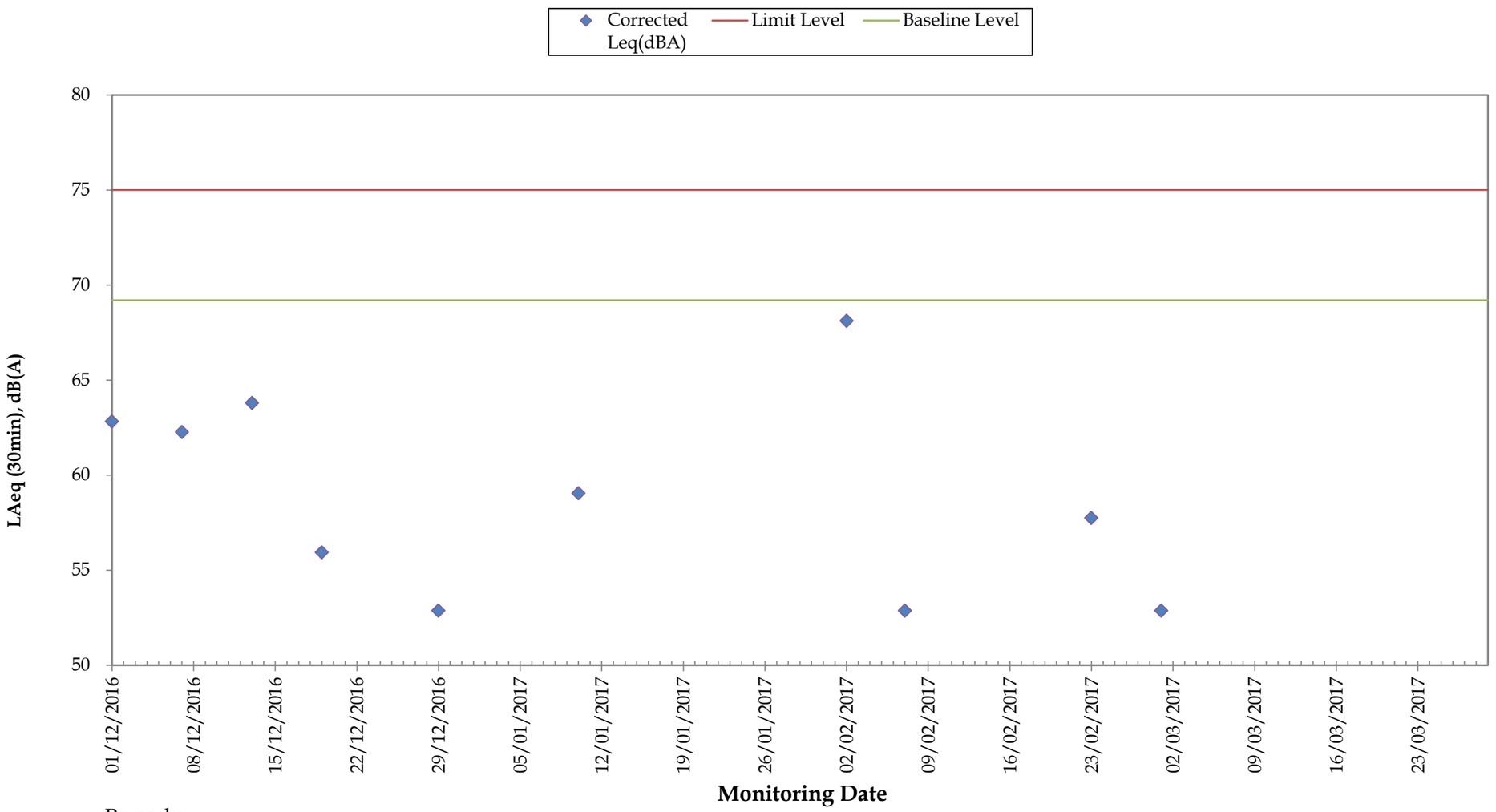
Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months



Remarks:

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

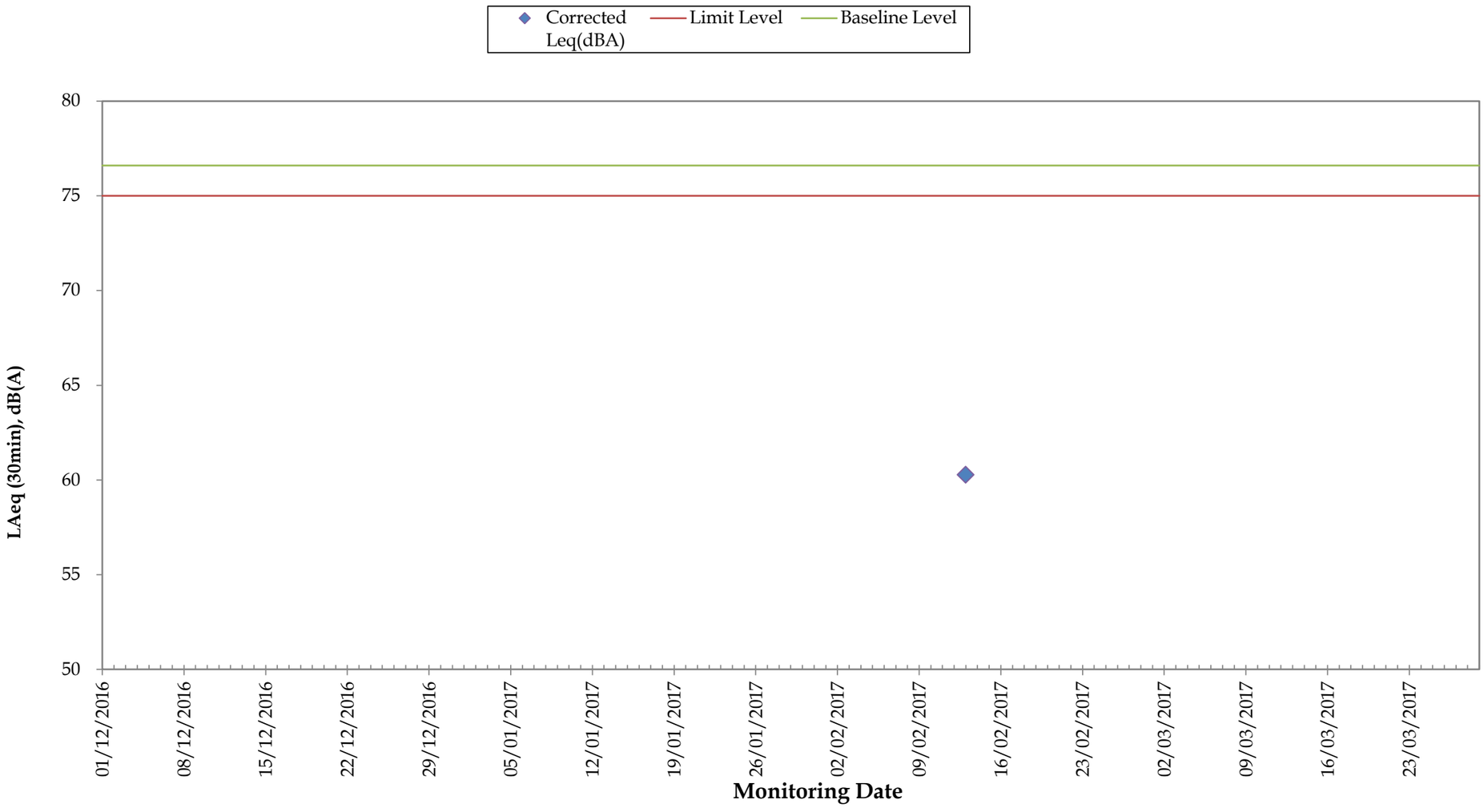
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min)) for the Past 4 Months



Remarks:

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

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



Remarks:

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

Annex J

Construction Dust Monitoring Results and Wind Data Monitoring Results

Annex J **Construction Dust Monitoring Results**

Station DMS-6 Katherine Building

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
01-Mar-17	10:50	02-Mar-17	10:50	Cloudy	2.8247	2.9400	16952.30	16976.30	24.00	1.38	1.38	1.38	58	156.8	260	-	0107	8478
07-Mar-17	11:00	08-Mar-17	11:00	Cloudy	2.8353	2.9561	16976.30	17000.30	24.00	1.35	1.35	1.35	62	156.8	260	-	0107	8484
13-Mar-17	10:55	14-Mar-17	10:55	Cloudy	2.8401	2.9700	17000.30	17024.30	24.00	1.35	1.35	1.35	67	156.8	260	-	0107	8490
17-Mar-17	8:40	18-Mar-17	8:40	Cloudy	2.8409	2.9602	17024.30	17048.30	24.00	1.35	1.35	1.35	61	156.8	260	-	0107	8496
23-Mar-17	10:55	24-Mar-17	10:55	Fine	2.8506	2.9617	17048.30	17072.30	24.00	1.35	1.35	1.35	57	156.8	260	-	0107	8602
29-Mar-17	10:55	30-Mar-17	10:55	Cloudy	2.7973	2.9025	17072.30	17096.30	24.00	1.35	1.35	1.35	54	156.8	260	-	0107	8606
												Minimum	54					
												Average	60					
												Maximum	67					

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Station DMS-7 Parc 22

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
01-Mar-17	-	02-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
07-Mar-17	-	08-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
13-Mar-17	-	14-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
17-Mar-17	-	18-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
23-Mar-17	-	24-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
29-Mar-17	-	30-Mar-17	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
												Minimum	-					
												Average	-					
												Maximum	-					

Note: 24-hour averaged dust monitoring at DMS-7 (Parc-22) was temporary suspended since 13 December 2016 due to request from the Management Office

Station DMS-8 SKH Good Shepherd Primary School

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
01-Mar-17	8:10	02-Mar-17	8:10	Cloudy	2.8062	2.9191	7157.11	7181.11	24.00	1.29	1.29	1.29	61	152.2	260	-	3572	8477
07-Mar-17	8:10	08-Mar-17	8:10	Cloudy	2.8181	2.9311	7181.11	7205.11	24.00	1.24	1.24	1.24	63	152.2	260	-	3572	8483
13-Mar-17	8:05	14-Mar-17	8:05	Cloudy	2.8453	2.9669	7205.11	7229.11	24.00	1.24	1.24	1.24	68	152.2	260	-	3572	8489
17-Mar-17	8:25	18-Mar-17	8:25	Cloudy	2.8386	2.9609	7229.11	7253.11	24.00	1.24	1.24	1.24	68	152.2	260	-	3572	8495
23-Mar-17	8:10	24-Mar-17	8:10	Fine	2.8805	2.9809	7253.11	7277.11	24.00	1.24	1.24	1.24	56	152.2	260	-	3572	8601
29-Mar-17	8:10	30-Mar-17	8:10	Cloudy	2.8370	2.9411	7277.11	7301.11	24.00	1.24	1.24	1.24	58	152.2	260	-	3572	8605
												Minimum	56					
												Average	63					
												Maximum	68					

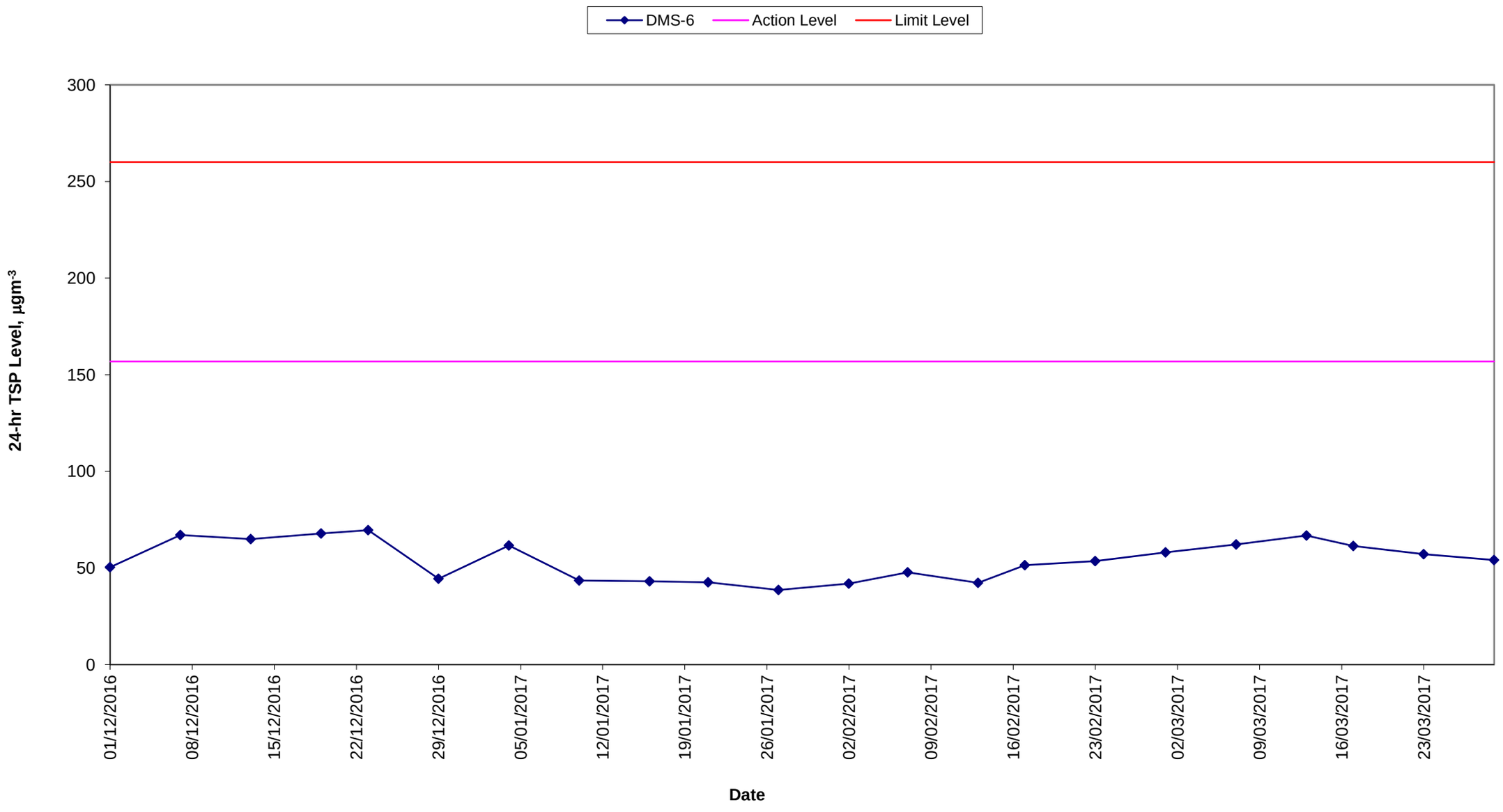
Station DMS-9 No. 12 Pau Chung Street

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
01-Mar-17	8:20	02-Mar-17	8:20	Cloudy	2.8107	2.9410	17121.40	17145.40	24.00	1.23	1.23	1.23	74	160.9	260	-	0814	8476
07-Mar-17	8:20	08-Mar-17	8:20	Cloudy	2.8345	2.9611	17145.40	17169.40	24.00	1.21	1.21	1.21	73	160.9	260	-	0814	8482
13-Mar-17	8:15	14-Mar-17	8:15	Cloudy	2.8454	2.9711	17169.40	17193.40	24.00	1.21	1.21	1.21	72	160.9	260	-	0814	8488
17-Mar-17	8:15	18-Mar-17	8:15	Cloudy	2.8264	2.9522	17193.40	17217.40	24.00	1.21	1.21	1.21	72	160.9	260	-	0814	8494
23-Mar-17	8:20	24-Mar-17	8:20	Fine	2.8300	2.9500	17217.40	17241.40	24.00	1.21	1.21	1.21	69	160.9	260	-	0814	8500
29-Mar-17	8:20	30-Mar-17	8:20	Cloudy	2.8471	2.9556	17241.40	17265.40	24.00	1.21	1.21	1.21	62	160.9	260	-	0814	8604
												Minimum	62					
												Average	70					
												Maximum	74					

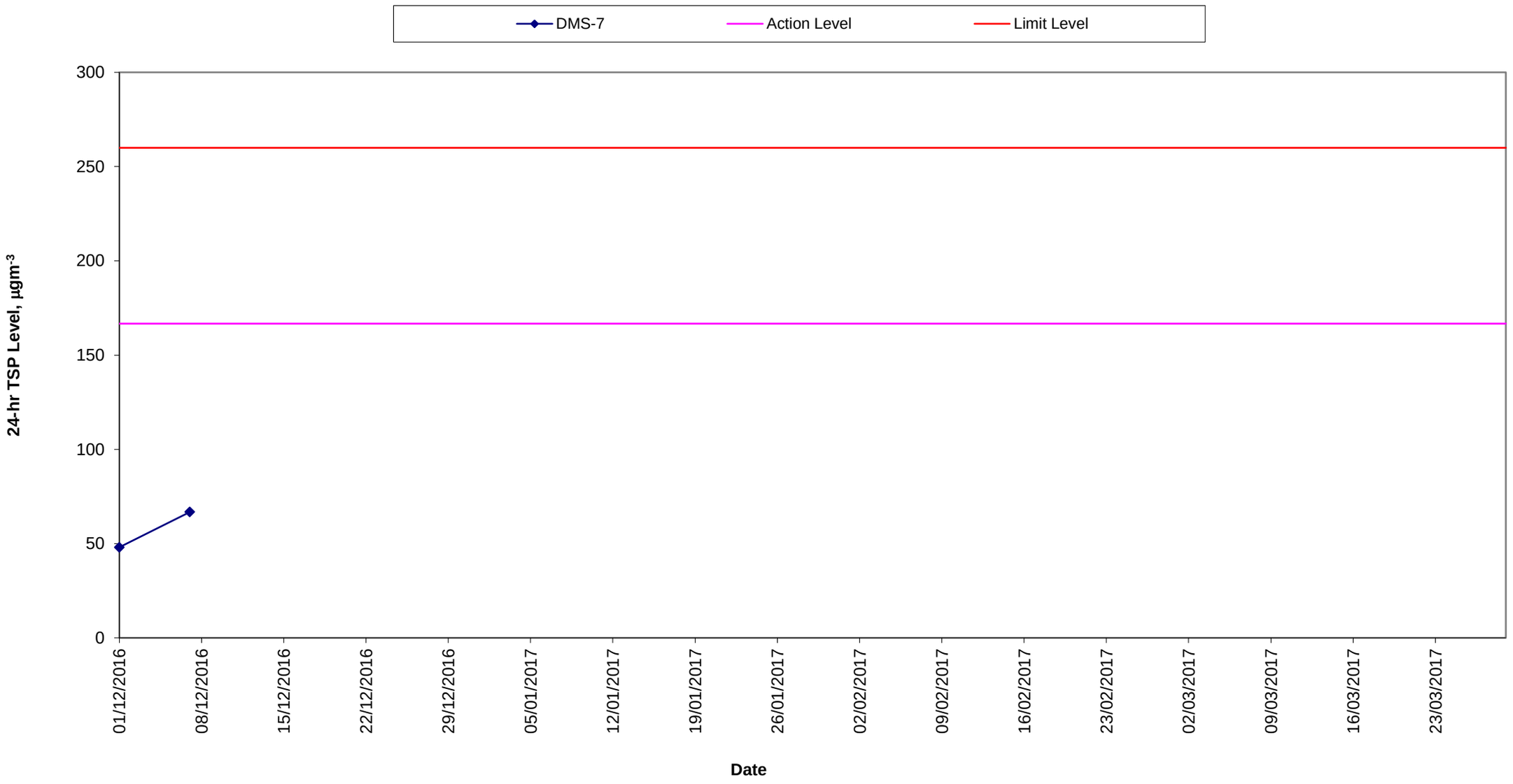
Station DMS-10 Chat Ma Mansion

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
01-Mar-17	8:45	02-Mar-17	8:45	Cloudy	2.8367	2.9522	7573.20	7597.20	24.00	1.22	1.22	1.22	66	170.4	260	-	3573	8475
07-Mar-17	8:45	08-Mar-17	8:45	Cloudy	2.8305	2.9686	7597.20	7621.20	24.00	1.25	1.25	1.25	77	170.4	260	-	3573	8481
13-Mar-17	8:45	14-Mar-17	8:45	Cloudy	2.8305	2.9609	7621.20	7645.20	24.00	1.25	1.25	1.25	72	170.4	260	-	3573	8487
17-Mar-17	8:00	18-Mar-17	8:00	Cloudy	2.8355	2.9611	7645.20	7669.20	24.00	1.25	1.25	1.25	70	170.4	260	-	3573	8493
23-Mar-17	8:48	24-Mar-17	8:48	Fine	2.8305	2.9411	7669.20	7693.20	24.00	1.25	1.25	1.25	61	170.4	260	-	3573	8499
29-Mar-17	8:45	30-Mar-17	8:45	Cloudy	2.8491	2.9387	7693.20	7717.20	24.00	1.25	1.25	1.25	50	170.4	260	-	3573	8603
												Minimum	50					
												Average	66					
												Maximum	77					

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

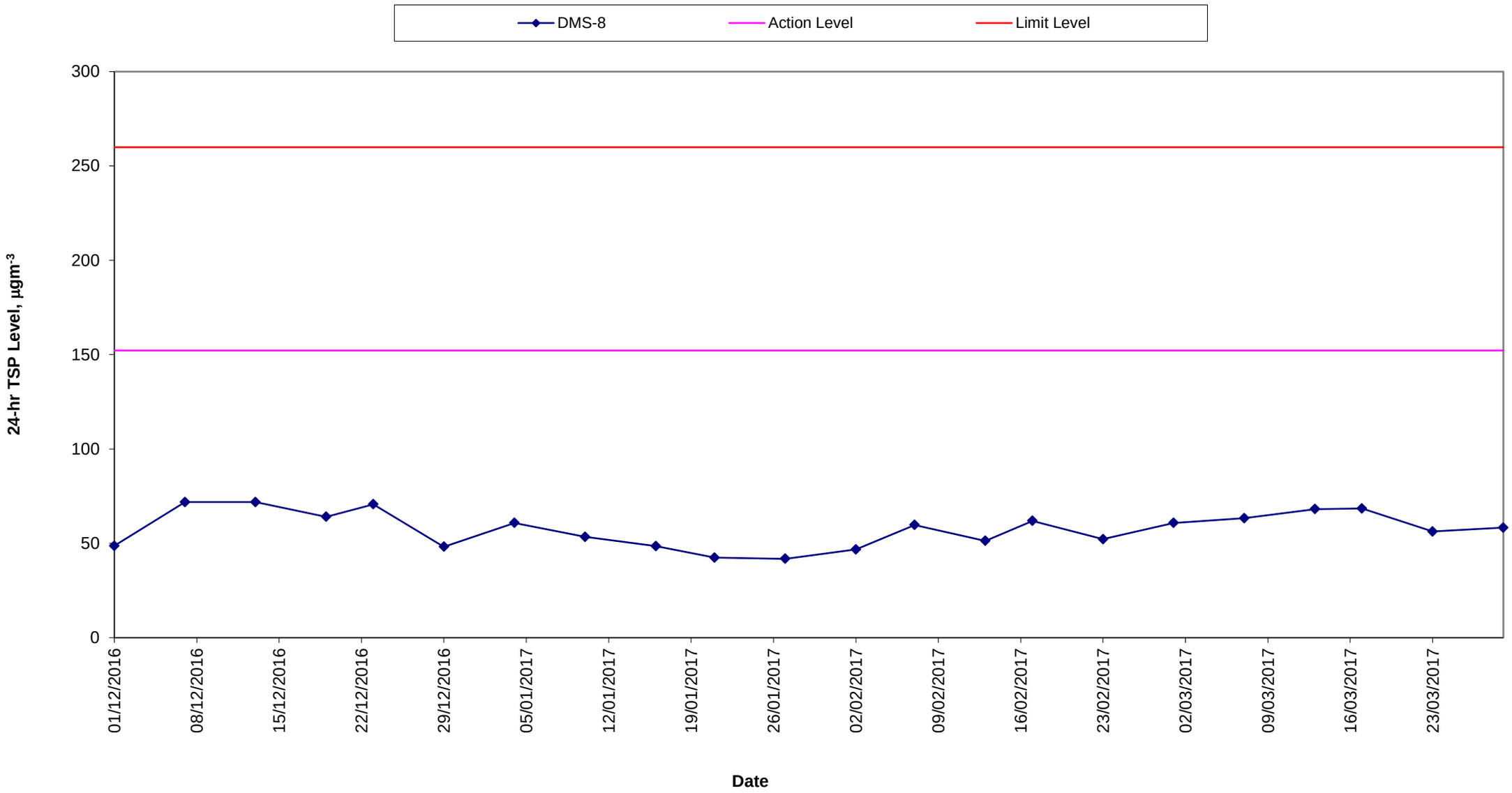


Construction Dust Monitoring Results for the Past 4 Months
DMS- 7 (Parc 22)

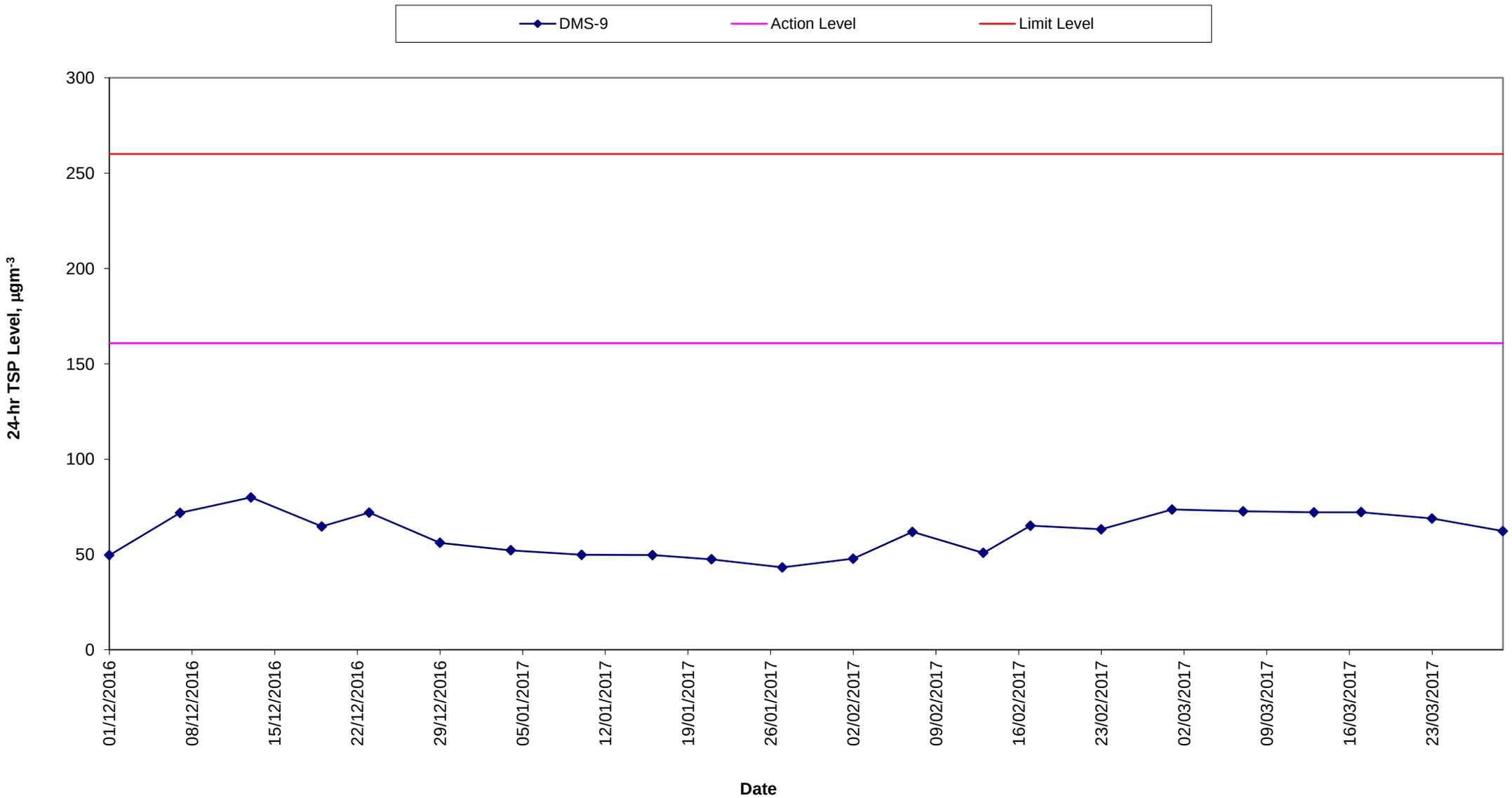


Remark:
- 24-hour averaged dust monitoring at DMS-7 (Parc-22) was temporary suspended since 13 December 2016 due to request from the Management Office.

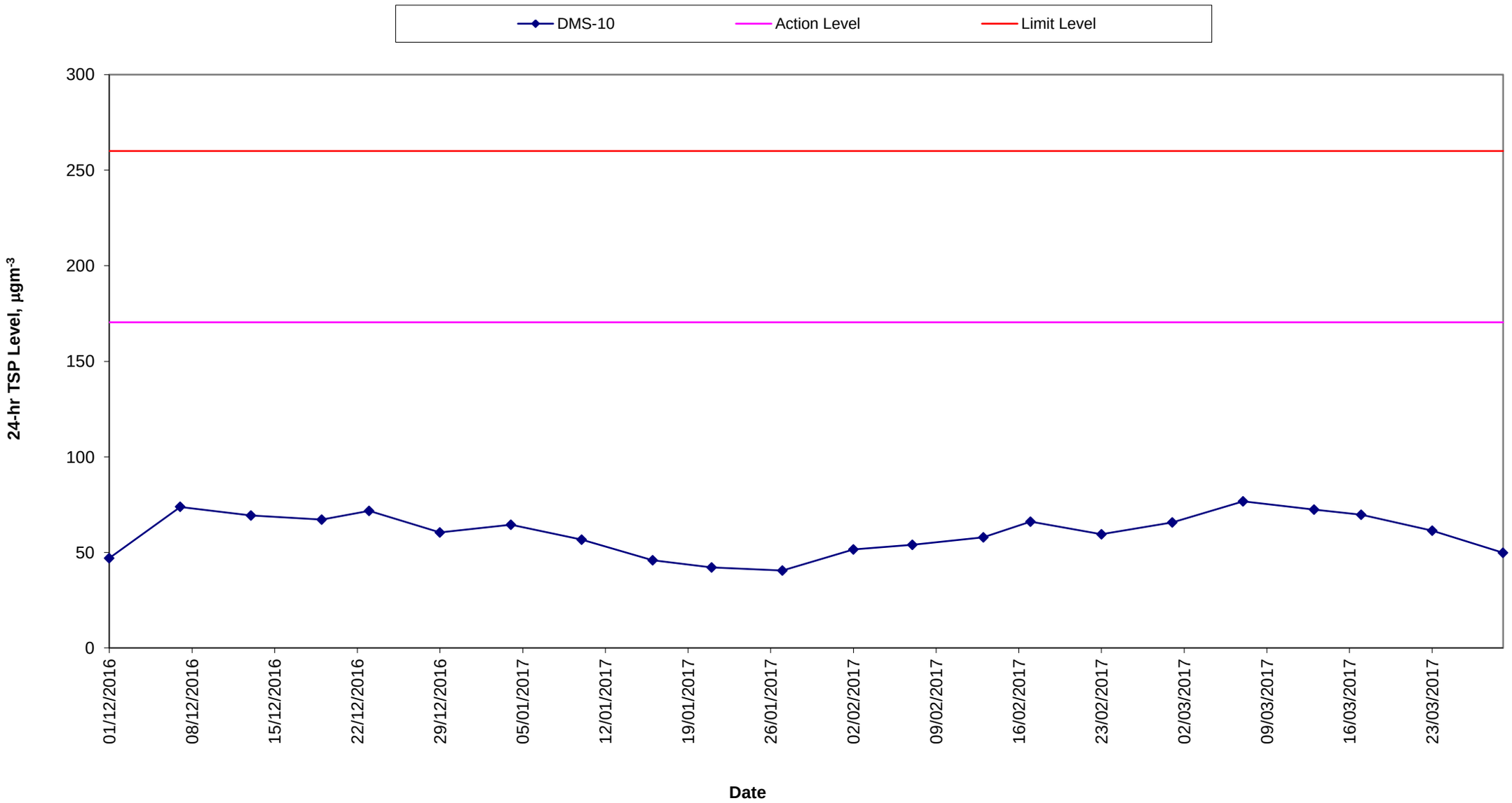
Construction Dust Monitoring Results for the Past 4 Months
DMS-8 (SKH Good Shepherd Primary School)



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



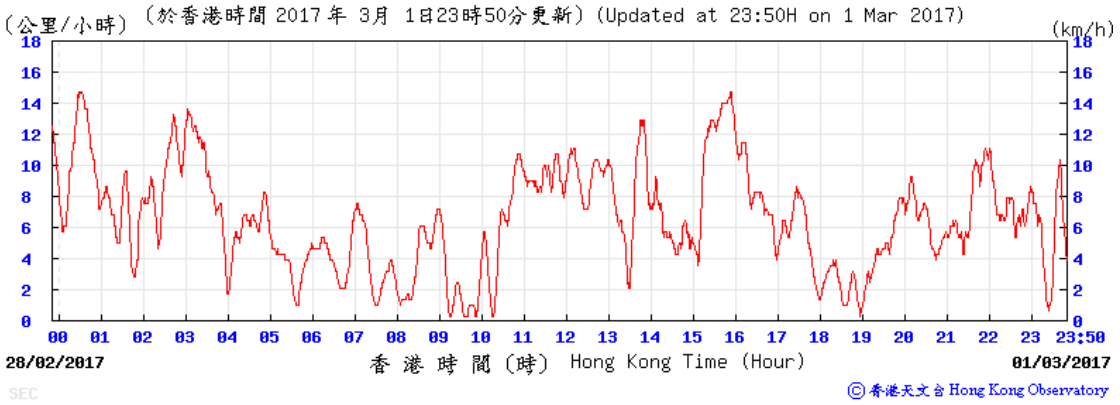
Construction Dust Monitoring Results for the Past 4 Months
DMS-10 (Chat Ma Mansion)



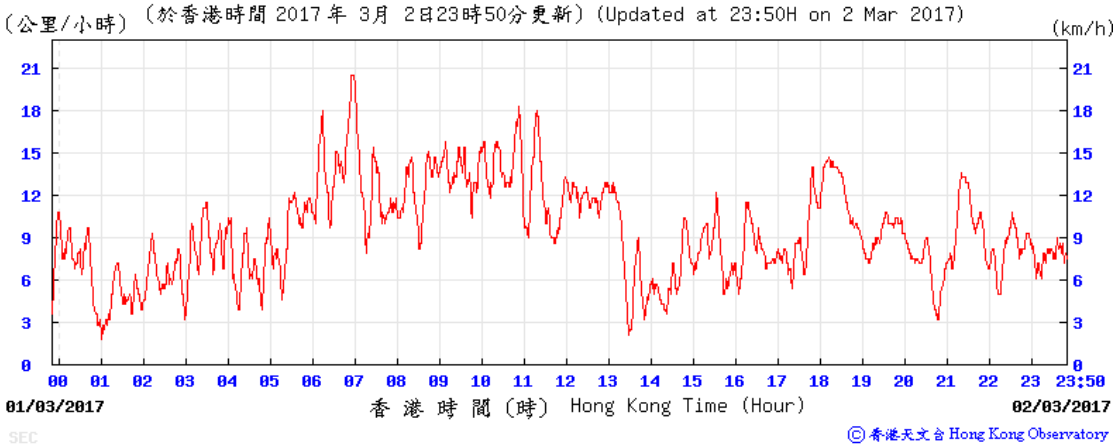
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

1-2 March 2017

Wind Speed:

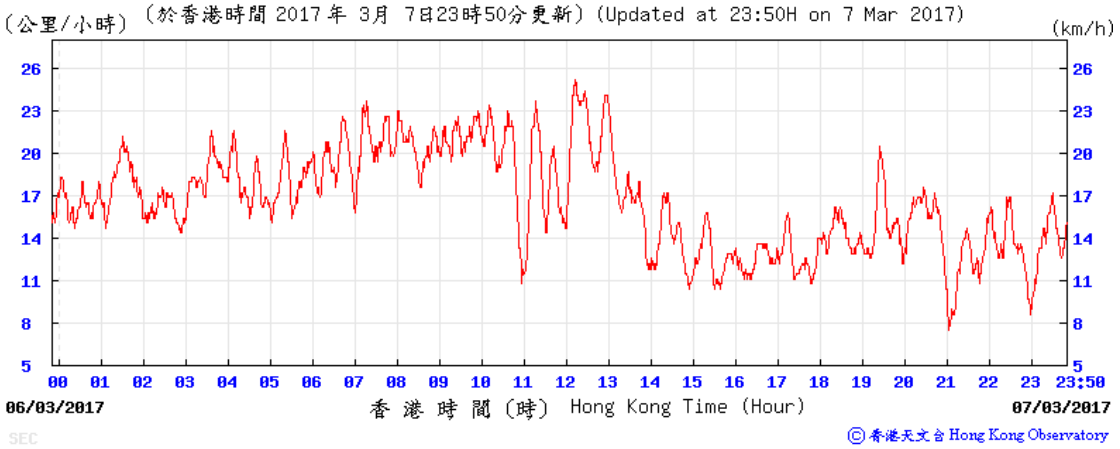


Wind Speed:

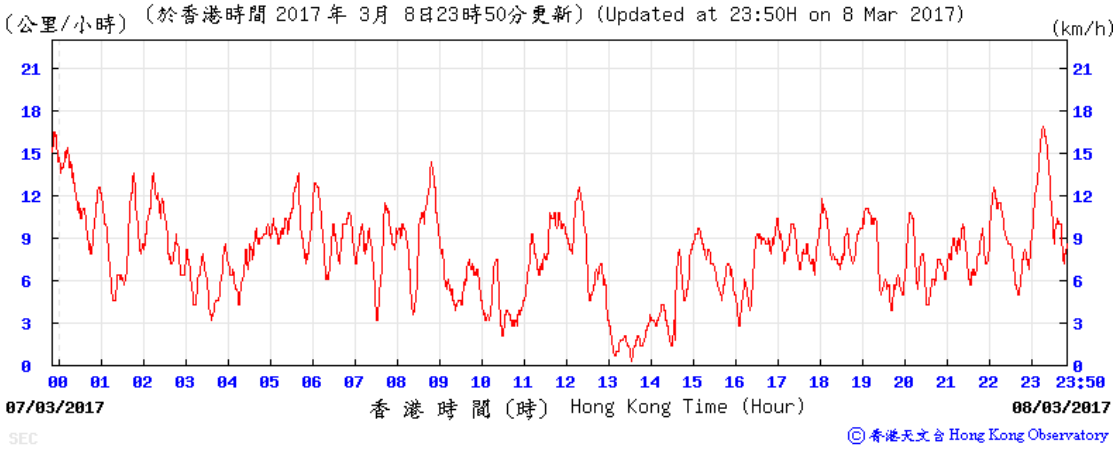


7-8 March 2017

Wind Speed:

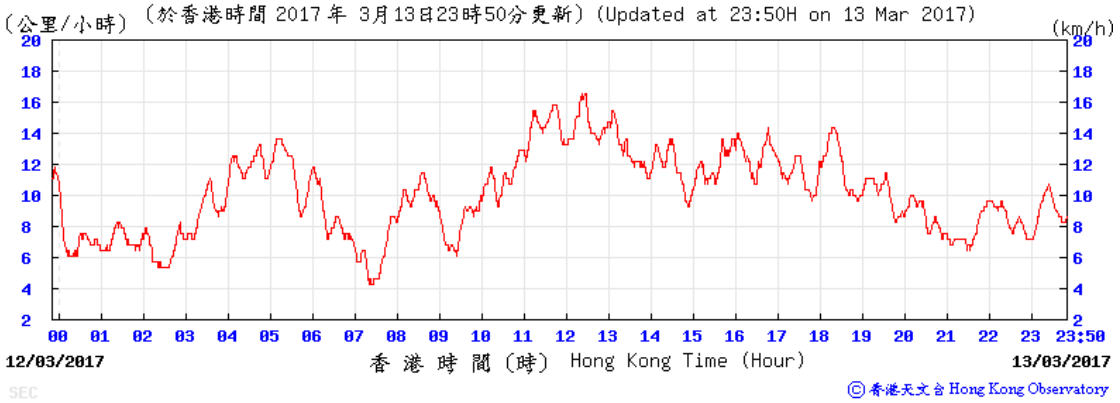


Wind Speed:

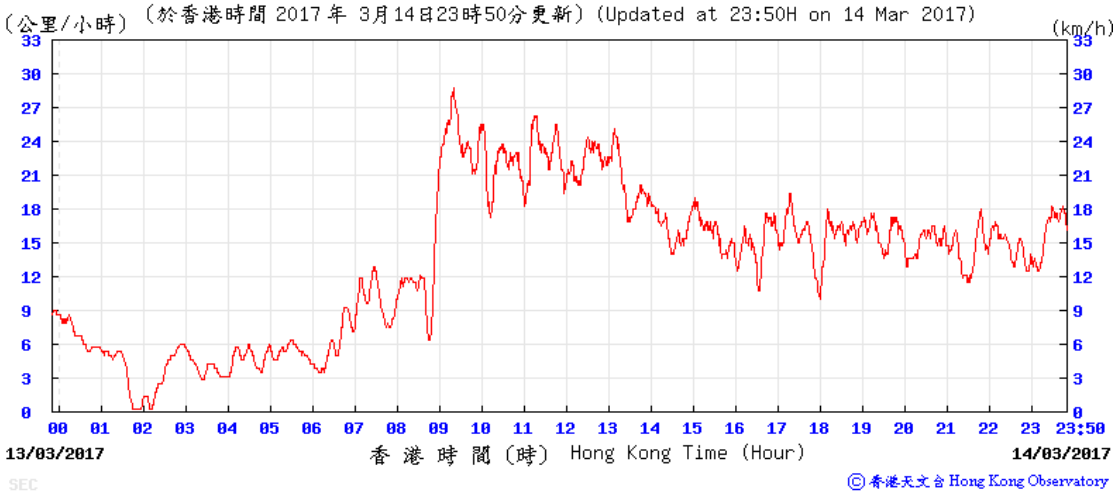


13-14 March 2017

Wind Speed:

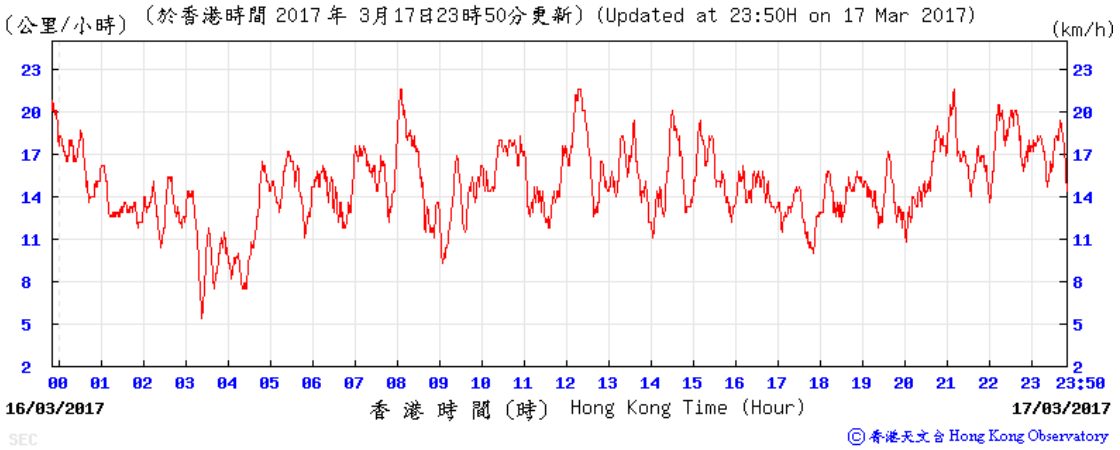


Wind Speed:

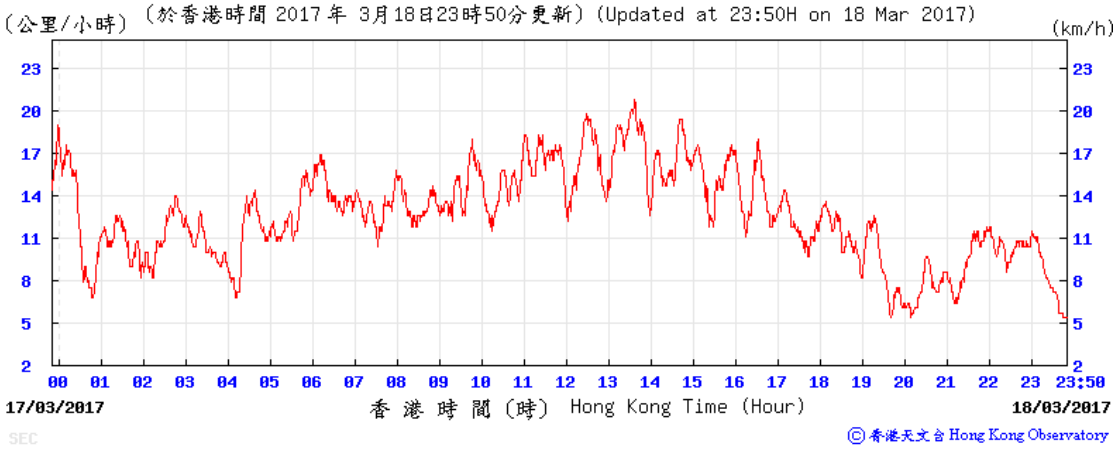


17-18 March 2017

Wind Speed:

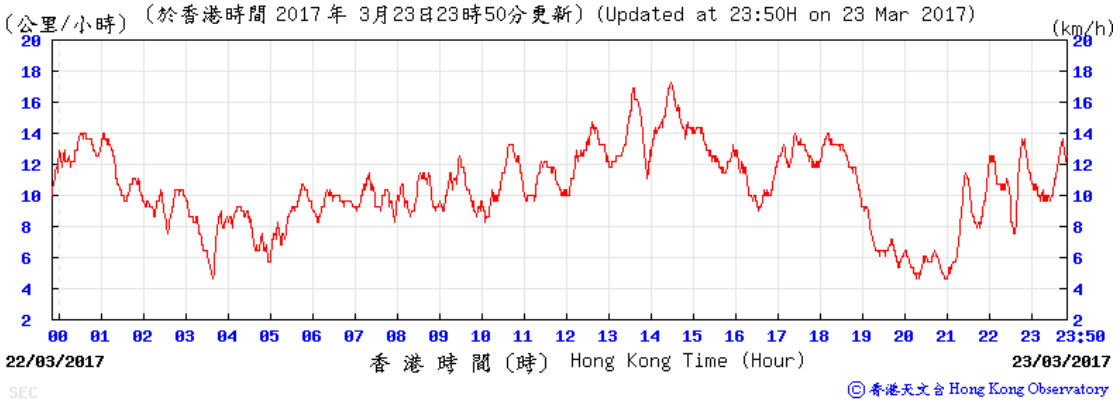


Wind Speed:

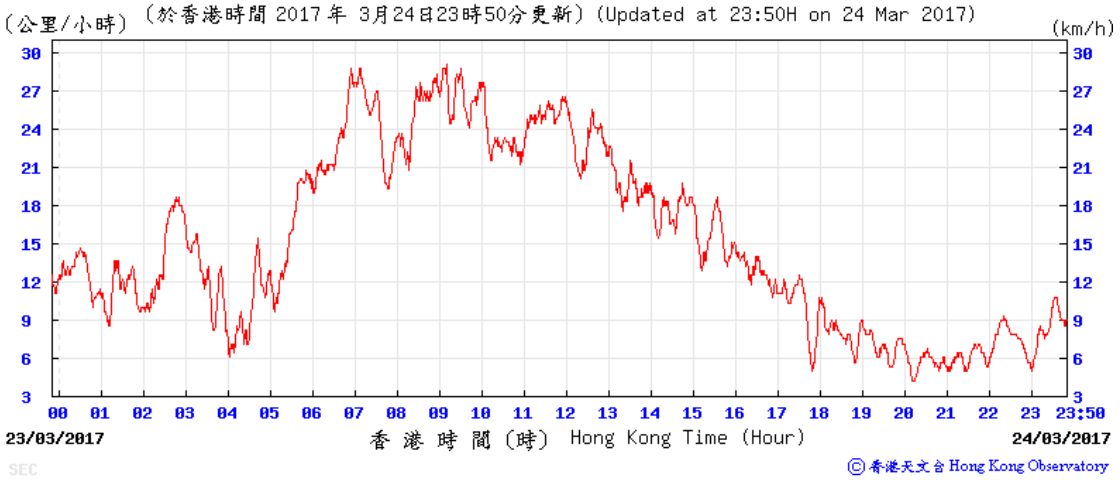


23-24 March 2017

Wind Speed:

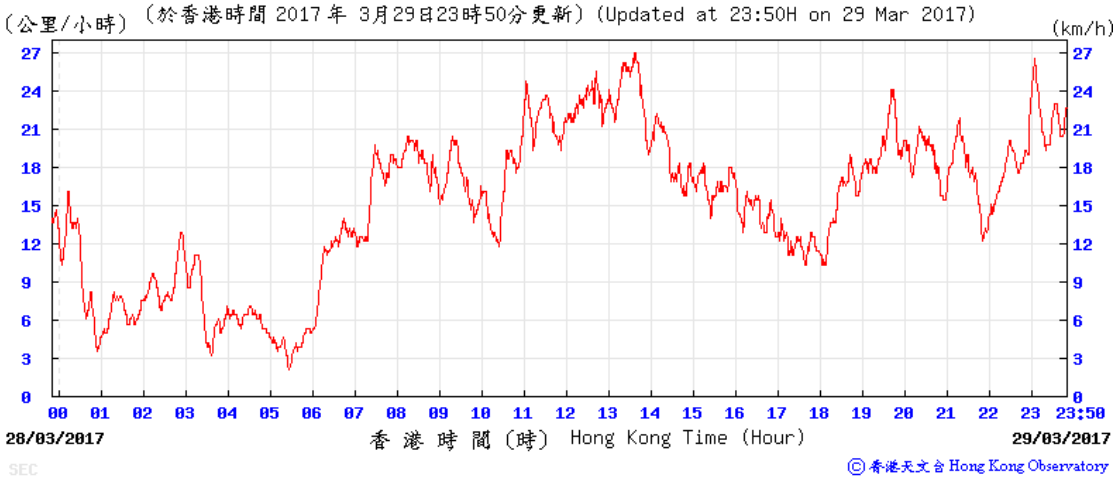


Wind Speed:

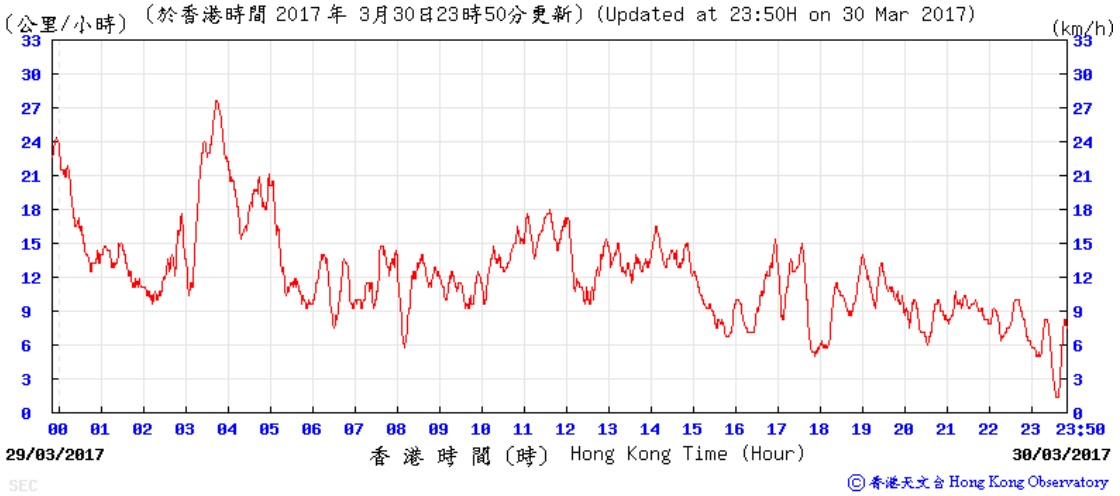


29-30 March 2017

Wind Speed:



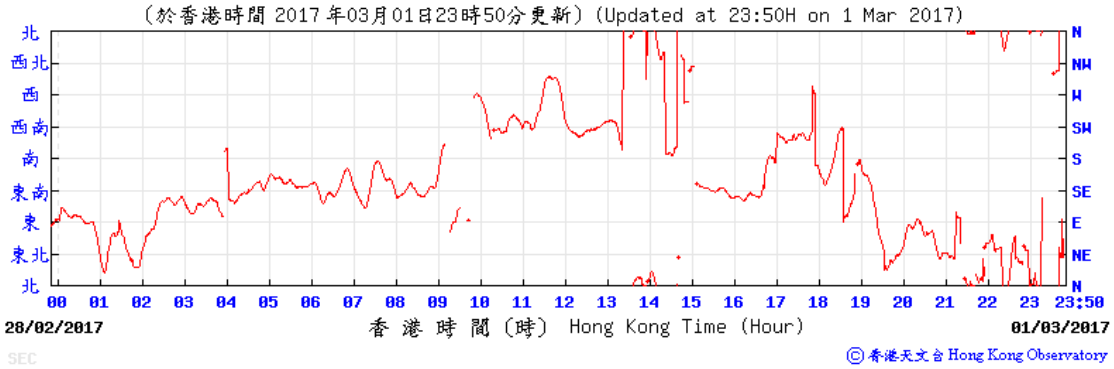
Wind Speed:



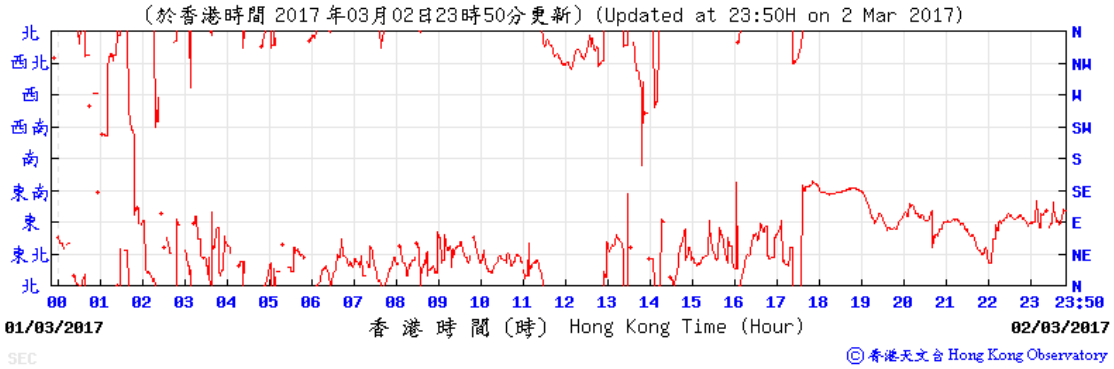
Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

1-2 March 2017

Wind Direction:

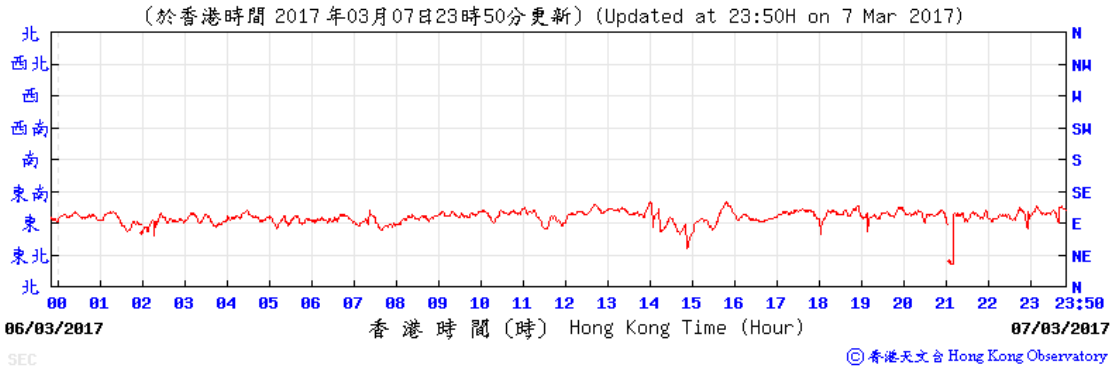


Wind Direction:

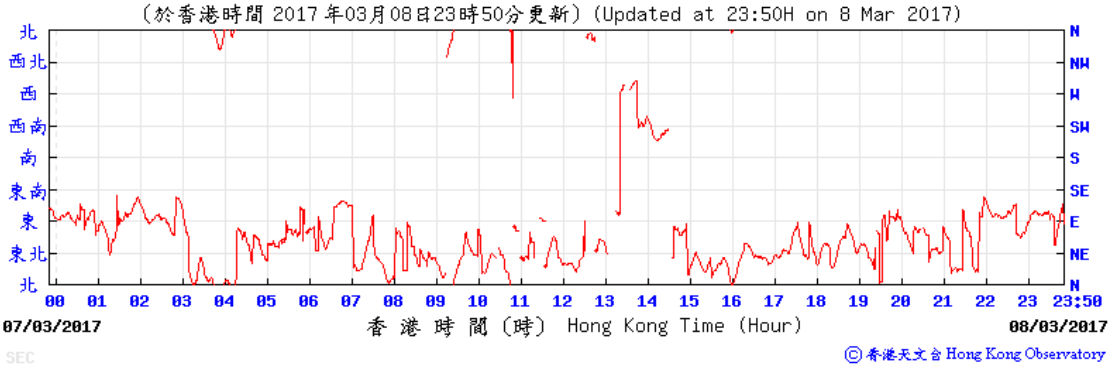


7-8 March 2017

Wind Direction:

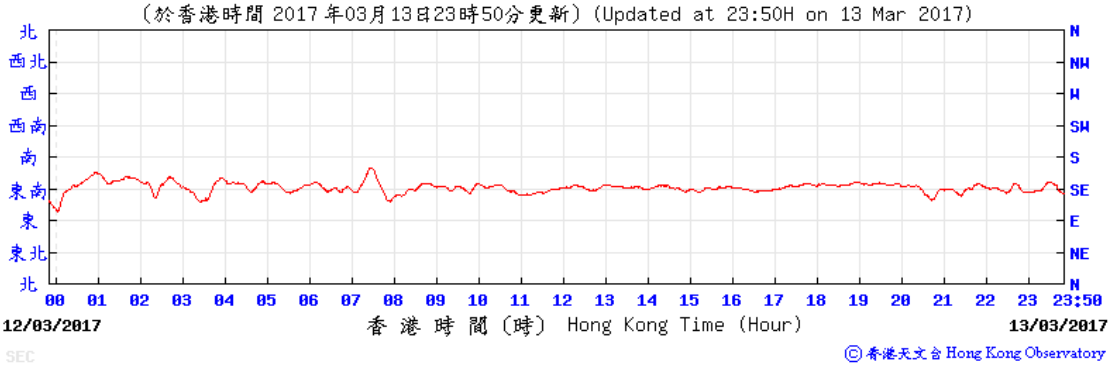


Wind Direction:

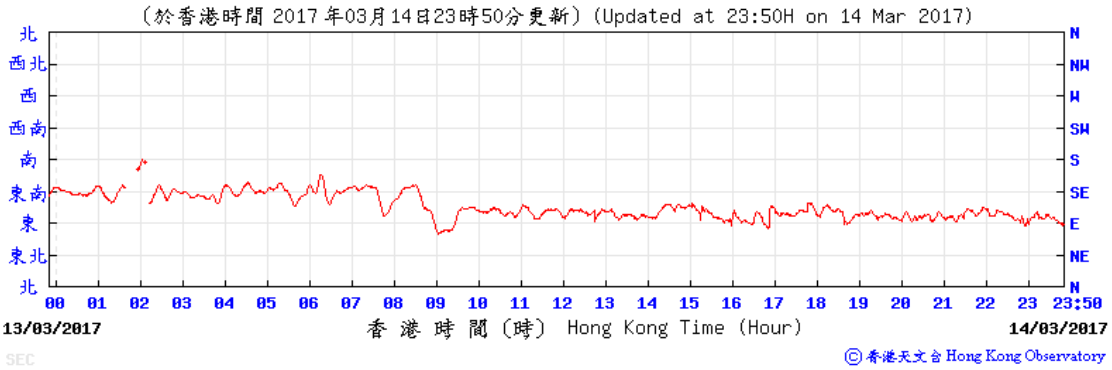


13-14 March 2017

Wind Direction:

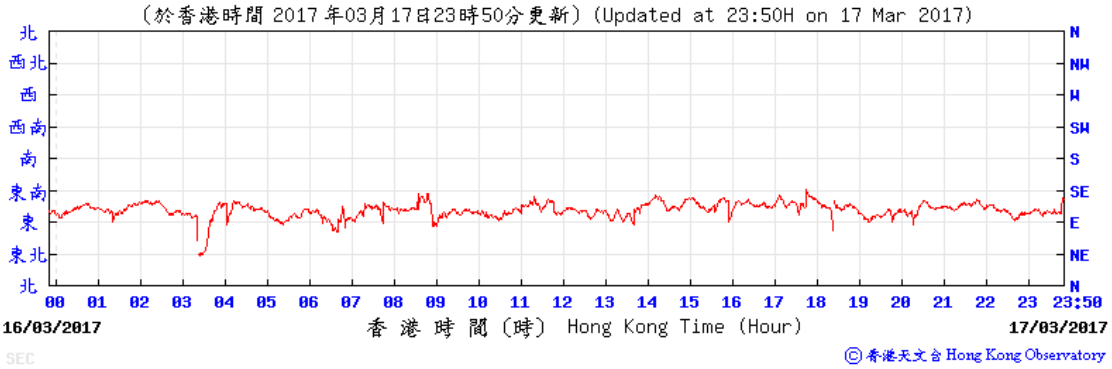


Wind Direction:

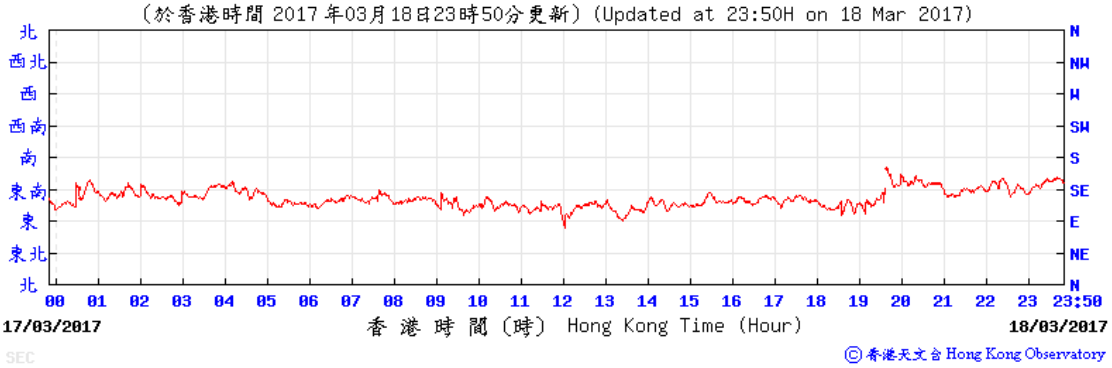


17-18 March 2017

Wind Direction:

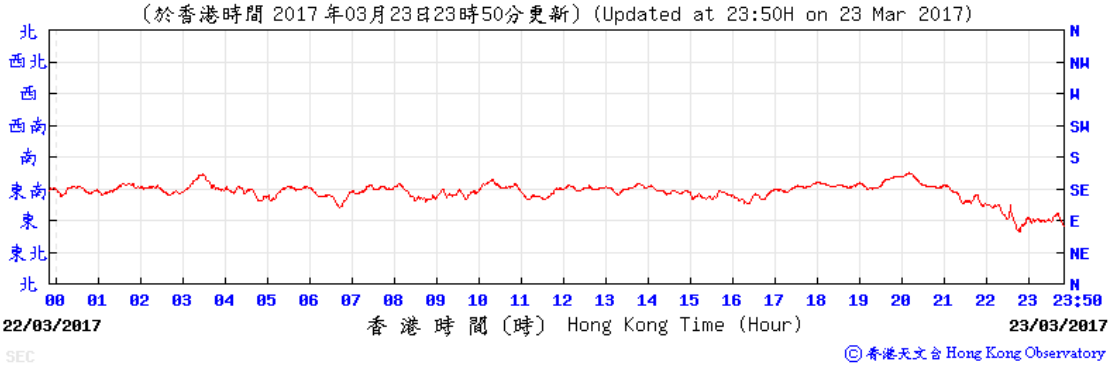


Wind Direction:

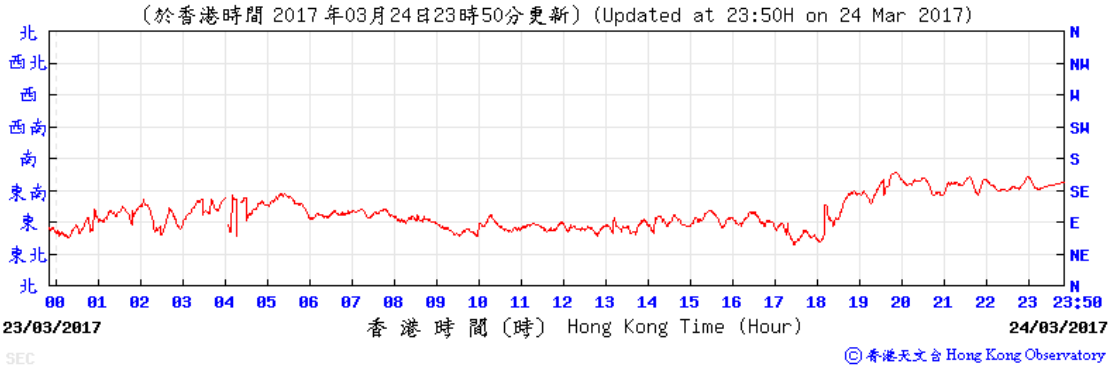


23-24 March 2017

Wind Direction:

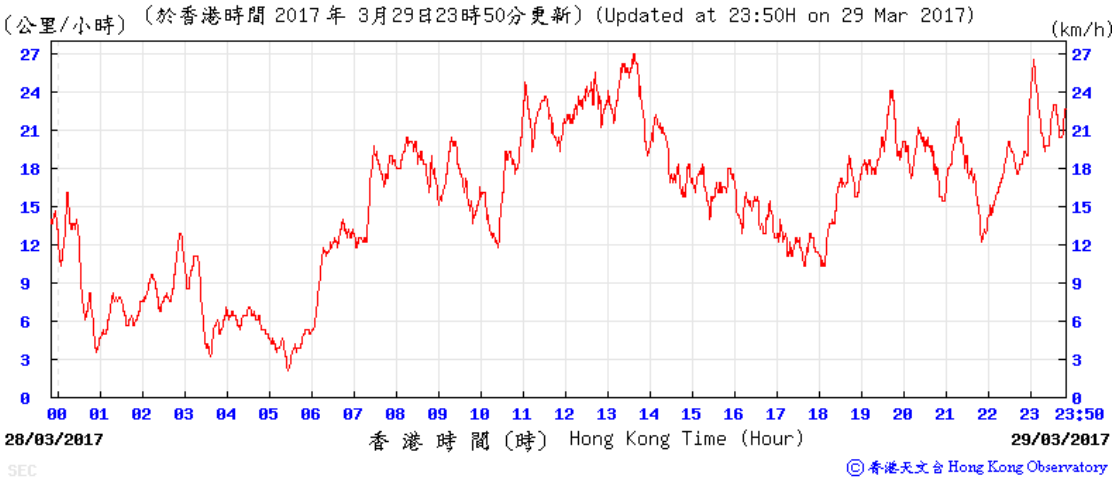


Wind Direction:

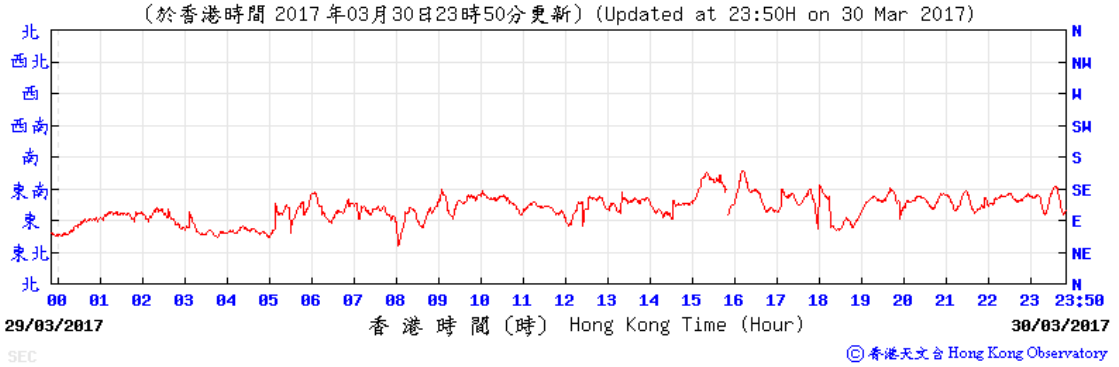


29-30 March 2017

Wind Direction:



Wind Direction:



Annex K – Waste Flow Table

Monthly Summary Waste Flow Table for the year 2012-2014

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)	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 '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m^3)	(in '000m³)
Sep 2012	0.004	0.000	0.000	0.000	0.004	-	0.000	0.000	5.300	0.000	0.144	0.000
Oct 2012	0.000	0.000	0.000	0.000	0.000	-	12.800	0.242	0.013	0.000	0.514	0.000
Nov 2012	0.624	0.000	0.605	0.000	0.019	-	0.000	0.154	0.002	0.000	0.172	6.804
Dec 2012	16.844	0.000	0.000	0.000	0.005	16.839	0.000	0.000	0.000	0.000	0.057	0.000
Sub-total	17.472	0.000	0.605	0.000	0.028	16.839	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	0.541	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	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)	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 '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m^3)	(in '000m³)
Jan 2015	64.165	0.000	0.000	0.266	0.000	63.899	0.000	0.077	0.328	0.180	0.150	0.000
Feb 2015	46.884	0.000	0.000	2.599	0.000	44.285	0.000	0.090	3.102	0.000	0.106	0.000
Mar 2015	41.498	0.000	0.000	0.000	0.000	41.498	0.000	0.072	2.321	0.600	0.126	0.000
Apr 2015	13.049	0.000	0.000	0.000	0.000	13.049	0.000	0.081	1.598	0.000	0.119	0.000
May 2015	54.559	0.000	0.000	0.000	0.000	54.559	0.000	0.063	0.548	0.000	0.099	0.000
Jun 2015	48.857	0.000	0.000	0.000	0.000	48.857	0.000	0.041	0.880	0.000	0.144	0.000
Jul 2015	34.471	0.000	0.000	0.000	0.000	34.471	0.000	0.090	4.972	0.720	0.218	0.000
Aug 2015	28.330	0.000	0.000	0.000	0.000	28.330	0.000	0.077	1.027	1.240	0.244	0.000
Sep 2015	25.376	0.000	0.000	0.000	0.000	25.376	0.000	0.068	0.845	2.080	0.224	0.000
Oct 2015	45.061	0.000	0.000	0.000	0.000	45.061	0.000	0.072	0.743	0.000	0.336	0.000
Nov 2015	45.607	0.000	0.000	0.000	0.000	45.607	0.000	0.085	4.719	1.760	0.344	0.000
Dec 2015	43.527	0.000	0.000	0.000	0.000	43.527	0.000	0.090	0.669	0.048	0.286	0.000
Sub-total	491.384	0.000	0.000	2.865	0.000	488.519	0.000	0.906	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	2.016	9.096	16.960	4.665	0.000
Jan 2017	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	0.059	0.417	0.000	0.745	0.000
Mar 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.077	0.448	0.000	0.618	0.000
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.262	1.141	0.000	2.132	0.000
Total	942.267	0.000	0.605	2.865	0.064	938.732	12.800	5.169	47.703	26.643	14.123	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.

Annex L

Details of Complaint Findings

Details of Complaint Findings

Project	SCL 1109
Date	20 February 2017
Time	--
EPD Reference No	17-04672, dated 1 March 2017
Description of the Complaint	A complaint was referred by EPD through above letter reference regarding dust emission was observed when dump truck leaving the construction site next to the To Kwa Wan Market and causing the Pau Chung Street dusty.
Site Activity Summary	Based on the site information on 20 February 2017, D-wall cutting, rebar fixing, formwork erection and removal of pedestrian decking were conducted at works area next to the To Kwa Wan Market.
Actions taken/ to be taken	1. Regular water spraying and wheel washing activity had been arranged to minimise dust generation within site area. 2. The impact dust data recorded adjacent to the construction site next to the To Kwa Wan Market on 17 and 23 February 2017 have been reviewed and no action/limit level was triggered. 3. For weekly site inspection on 20 February 2017, no adverse comment or observation on the air quality was recorded from inspection team. 4. Site visit had been conducted by EPD once the complaint was received. No adverse comment or observation was recorded.
Remarks	-

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
Overall Total	33	0

Appendix B

51st EM&A Report for Works Contract 1111 –
Hung Hom North Approach Tunnel

AECOM

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
March 2017

[April 2017]

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

Version: 0	Date: 10 April 2017

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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 March 2017. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Ho Man Tin	Manhole construction, pipe laying, concreting works, EVA construction
NSL (North) & HHBP	Parapet modification works, ELS & decking removal work, concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying
OB2	Backfill, TB1 dismantling, watermain diversion, upstand wall modification, OB2 bridge jacking and bearing replacement and parapet wall construction
OB2A	Soil replacement, OB2A bridge reinstatement, precast parapet installation
NSL 9 & Oi Sen Path	Backfilling, drainage work, Scaffolding platform erection, dismantling of scaffolding, pre-split, lifting works, temporary working platform removal, ELS removal, tunnel works, rock breaking, rock cutting
EWL 7 - 9	Reinstatement, road diversion, backfilling, steel deck dismanting

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 environmental complaint and no 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	Manhole construction, pipe laying, concreting works, EVA construction
NSL (North) & HHBP	Parapet modification works, ELS & decking removal work, concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying
OB2	Backfill, TB1 dismantling, watermain diversion, upstand wall modification, OB2 bridge jacking and bearing replacement and parapet wall construction
OB2A	Soil replacement, OB2A bridge reinstatement, precast parapet installation
NSL 9 & Oi Sen Path	Backfilling, drainage work, Scaffolding platform erection, dismantling of scaffolding, pre-split, lifting works, temporary working platform removal, ELS removal, tunnel works, rock breaking, rock cutting
EWL 7 - 9	Reinstatement, road diversion, backfilling, steel deck dismantling

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 fifty-first monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 31 March 2017.

1.2 Report Structure

1.1.2 This monthly EM&A Report is orgainised 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 the latest Environmental Permit (EP No: EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016.

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	Manhole construction, pipe laying, concreting works, EVA construction
NSL (North) & HHBP	Parapet modification works, ELS & decking removal work, concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying
OB2	Backfill, TB1 dismantling, watermain diversion, upstand wall modification, OB2 bridge jacking and bearing replacement and parapet wall construction
OB2A	Soil replacement, OB2A bridge reinstatement, precast parapet installation
NSL 9 & Oi Sen Path	Backfilling, drainage work, Scaffolding platform erection, dismantling of scaffolding, pre-split, lifting works, temporary working platform removal, ELS removal, tunnel works, rock breaking, rock cutting
EWL 7 - 9	Reinstatement, road diversion, backfilling, steel deck dismanting

2.3.2 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. Felice Wong	2688 1283	2993 7577
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	
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	22 Mar 2012	-	Valid	-
EP-438/2012/K	4 Oct 2016	-	Valid	-
Construction Noise Permit				
GW-RE0730-16	11 Sep 2016	9 Mar 2017	Valid	CNP for Dewatering and welding at HMT (for power cable duct to NSL9)
GW-RE0734-16	15 Sep 2016	14 Mar 2017	Valid until superseded by GW-RE0167-17 on 15 Mar 2017	CNP for General Work at NSL 3 - 6
GW-RE1145-16	20 Dec 2016	19 Mar 2017	Valid until 19 Mar 2017	CNP for Scaffolding and 2.4m Hoarding Modification Works at Ho Man Tin and Oi Sen Path
GW-RE1149-16	21 Dec 2016	20 Jun 2017	Valid	CNP for General Works at NSL 9
GW-RE1152-16	2 Dec 2016	25 May 2017	Valid	CNP for Foul Water Diversion Works at EWL7
GW-RE1185-16	16 Dec 2016	16 Mar 2017	Valid until Superseded by GW-RE0178-17 on 16 Mar 2017	CNP for OB1 & OB2 Maintenance Work at Chatham Rd North
GW-RE1250-16	11 Jan 2017	10 Mar 2017	Valid until Superseded by GW-RE0139-17 on 10 Mar 2017	CNP for Parapet Modification Work at Hung Hom Bypass
GW-RE0004-17	12 Jan 2017	11 Jul 2017	Valid	CNP for Dewatering System at EWL 7
GW-RE0014-17	10 Jan 2017	4 Jul 2017	Valid	CNP for General Works at EWL 9
GW-RE0015-17	12 Jan 2017	11 Mar 2017	Valid until superseded by GW-RE0155-17 on 11 Mar 2017	CNP for Noise Enclosure and Steel Platform Erection Work at Oi Sen Path
GW-RE0048-17	27 Jan 2017	26 Jul 2017	Valid	CNP for Dewatering and welding at NSL6
GW-RE0055-17	27 Jan 2017	26 Jul 2017	Valid	CNP for General and Reprovisioning Works at Hung Hom Station
GW-RE0116-17	16 Feb 2017	15 Aug 2017	Valid	CNP for General Work at Oi Sen Path and Ho Man Tin Siding
GW-RE0114-17	23 Feb 2017	22 Aug 2017	Valid	CNP for General Works for steel decking at EWL8
GW-RE0112-17	23 Feb 2017	22 Aug 2017	Valid	CNP for General Works at NSL 7- 8
GW-RE0115-17	24 Feb 2017	23 May 2017	Valid	CNP for Hoarding Erection at NSL 3 - 6

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
GW-RE0111-17	24 Feb 2017	23 May 2017	Valid	CNP for 6m Hoarding and Scaffolding Platform Modification Works at NSL 9 & Oi Sen Path
GW-RE0139-17	10 Mar 2017	9 May 2017	Valid	CNP for Parapet Modification Work at Hung Hom Bypass
GW-RE0155-17	11 Mar 2017	10 May 2017	Valid	CNP for Noise Enclosure and Steel Platform Erection Work at Oi Sen Path
GW-RE0167-17	15 Mar 2017	14 Sep 2017	Valid	CNP for General Work at NSL 3 - 6
GW-RE0178-17	16 Mar 2017	15 Jun 2017	Valid	CNP for OB2 & OB2A Maintenance Work at Chatham Rd North
GW-RE0175-17	21 Mar 2017	18 Jun 2017	Valid	CNP for Scaffolding and 2.4m Hoarding Modification Works at Ho Man Tin and Oi Sen Path
Wastewater Discharge License				
WT00015644-2013	16 Apr 2013	30 Apr 2018	Valid	For MTR Ho Man Tin Sidings
WT00016090-2013	14 Jun 2013	30 Jun 2018	Valid	For alongside On Wan Road, MTR Hung Hom Station
WT00016108-2013	14 Jun 2013	30 Jun 2018	Valid	For Hong Chong Park and Slip road from Chatham Road North and underneath
WT00016435-2013	23 Jul 2013	31 Jul 2018	Valid	For Hong Chong Slip Rd and Slip Rd at Princess Margaret Road Link & Chatham Road North
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
WT00020759-2015	15 May 2013	31 May 2018	Valid	For near Chatham Road North
WT00022080-2015	13 Aug 2015	31 Aug 2020	Valid	For near Chatham Road North, EWL 9
WT00022793-2015	23 Nov 2015	31 Jul 2018	Valid	For Winslow Street Slope (near Wa Fung Street)
WT00022802-2015	23 Nov 2015	28 Feb 2018	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

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
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	18 Apr 2018	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. 234-248 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:-

(i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
(ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
(iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
(iv) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
(v) No furnace or incinerator flues nearby.
(vi) Airflow around the sampler was unrestricted.
(vii) Permission was obtained to set up the samplers and access to the monitoring stations.
(viii) A secured supply of electricity was obtained to operate the samplers.
(ix) 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 ±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 ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.
(iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(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^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/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 March 2017 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	B&K (Model No. B&K2238 (S/N: 2800927), Model No. B&K2270 (S/N: 2644597), Model No. B&K2250-L (S/N: 2681366))
Acoustic Calibrator	Rion (Model No. NC-73 (S/N: 10307223), Model No. NC-74 (S/N: 34246490))

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(1)	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. 234-248 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 March 2017 is provided in **Appendix F**.

3.3 Continuous noise monitoring

Monitoring Requirements

3.3.1 According to EP conditions under EP-437/2012 (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(1)

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. 234-248 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 ($L_{eq,\ 30\ min}$) 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(1)	Feb and Jun 2014, Jan and Feb 2015(3) Mar 2015 (4)
NM2	No. 234-238 Chatham Road North(2)	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. 234-248 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) & Condition 3.4 (EP-438/2012/K)	Monthly EM&A Report for February 2017	14 March 2017

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 ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1	60.9	46.9 – 95.2	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(2)	<Baseline	70 (65)(1)
NM 2(2)	<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, 875m^3 of inert C&D material was generated. 203m^3 and 8m^3 were disposed as public fills at TKO137 and TM38 respectively. 664m^3 of public fills was delivered to Hung Hom Barging Point and handled by other project. No public fills was reused in the Contract. While 118,440kg of general refuse was disposed at NENT landfill in the reporting month. No paper, metal 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 2, 16 and 30 March 2017. 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 2, 9, 16, 23 and 30 March 2017. The one held on 16 March 2017 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	2 Mar 2017	• The exposed surface at OB2 was observed dry. The Contractor was reminded to provide regular watering for dust suppression. (Reminder)	The item was rectified by the Contractor on 2 March 2017.
	16 Mar 2017	• The Contractor was reminded to provide watering during breaking of pavement at OB2. (Reminder)	The item was rectified by the Contractor on 16 March 2017.
	23 Mar 2017	• The Contractor was reminded to cover the gaps of water-fill barrier along the walkway at NSL6 (Reminder)	The item was rectified by the Contractor on 30 March 2017.
Noise	N/A	N/A	N/A
Waste/ Chemical Management	23 Feb 2017	• Some chemical container were placed at pavement without drip tray at OB2. The Contractor was advised to provide drip trays for chemical containers to prevent land contamination.	The item was rectified by the Contractor on 2 March 2017.
		• Stagnant water was observed in drip tray of an air compressor at OSP. The Contractor was reminded to remove the stagnant water. (Reminder)	The item was rectified by the Contractor on 2 March 2017.
	9 Mar 2017	• Oil and water mixture was observed in drip tray at NSL 6. The Contractor was reminded to remove the mixture in drip tray and dispose of as chemical waste. (Reminder)	The item was rectified by the Contractor on 16 March 2017.
	16 Mar 2017	• Oil and water mixture was observed in a drip tray at NSL9. The Contractor was reminded to remove the mixture and disposal of as chemical waste. (Reminder)	The item was rectified by the Contractor on 16 March 2017.
	23 Mar 2017	• Chemical spillage was observed near a chemical drum at OB2. The Contractor was advised to clear the spillage and dispose any impacted material as chemical waste.	The item was rectified by the Contractor on 30 March 2017.
	30 Mar 2017	• Oil Stain was observed on the pavement at OB2. The Contractor was advised to clear the stain and dispose any material as chemical waste	The item will be followed-up in the next reporting month
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

6.1.3 Most 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 into the following weekly site

inspection conducted during the reporting period. Some outstanding follow-up actions will be reported in the next reporting period.

6.1.4 The items of which their inspection for follow-up actions were outstanding as recorded in the last reporting month have already been rectified by the Contractor as confirmed by the ET during the 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 April and May 2017 will be:

Location	Site Activities
Ho Man Tin	Manhole construction, pipe laying, concreting works, EVA construction
NSL (North) & HHBP	Parapet modification works, ELS & decking removal work, concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying
OB2	Backfill, TB1 dismantling, watermain diversion, upstand wall modification, OB2 bridge jacking and bearing replacement and parapet wall construction
OB2A	Soil replacement, OB2A bridge reinstatement, precast parapet installation
NSL 9 & Oi Sen Path	Backfilling, drainage work, Scaffolding platform erection, dismantling of scaffolding, pre-split, lifting works, temporary working platform removal, ELS removal, tunnel works, rock breaking, rock cutting
EWL 7 - 9	Reinstatement, road diversion, backfilling, steel deck dismantling

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 April and May 2017 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 March 2017. 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 environmental 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

- Implement effective measures for exposed surface and during breaking process; and
- Maintain hoarding along pedestrian walkway

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

- Prevent leakage of chemical by providing secondary containment; and
- Provide proper waste and chemical management;

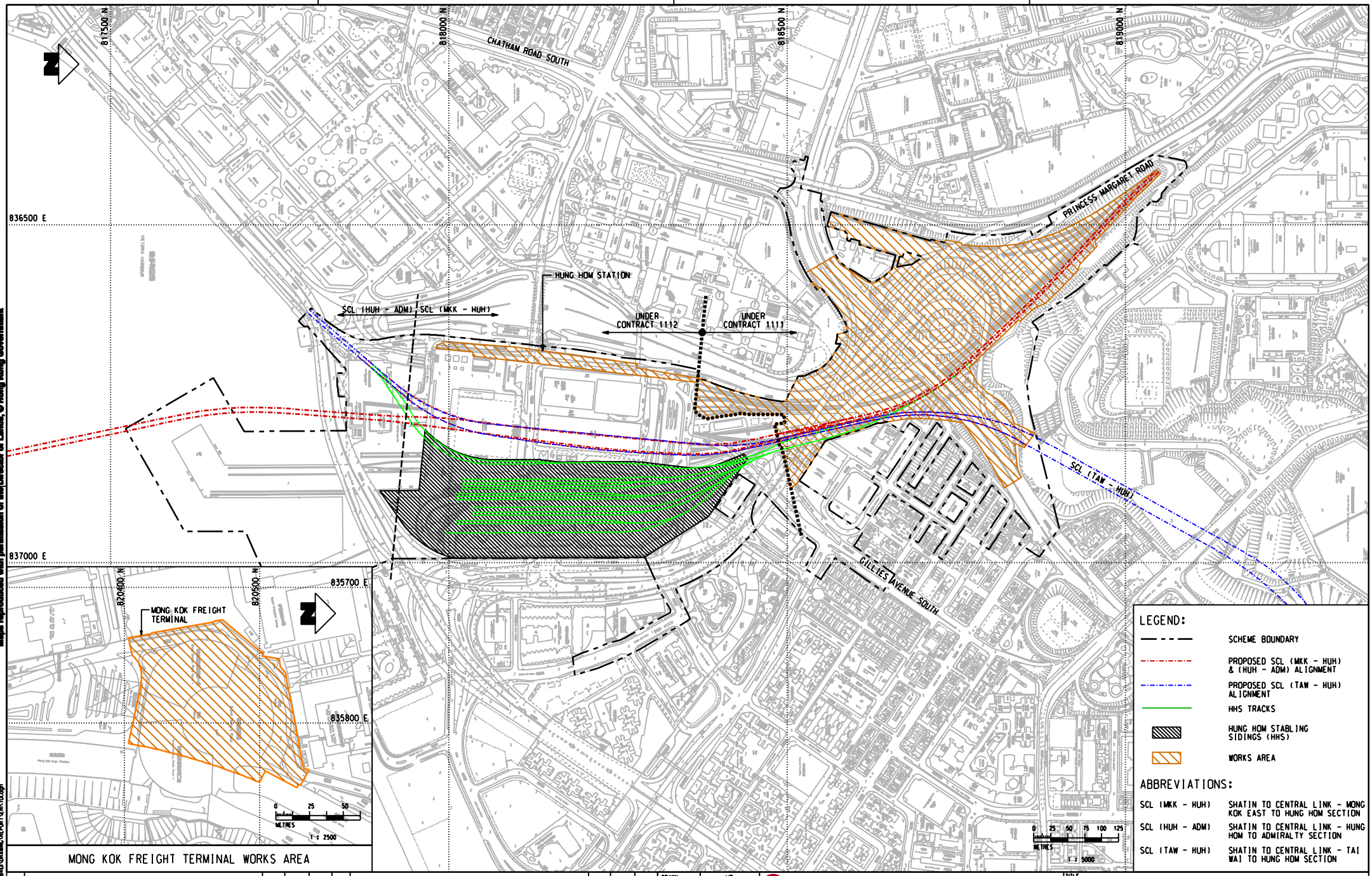
Landscape and Visual Impact

- No specific observation was identified in the reporting month.

Permits/Licenses

- No specific observation was identified in the reporting month.

FIGURES



MONG KOK FREIGHT TERMINAL WORKS AREA

LEGEND:

- SCHEME BOUNDARY
- PROPOSED SCL (MKK - HUH) & (HUH - ADM) ALIGNMENT
- PROPOSED SCL (TAW - HUH) ALIGNMENT
- HHS TRACKS
- HUNG HOM STABLING SIDINGS (HHS)
- WORKS AREA

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

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ORIGINATOR: AECOM

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HUNG HOM NORTH APPROACH TUNNELS
WORKS AREAS OF THE PROJECT

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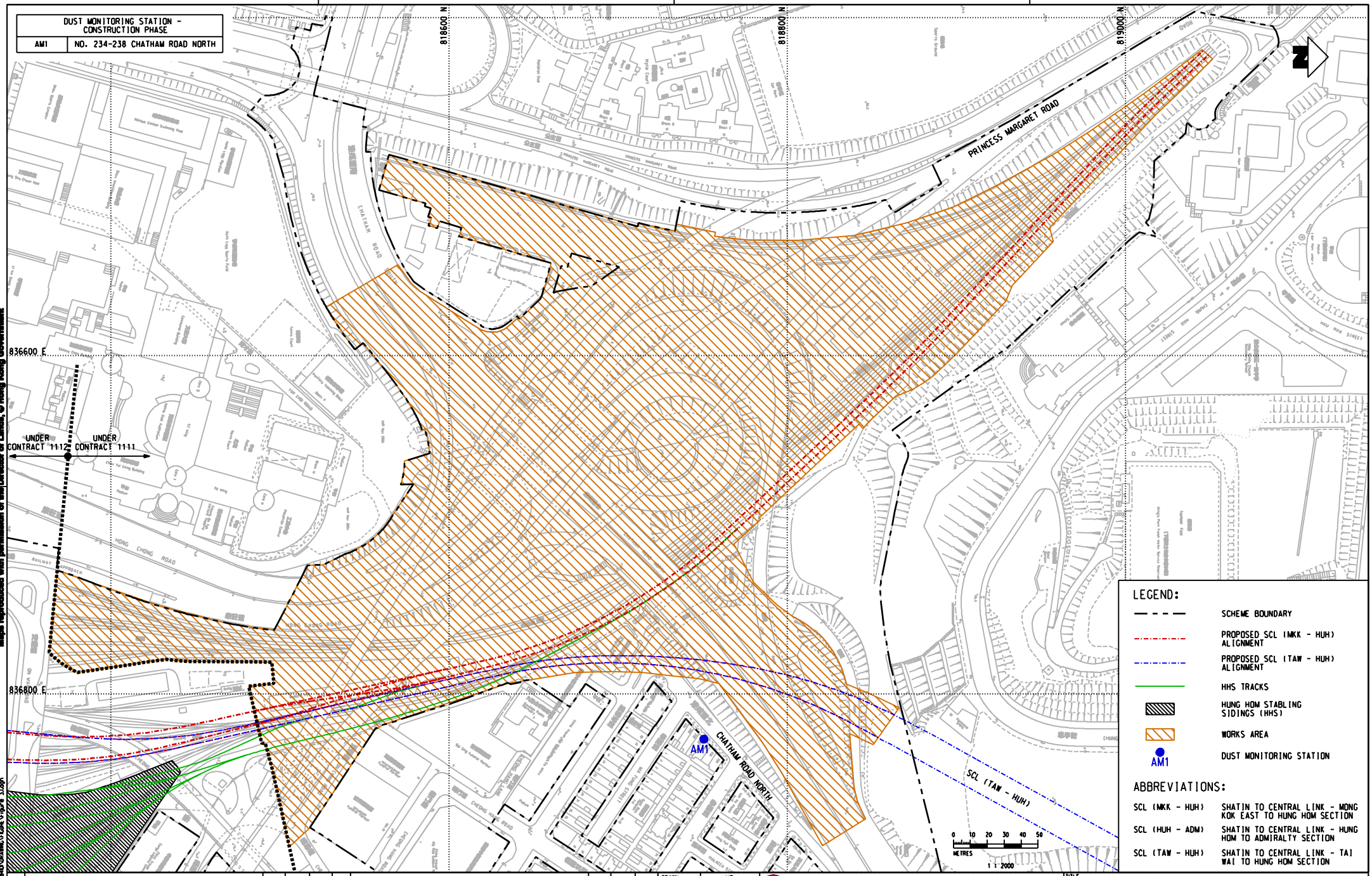

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HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF AIR QUALITY MONITORING STATION

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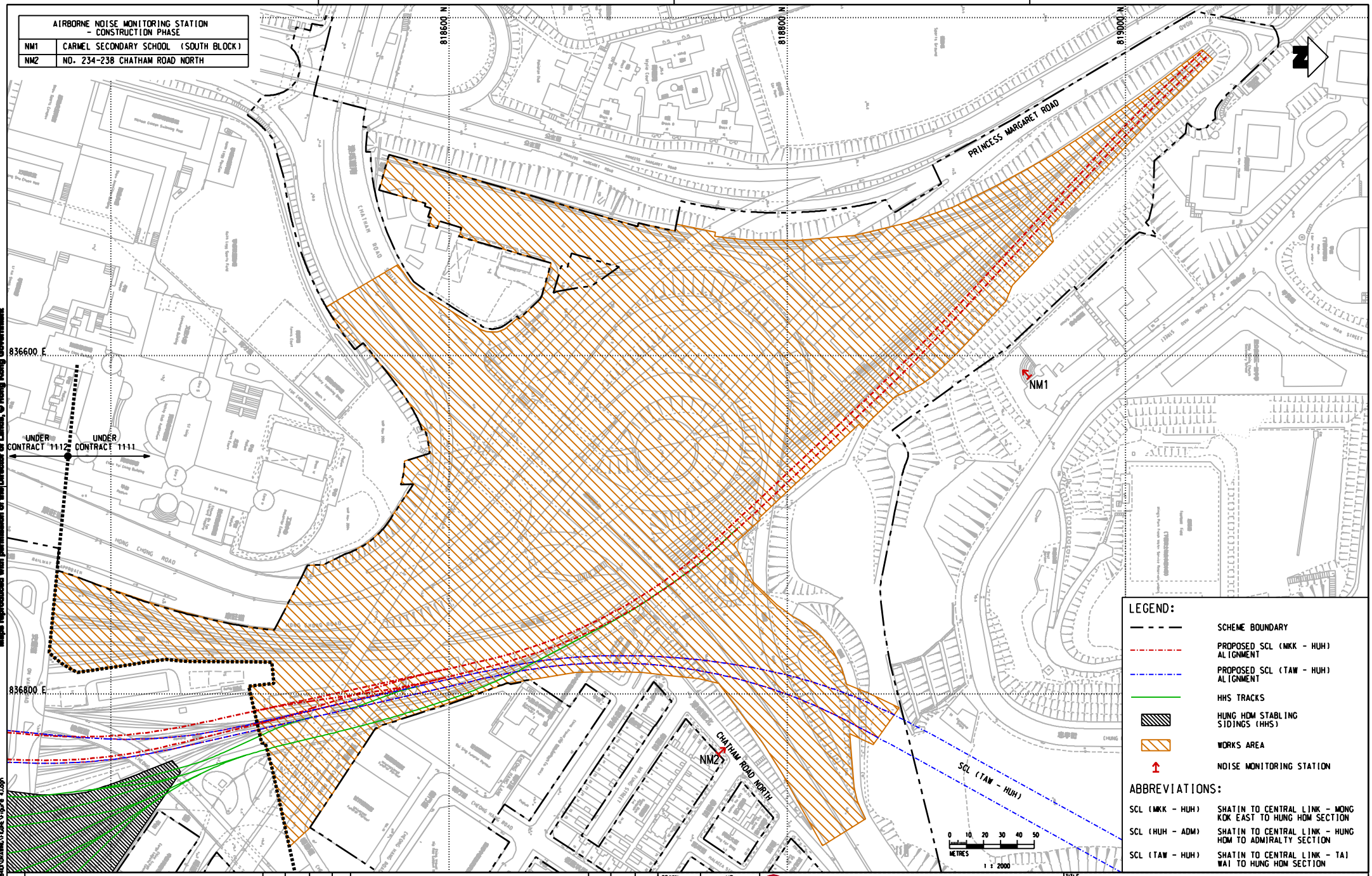

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ORIGINATOR: AECOM

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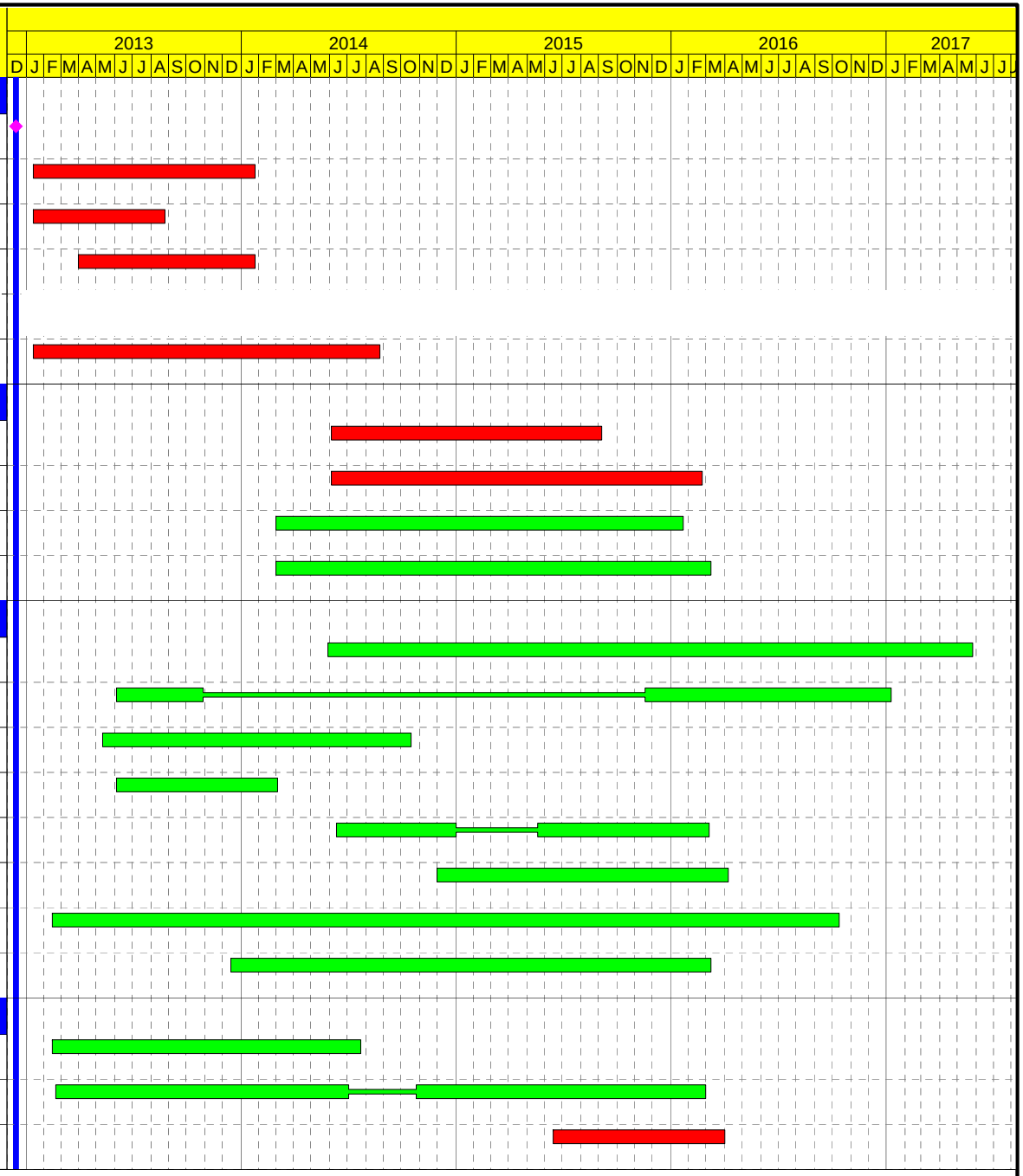
HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF NOISE MONITORING STATION (CONSTRUCTION PHASE)

SCALE 1 : 2000 (A3) | FIGURE NO. FIGURE 3.1 | REV. -

APPENDIX A

Construction Programme

Activity Description	Start	Finish
REPROVISIONING WORKS		
Commencement of Works	17/12/12	
Existing HUH Station Platform Level Works	14/01/13	26/01/14
Mong Kok Freight Terminal Podium Level	14/01/13	25/08/13
Poly U Railway Reserve & New Maintenance Sidings	01/04/13	26/01/14
Inter City Crew Accomodation on HUH EWL Platform	14/01/13	24/08/14
NSL/EWL TUNNEL		
NSL/EWL Area 3 Tunnel (early handover)	03/06/14*	04/09/15
NSL/EWL Area 4 Tunnel	03/06/14*	22/02/16
NSL/EWL Area 5 Tunnel	03/03/14*	20/01/16
NSL/EWL Area 6 Tunnel	03/03/14*	07/03/16
NSL TUNNEL		
NSL Area 7 Tunnel (inc CRN1 & Traffic Diversion)	30/05/14*	26/05/17
NSL Area 8A Tunnel	04/06/13*	07/01/17
TB1	13/05/13*	17/10/14
TB2	04/06/13*	05/03/14
NSL Area 8B Tunnel	13/06/14*	05/03/16
NSL Area 9 Tunnel	01/12/14*	06/04/16
Oi Sen Path Slope Works and Tunnel	14/02/13*	13/10/16
Oi Sen Path Noise Enclosure	14/12/13*	09/03/16
EWL TUNNEL		
EWL Area 6A Tunnel	15/02/13*	22/07/14
EWL Areas 7&8 Tunnel	22/02/13*	27/02/16
EWL Area 9 Tunnel (late possession)	15/06/15*	02/04/16



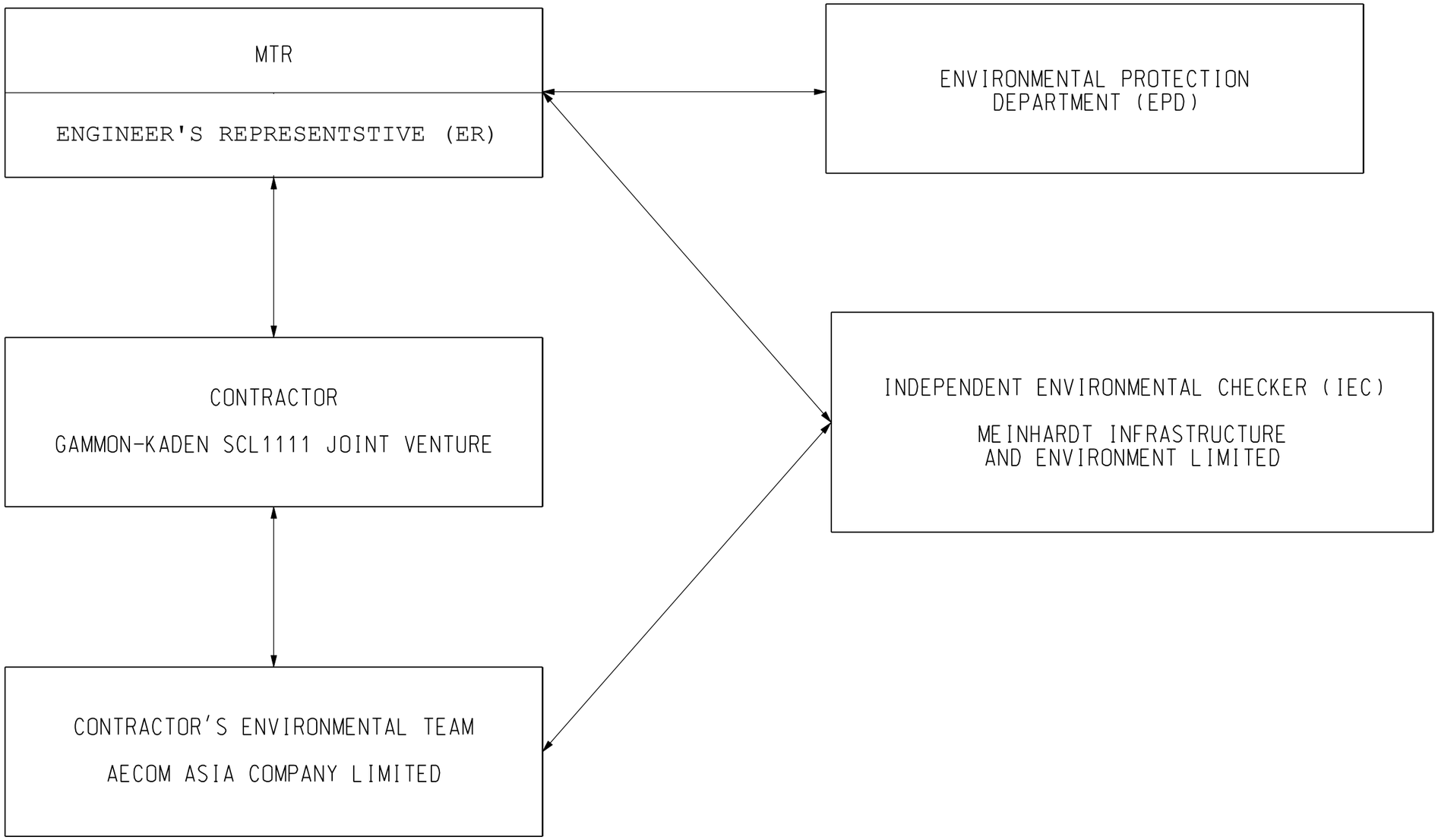
Early Bar
Progress Bar
Critical Activity

SCL 1111
SUMMARY PROGRAMME

Date	Revision	Checked	Approved
19/09/12			

APPENDIX B

Project Organization Structure



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CONTRACTOR: Gammon Kaden — Gammon – Kaden SCL 1111 Joint Venture

ORIGINATOR: AECOM

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HUNG HOM NORTH APPROACH TUNNELS
PROJECT ORGANISATION

SCALE N.T.S.

FIGURE NO. Appendix B

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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	• Existing topsoil shall be re-used where possible for new planting areas within the Project.	All construction sites	N/A
		• 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.	All construction sites	N/A
		• All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period.	All construction sites	V
		• Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas.	All construction sites	V
		• Giving control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	All construction sites	V
		• Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable.	All construction sites	N/A
		• Compensatory tree & shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	All construction sites	N/A
		• Control of night-time lighting glare.	All construction sites	N/A
		• 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.	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	• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.	All construction sites	V
		• 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.	All construction sites	V
		• Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs.	All construction sites	V
		• Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works.	All construction sites	V
		• Mobile plant should be sited as far away from NSRs as possible and practicable.	All construction sites	V
		• Material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	All construction sites	V
		The following quiet PME should be used: • Asphalt Paver (SWL=101dB(A)) • Backhoe (SWL=106dB(A)) • Backhoe with Hydraulic Breaker (SWL=110dB(A)) • Concrete lorry mixer (SWL=96dB(A)) • Concrete mixer truck (SWL=96dB(A)) • Concrete Pump (SWL=106dB(A)) • Concrete Pump Truck (SWL=106dB(A)) • Crane, mobile (SWL=94dB(A)) • Crawler Crane (SWL=102dB(A)) • Drill, hand-held (SWL=98dB(A)) • Dump truck (SWL=104dB(A)) • Excavator (SWL=106dB(A)) • Flat Bed Lorry (SWL=102dB(A)) • Generator (SWL=95dB(A)) • Giken Piler and Power-pack (SWL=94dB(A)) • Hydraulic breaker (SWL=110dB(A))	Works areas where required	N/A

Construction Noise Impact				
		• Hydraulic excavator (SWL=106dB(A)) • Lorry (SWL=102dB(A)) • Lorry with crane/ grab (SWL=94dB(A)) • Mini Piling Rig (SWL=112dB(A)) • Piling Rig (SWL=112dB(A)) • Poker, vibrator, hand-held (SWL=98dB(A)) • Road Roller (SWL=101dB(A)) • Rock Drill (SWL = 108dB(A) • Roller (SWL = 101dB(A) • Truck (SWL=103dB(A)) • Vibratory Hammer (SWL=118dB(A))		
		• Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs.	All construction sites	V
		• Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants	All construction sites	V
		• Sequencing operation of construction plants where practicable.	All construction sites	V
		• Particularly noisy construction activities will be scheduled to avoid school examination period as far as practicable.	Works areas near the Carmel Secondary School	V
/	To control construction airborne noise	• 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	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	• Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%.	All construction sites	@
		• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet.	All construction sites	V
		• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads	All construction sites	V
		• A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.	All construction sites	V
		• 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	All construction sites	N/A
		• Vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point.	All construction sites	V
		• 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.	All construction sites	V
		• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided.	All construction sites	@
		• 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.	All construction sites	V
		• 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.	All construction sites	@
		• 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.	All construction sites	N/A
		• 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.	All construction sites	V

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 impactt	• 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.	Site drainage system	V
		• 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.	Site drainage system	V
		• Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities.	All works area	V
		• 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.	All works area	V
		• Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly.	All construction sites	V
		• Construction works should be programmed to minimize soil excavation works in rainy seasons.	All construction sites	N/A
		• 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.	All construction sites	V
		• 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.	All construction sites	N/A
		• Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms.	All construction sites	V
		• 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.	All construction sites	V

Construction Water Quality Impact				
		• 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.	All construction sites	V
		• 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.	All construction sites	V
		• All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads.	All construction sites	V
		• 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.	All construction sites	V
		• A cofferdam wall should be built as necessary to limit groundwater inflow to the excavation works areas.	Excavation works areas	N/A
		• Wastewater generated should not be discharged into the stormwater drainage system.	All construction sites	V
		• 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.	All construction sites	N/A
		• Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site.	All construction sites	V
		• 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.	All construction sites where practicable	N/A
		• Appropriate measures will be deployed to minimize the intrusion of groundwater into excavation works areas.	All construction sites	N/A
		• 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.	All construction sites	N/A

Waste Management				
S11.5.1 (TAW-HUH), S11.5.1(HHS) & S9 (MKK-HUH)	Good site practice to minimize the generation and impact of the waste.	• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.	All construction sites	N/A
		• Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions.	All construction sites	V
		• 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.	All construction sites	V
		• Proper storage and site practices to minimize the potential for damage or contamination of construction materials.	All construction sites	V
		• Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	All construction sites	N/A
		• Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution.	All construction sites	@
		• Maintain and clean storage areas routinely.	All construction sites	V
		• Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away.	All construction sites	V
		• Waste should be removed in timely manner.	All construction sites	V
		• Waste collectors should only collect wastes prescribed by their permits.	All construction sites	V
		• Waste should be disposed of at licensed waste disposal facilities.	All construction sites	V
		• Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified.	All construction sites	V
		• 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.	All construction sites	V
		• 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.	All construction sites	V
		• The Contractor should register as a chemical waste producer if chemical wastes would be generated.	All construction sites	V
		• Disposal of chemical waste should be via a licensed waste collector.	All construction sites	V

Waste Management				
		• Stockpiling of contaminated sediments should be avoided as far as possible.	All construction sites	N/A
		• 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 should follow the trip-ticket system. • Licensed asbestos waste collectors should be appointed to collect the asbestos waste and deliver to the designated landfill for disposal.	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.	• Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil.	Within Project Boundary where signs of contamination is identified	N/A
		• 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.		N/A
	To remediate contaminated soil	• 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.		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 $\mu g/m^3$	260.0 $\mu g/m^3$

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)(1)
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)(1)
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

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 31, 2016 Rootsmeter S/N 0438320 Ta (K) - 298
Operator Tisch Orifice I.D. - 0988 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3670	3.2	2.00
2	NA	NA	1.00	0.9750	6.4	4.00
3	NA	NA	1.00	0.8700	7.9	5.00
4	NA	NA	1.00	0.8260	8.7	5.50
5	NA	NA	1.00	0.6830	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9884	0.7230	1.4090		0.9957	0.7284	0.8888
0.9842	1.0094	1.9926		0.9915	1.0170	1.2570
0.9821	1.1289	2.2278		0.9894	1.1373	1.4054
0.9811	1.1878	2.3365		0.9884	1.1967	1.4740
0.9758	1.4288	2.8179		0.9831	1.4394	1.7777
Qstd slope (m) =		1.99349		Qa slope (m) =		1.24829
intercept (b) =		-0.02737		intercept (b) =		-0.01727
coefficient (r) =		0.99988		coefficient (r) =		0.99988
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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:	24-Feb-17	Next Due Date:	24-Apr-17
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	286.1	Pressure, Pa (mmHg)	766.7

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.99349	Intercept, bc	-0.02737
Last Calibration Date:	31-May-16	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-May-17				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	7.0	2.71	1.37	43.0	44.08
13	5.3	2.36	1.20	33.0	33.83
10	5.0	2.29	1.16	32.0	32.80
7	4.1	2.08	1.05	26.0	26.65
5	3.2	1.83	0.93	19.0	19.48

By Linear Regression of Y on X

Slope , mw = 55.3985 **Intercept, bw =** -32.0504

Correlation Coefficient* = 0.9986

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/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; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2}$ = **38.99**

Remarks: _____

QC Reviewer: H Y Shum Signature: _____ Date: 24/2/17

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0704 03-01 **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.:	2800927 / N.009.06	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	04-Jul-2016

Date of test: 07-Jul-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	18-Jun-2017	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 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 ±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: Huang Jian Min/Feng Jun Qi **Date:** 09-Jul-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533
HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed 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 $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ 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:** 07-Jul-2016

Checked by: Lam Tze Wai **Date:** 09-Jul-2016

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
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Fax : (852) 2555 7533

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0401 01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2270	,	4189
Serial/Equipment No.:	2644597	,	2933110
Adaptors used:	- (N-012-01)	,	-

Item submitted by

Customer Name:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	01-Apr-2016

Date of test: 06-Apr-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 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 ±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: Huang Jian Min/Feng Jun Qi **Date:** 07-Apr-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed 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:	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 $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ 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	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 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: 06-Apr-2016

Checked by: Lam Tze Wai Date: 07-Apr-2016

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0303 01-02 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone	Pream
Manufacturer:	B & K	,	B & K	B & K
Type/Model No.:	2270	,	4189	ZC0032
Serial/Equipment No.:	2644597 N.012.01	,	2846461	17965
Adaptors used:	-	,	-	-

Item submitted by

Customer Name:	AECOM ASIA CO LTD
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Mar-2017

Date of test: 07-Mar-2017

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	18-Jun-2017	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1010 ± 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 ±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: Huang Jian Min/Feng Jun Qi **Date:** 08-Mar-2017 **Company Chop:** SOILS & MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 17CA0303 01-02 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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:	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 $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ 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	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 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:** 07-Mar-2017

Checked by: Lam Tze Wai **Date:** 08-Mar-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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

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	2879980	19428
Adaptors used:	- (N-0401.01)	-	-

Item submitted by

Customer Name:	AECOM ASIA CO LIMITED
Address of Customer:	-
Request No.:	-
Date of receipt:	04-Mar-2016

Date of test: 05-Mar-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1010 ± 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 ±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: Huang Jian Min/Feng Jun Qi **Date:** 08-Mar-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

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HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0304 02 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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	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 $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ 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:** 05-Mar-2016

Checked by: Lam Tze Wai **Date:** 08-Mar-2016

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0303 01-01

Item tested

		Microphone	Preamp
Description:	Sound Level Meter (Type 1)		
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366 N.011.01	2665582	17190
Adaptors used:	-	-	-

Item submitted by

Customer Name:	AECOM ASIA CO LTD
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Mar-2017

Date of test: 07-Mar-2017

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	18-Jun-2017	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1010 ± 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 ±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: Huang Jian Min/Feng Jun Qi **Date:** 08-Mar-2017 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 17CA0303 01-01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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	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 $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ 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:** 07-Mar-2017

Checked by: Lam Tze Wai **Date:** 08-Mar-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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA1201 01 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10307223 (CN.004.08)
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	01-Dec-2016

Date of test: 05-Dec-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	14-Apr-2017	SCL
Preamplifier	B&K 2673	2239857	28-Apr-2017	CEPREI
Measuring amplifier	B&K 2610	2346941	26-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI
Digital multi-meter	34401A	US36087050	18-Apr-2017	CEPREI
Audio analyzer	8903B	GB41300350	19-Apr-2017	CEPREI
Universal counter	53132A	MY40003662	19-Apr-2017	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 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: Huang Jian Min/Feng Jun Qi **Date:** 08-Dec-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA1201 01 **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.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.22	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 = 0.002 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 = 986.6 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 = 0.5 %**

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: Fung Chi Yip **Date:** 05-Dec-2016

Checked by: Lam Tze Wai **Date:** 08-Dec-2016

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0428 02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-74
Serial/Equipment No.:	34246490
Adaptors used:	Yes

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	28-Apr-2016

Date of test: 10-May-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	14-Apr-2017	SCL
Preamplifier	B&K 2673	2239857	28-Apr-2017	CEPREI
Measuring amplifier	B&K 2610	2346941	26-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI
Digital multi-meter	34401A	US36087050	18-Apr-2017	CEPREI
Audio analyzer	8903B	GB41300350	19-Apr-2017	CEPREI
Universal counter	53132A	MY40003662	19-Apr-2017	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	1005 ± 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: Huang Jian Min/Feng Jun Qi **Date:** 11-May-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
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Fax : (852) 2555 7533

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0428 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.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.07	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Flúctuations 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 = 0.002 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 = 1001.9 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 = 1.2 %**

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: Fung Chi Yip **Date:** 10-May-2016

Checked by: J. Q. Feng **Date:** 11-May-2016

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
Impact Monitoring Schedule for March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Mar	2-Mar	3-Mar	4-Mar
				24-hour TSP (AM1)	Noise (NM1, NM2)	
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
			24-hour TSP (AM1)	Noise (NM1, NM2)		
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
		24-hour TSP (AM1)	Noise (NM1, NM2)			
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
	24-hour TSP (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
		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 April 2017

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

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 May 2017

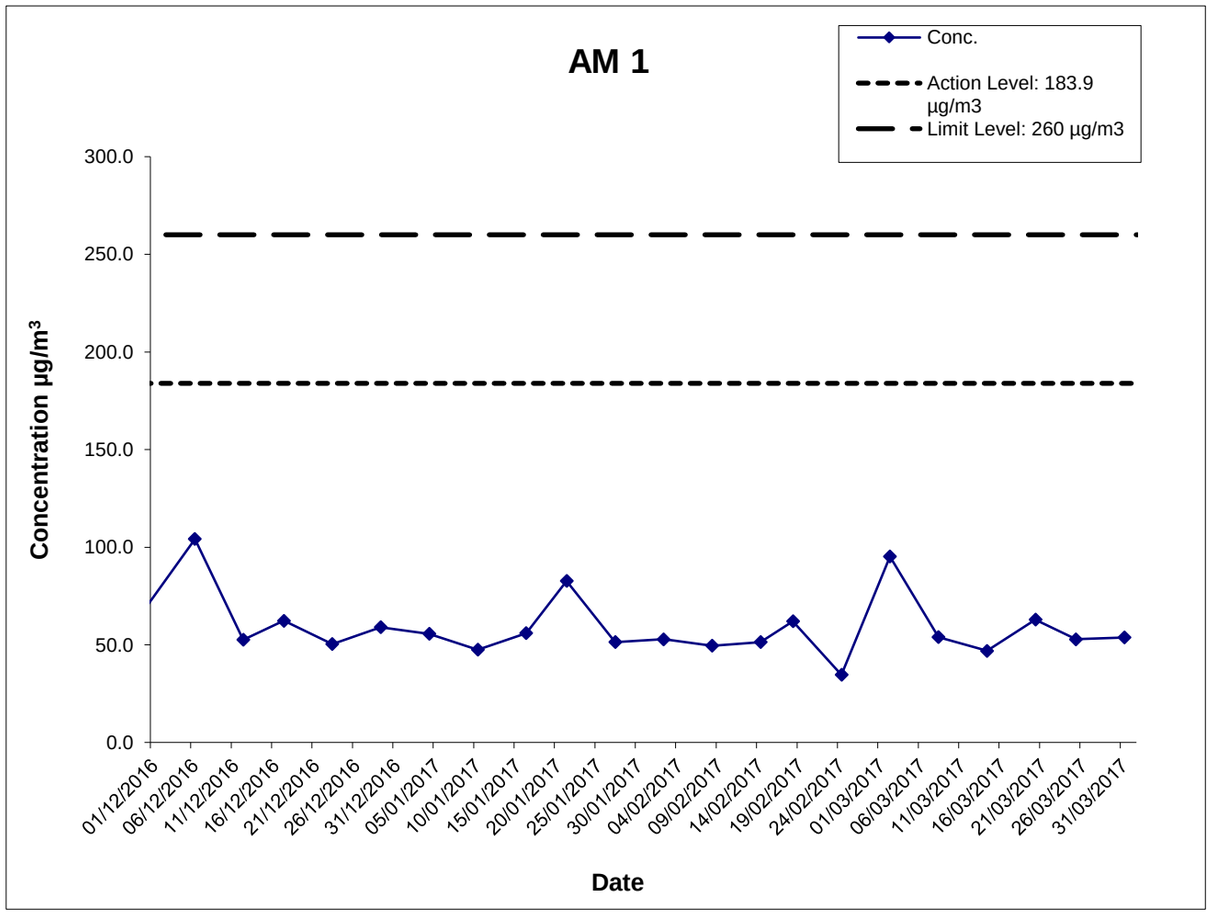
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-May	2-May	3-May	4-May	5-May	6-May
		24-hour TSP (AM1)		Noise (NM1, NM2)		
7-May	8-May	9-May	10-May	11-May	12-May	13-May
	24-hour TSP (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
14-May	15-May	16-May	17-May	18-May	19-May	20-May
					24-hour TSP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

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



AECOM	Shatin to Central Link Works Contract 1111- Hung Hom North Approach Tunnels	SCALE	N.T.S.	DATE	Apr-17
		CHECK	TYUT	DRAWN	RCCP
	Graphical Presentations of Impact 24-hour TSP Monitoring Results	JOB NO.	60284101	APPENDIX No. G	Rev. -

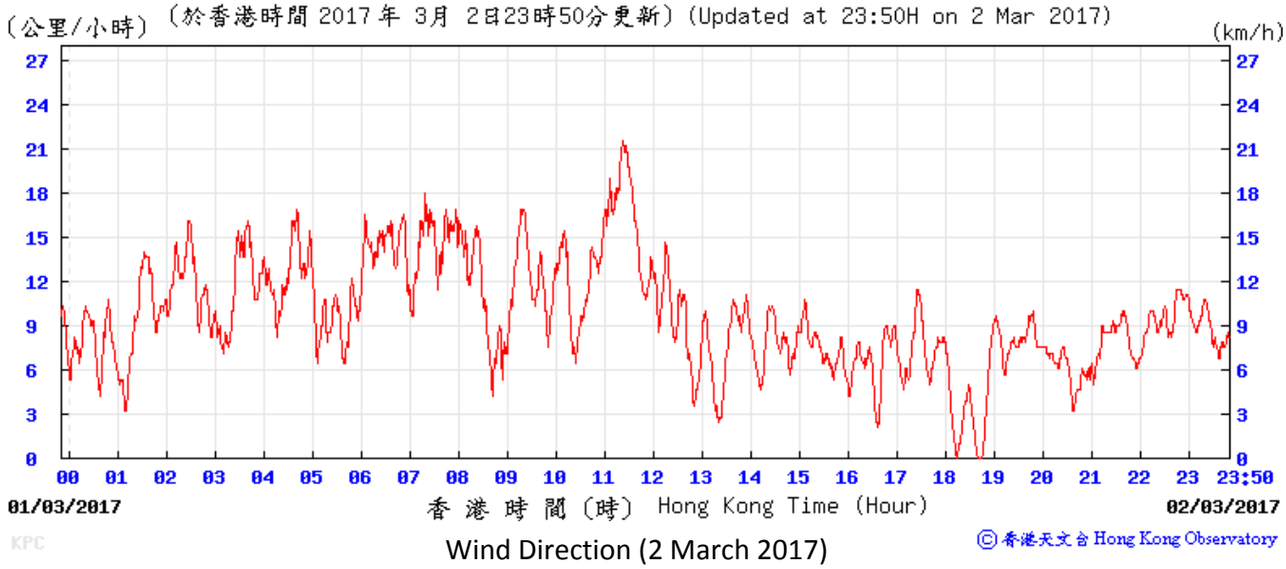
Appendix G
Air Quality Monitoring Results

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

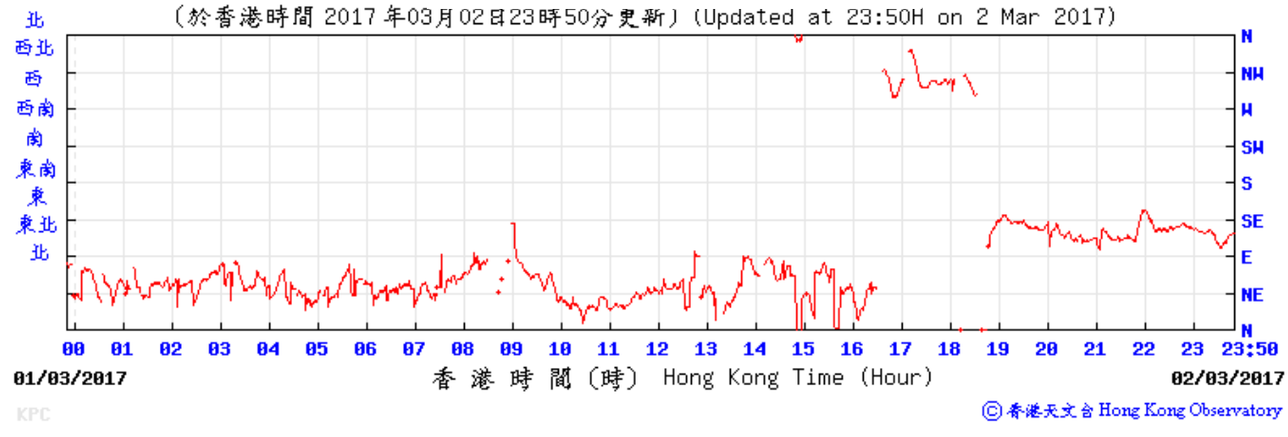
Start		End		Weather	Air	Atmospheric	Flow Rate (m^3/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (^oC)	Pressure (hPa)	Initial	Final	(m^3/min)	(m^3)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	($\mu g/m^3$)
2-Mar-17	0:00	3-Mar-17	0:00	Fine	1019.5	18.8	1.34	1.34	1.34	1932.5	2.8327	3.0167	0.1840	13124.04	13148.04	24.00	95.2
8-Mar-17	0:00	9-Mar-17	0:00	Cloudy	1017.5	16.3	1.34	1.34	1.34	1932.5	2.8093	2.9136	0.1043	13148.04	13172.04	24.00	54.0
14-Mar-17	0:00	15-Mar-17	0:00	Fine	1015.8	19.1	1.34	1.34	1.34	1932.5	2.8444	2.9350	0.0906	13172.04	13196.04	24.00	46.9
20-Mar-17	0:00	21-Mar-17	0:00	Fine	1015.1	21.9	1.34	1.34	1.34	1932.5	2.8056	2.9272	0.1216	13196.04	13220.04	24.00	62.9
25-Mar-17	0:00	26-Mar-17	0:00	Sunny	1017.2	20.2	1.34	1.34	1.34	1932.5	2.8588	2.9609	0.1021	13220.04	13244.04	24.00	52.8
31-Mar-17	0:00	1-Apr-17	0:00	Rainy	1015.3	20.1	1.34	1.34	1.34	1932.5	2.7911	2.8949	0.1038	13244.04	13268.04	24.00	53.7
																Average	**60.9**
																Minimum	**46.9**
																Maximum	**95.2**

Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (2 March 2017)

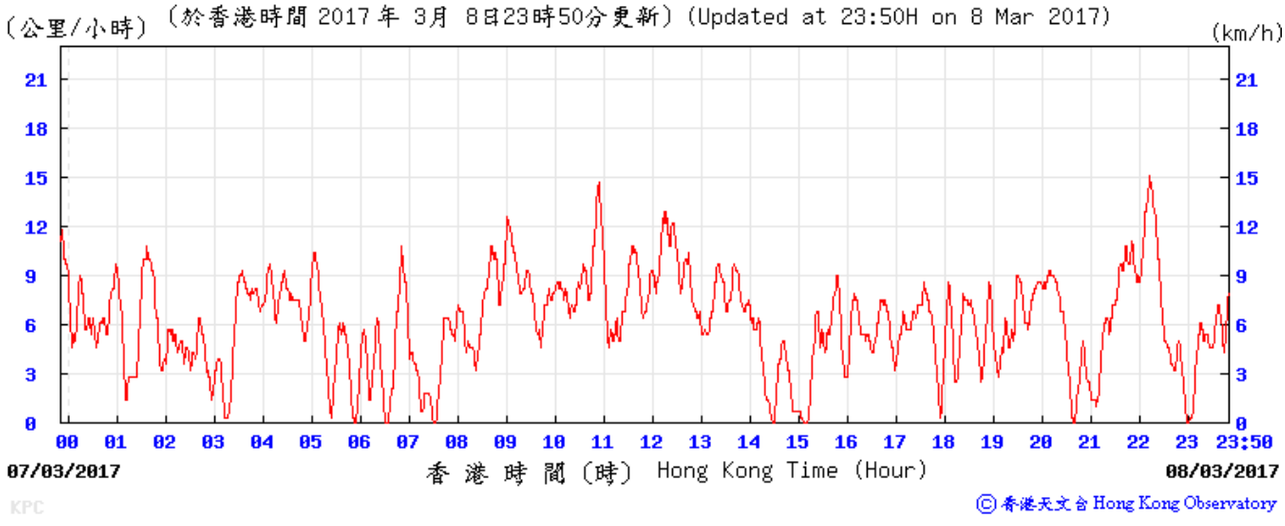


Wind Direction (2 March 2017)

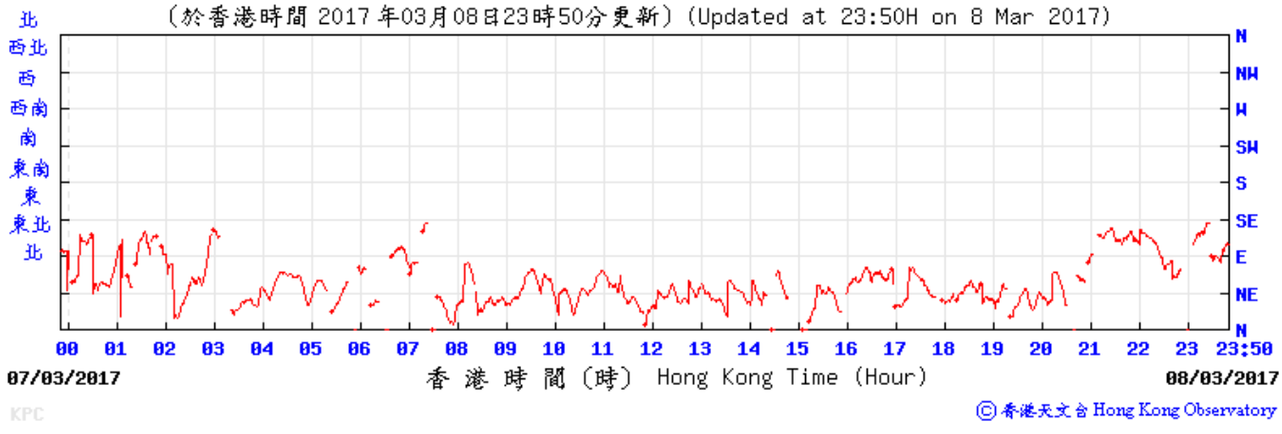


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (8 March 2017)

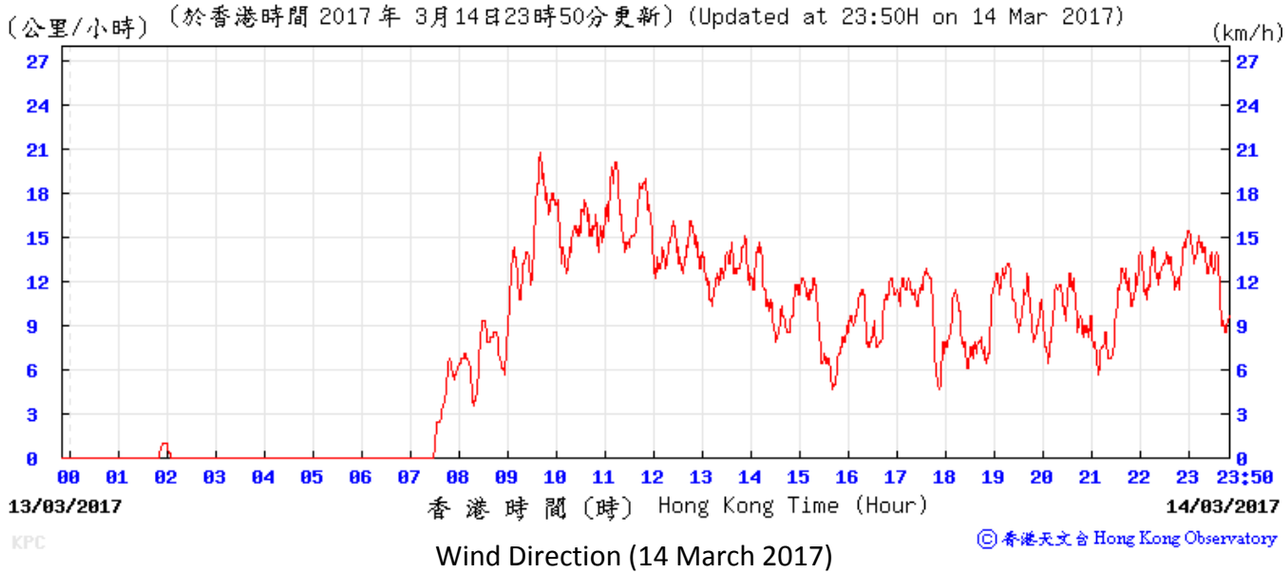


Wind Direction (8 March 2017)

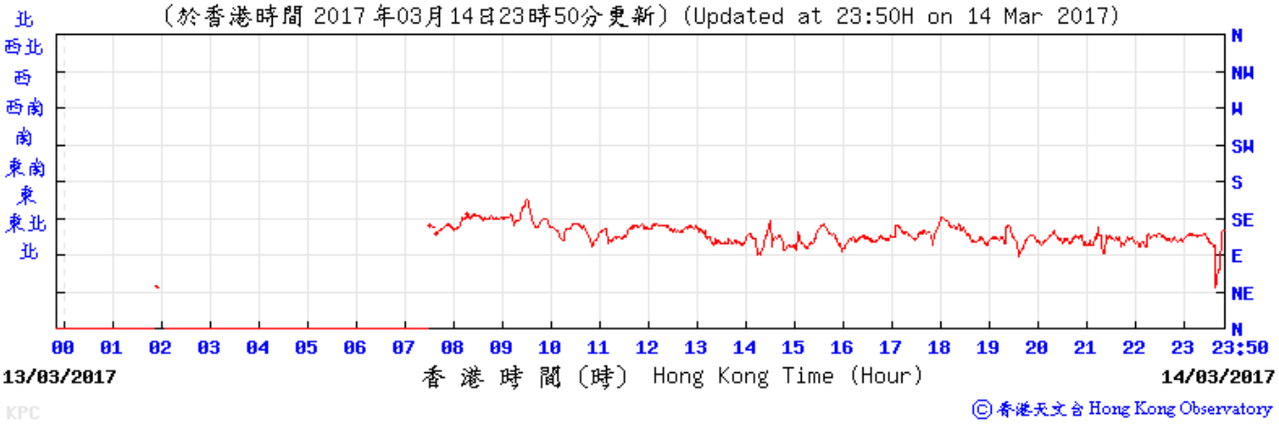


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (14 March 2017)

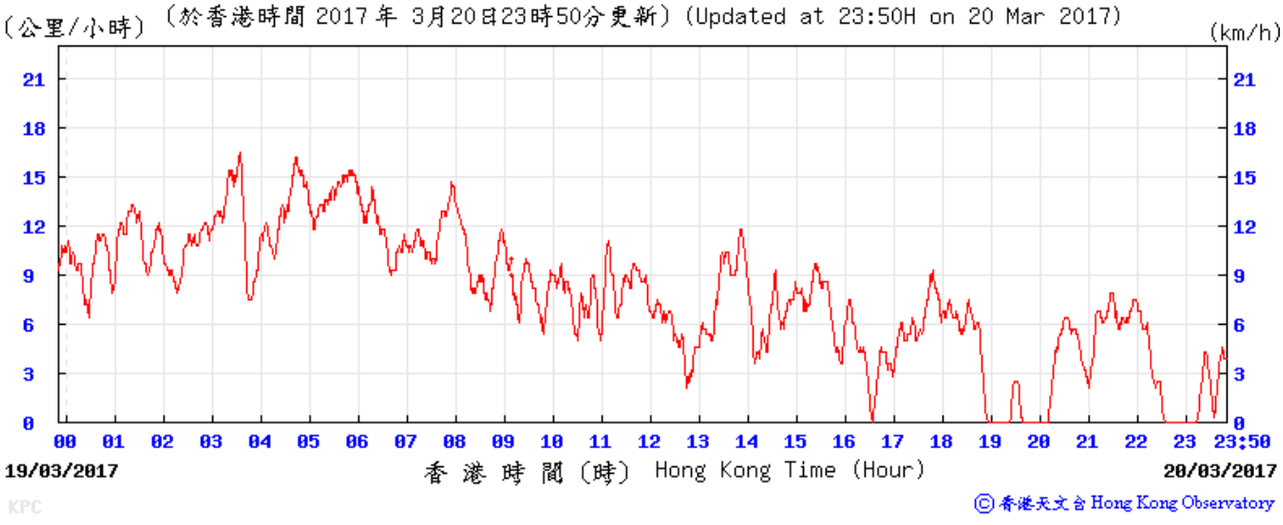


Wind Direction (14 March 2017)

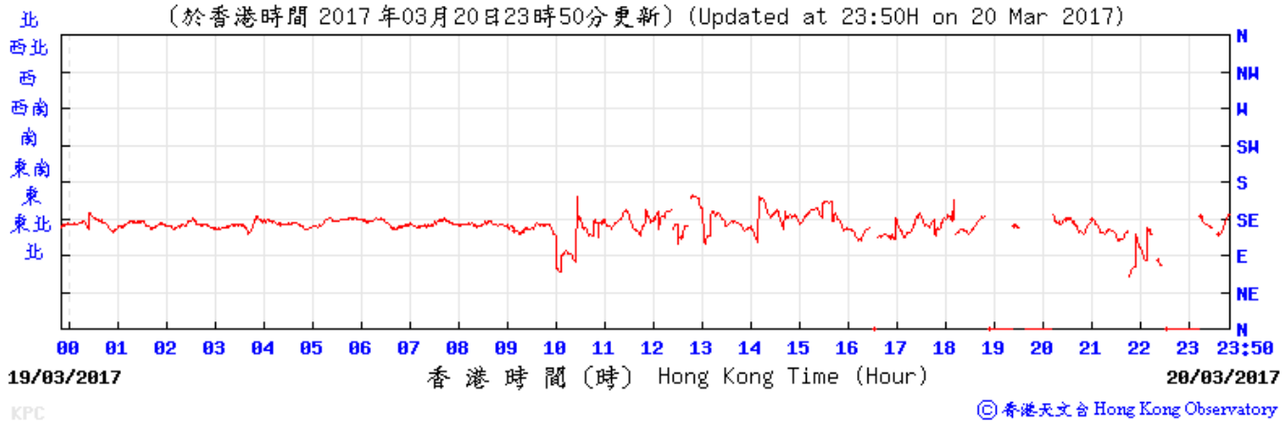


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (20 March 2017)

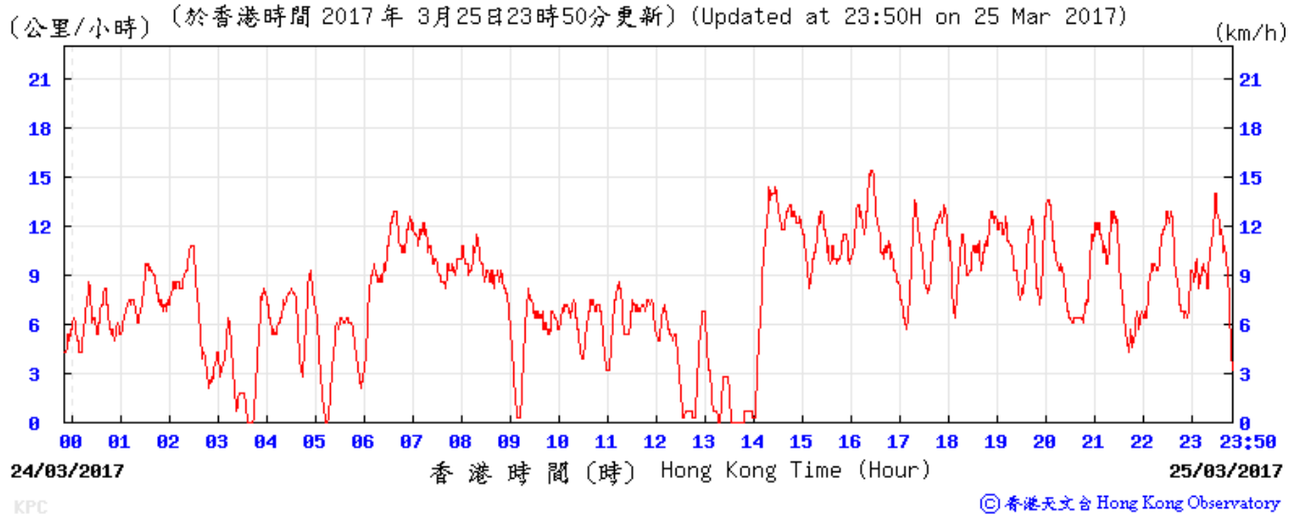


Wind Direction (20 March 2017)

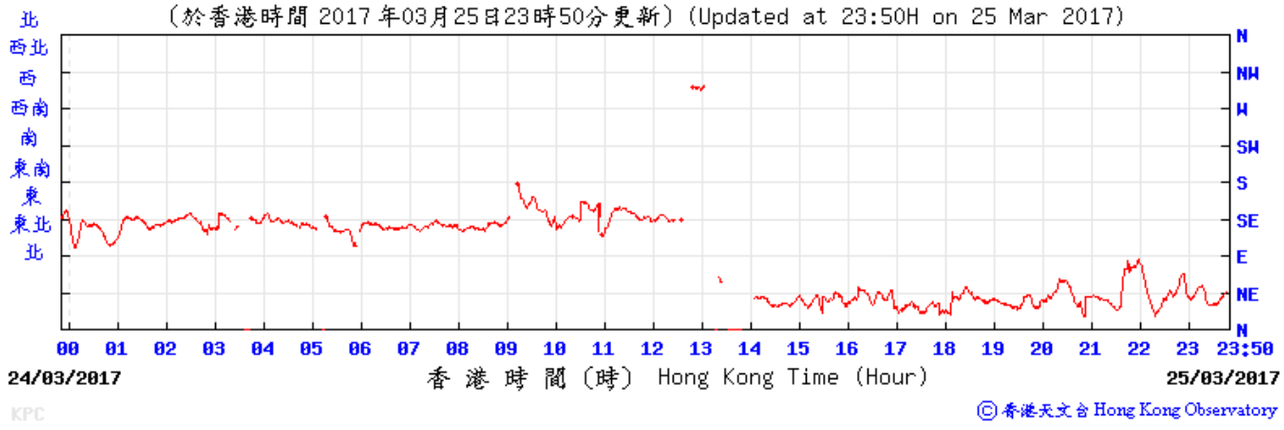


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (25 March 2017)

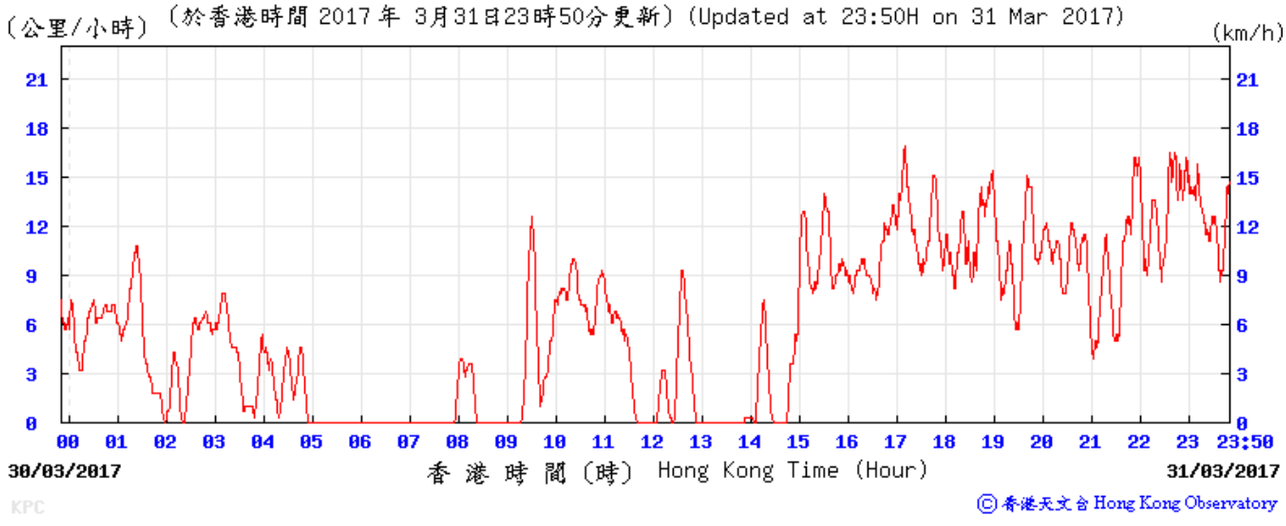


Wind Direction (25 March 2017)

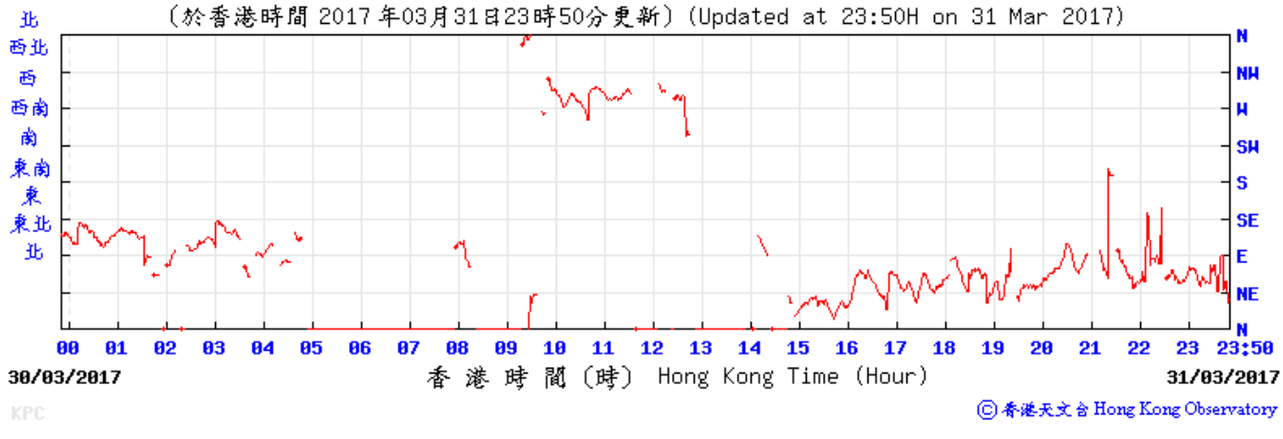


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2017

Wind Speed (31 March 2017)



Wind Direction (31 March 2017)



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)+				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level*, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
3-Mar-17	Fine	10:40	64.2	69.4	67.9	<Baseline	68.0	70	N
9-Mar-17	Fine	10:50	64.3	69.2	67.9	<Baseline	68.0	65	N
15-Mar-17	Fine	10:09	61.0	66.5	64.3	<Baseline	68.0	65	N
21-Mar-17	Fine	10:45	65.5	69.4	67.5	<Baseline	68.0	65	N
28-Mar-17	Sunny	14:00	63.9	66.2	65.4	<Baseline	68.0	70	N

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

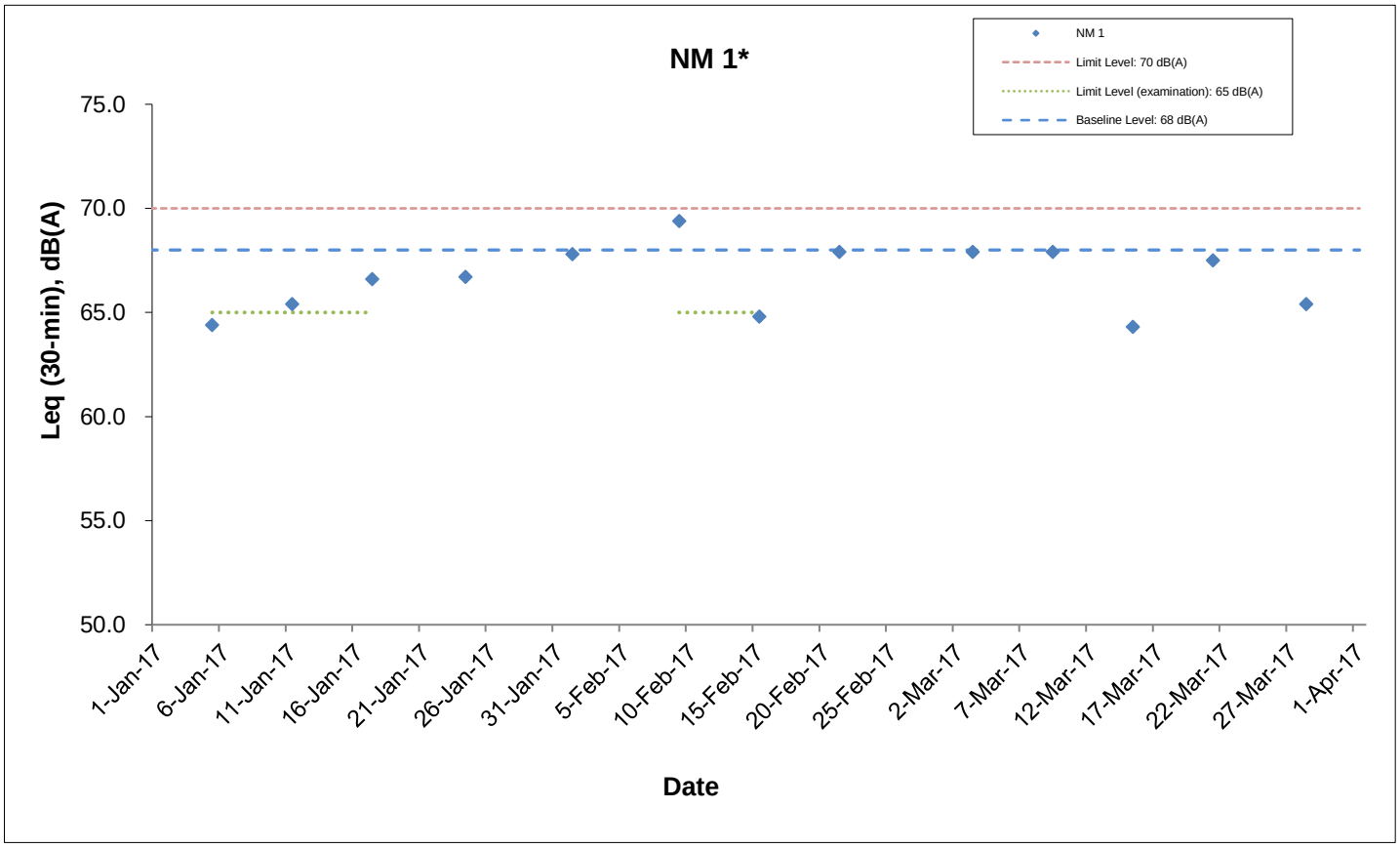
Date	Weather Condition	Noise Level for 30-min, dB(A)++				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
3-Mar-17	Fine	11:20	68.4	72.4	70.2	<Baseline	79.0	75	N
9-Mar-17	Fine	11:25	67.2	71.4	69.5	<Baseline	79.0	75	N
15-Mar-17	Fine	11:00	65.5	70.5	69.6	<Baseline	79.0	75	N
21-Mar-17	Fine	10:12	66.5	70.4	68.7	<Baseline	79.0	75	N
28-Mar-17	Sunny	15:30	67.8	70.3	69.0	<Baseline	79.0	75	N

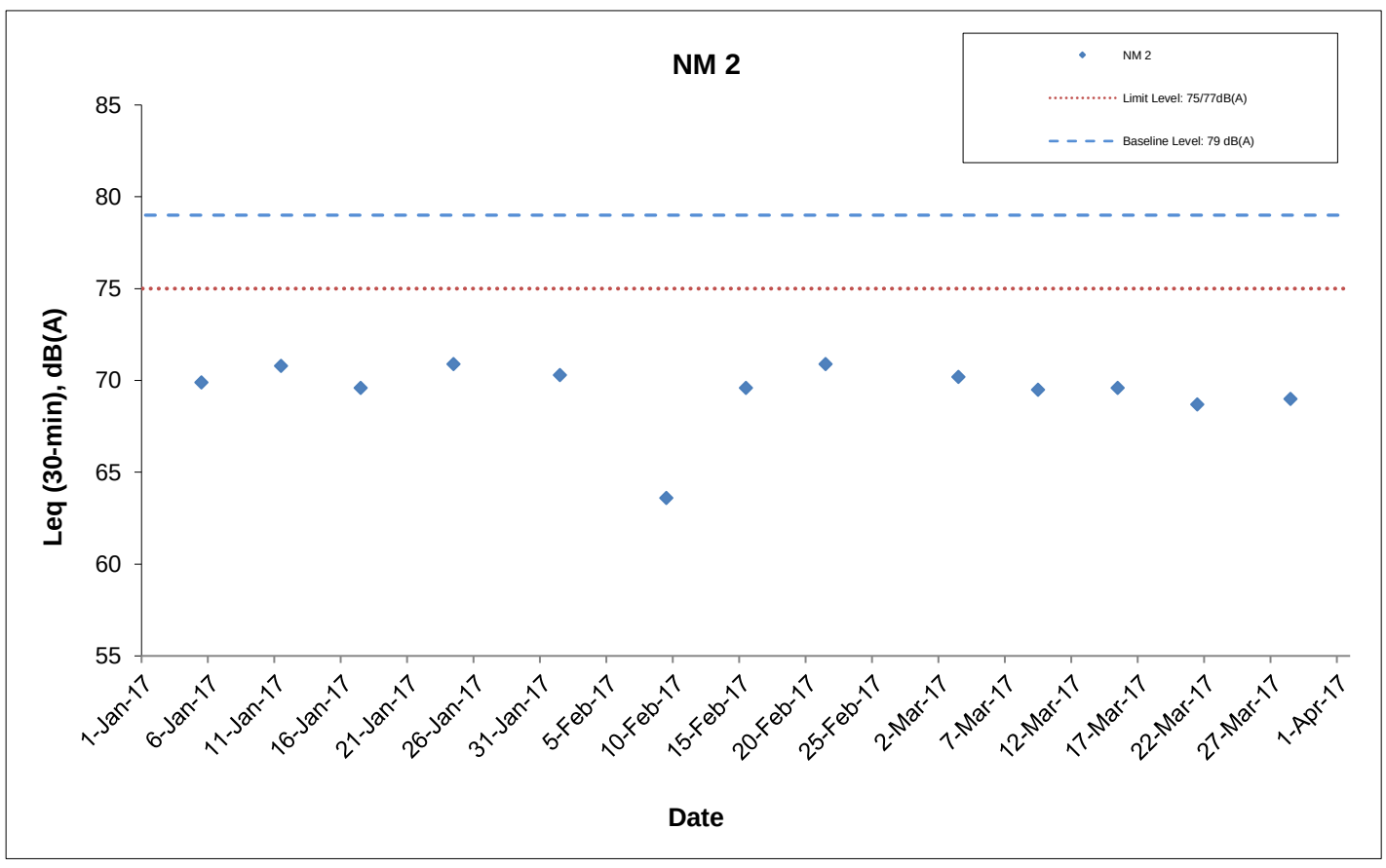
+ - Façade measurement

++ - Free field measurement

* - Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period. (6 Feb – 17 Feb 2017)

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

AECOM	**Shatin to Central Link Works Contract 1111- Hung Hom North Approach Tunnels**	SCALE	N.T.S.	DATE	Apr-17
		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**
ACTION LEVEL				
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**
LIMIT LEVEL				
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
ACTION LEVEL				
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2.Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4.Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity 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 non-conformity 2. Implement remedial measures 3.Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2.Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4.Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX J

Cumulative Statistics of Complaints, Notification of Summons and Successful Prosecutions

Appendix J

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental complaints	-	-	-	0	1
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	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	Building Debris							Tolo	WIL 705								Type 1	Type 2
Unit	('000m^3)	('000m^3)	('000m$^{3)}$	('000m$^{3)}$	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m^3)	('000m^3)
Jan	1.094	0.000	0.000	0.000	1.094	0.092	0.039	0.000	0.131	0.000	0.000	0.000	0.963	0.963	0.000	0.776	0.000	0.000	120.720	0.000	0.000
Feb	1.137	0.000	0.000	0.000	1.137	0.343	0.028	0.000	0.372	0.000	0.000	0.000	0.766	0.766	0.000	0.000	0.000	0.000	100.550	0.000	0.000
Mar	0.875	0.000	0.000	0.000	0.875	0.203	0.008	0.000	0.211	0.000	0.000	0.000	0.664	0.664	0.000	0.000	0.000	0.000	118.440	0.000	0.000
Apr																					
May																					
Jun																					
SUB-TOTAL	3.107	0.000	0.000	0.000	3.107	0.639	0.075	0.000	0.714	0.000	0.000	0.000	2.393	2.393	0.000	0.776	0.000	0.000	339.710	0.000	0.000
Jul																					
Aug																					
Sep																					
Oct																					
Nov																					
Dec																					
2016 TOTAL	3.107	0.000	0.000	0.000	3.107	0.639	0.075	0.000	0.714	0.000	0.000	0.000	2.393	2.393	0.000	0.776	0.000	0.000	339.710	0.000	0.000

Note:

1. Assume the density of fill is 2 ton/m^3.
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

50th EM&A Report for Works Contract 1103 –
Hin Keng to Diamond Hill

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 50

[Period from 1 to 31 March 2017]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(April 2017)

Certified by: Jacky Chan

Position: Environmental Team Leader

Date: 11 April 2017

MTR Corporation Limited

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

Monthly Environmental Monitoring and Audit Report - March 2017

228105-27

April 2017

Job number 228105-27

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ARUP

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Executive Summary

This is the fiftieth 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 March 2017 (1 to 31 March 2017).

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

- Underground Remedial Works in Diamond Hill;
- Tunnel Lining, Partition Walls, Dividing Slabs, Drains, Walkways and Site Formation at Hin Keng;
- Tunnels Connection, RC Concrete, ELS Work, Sheet piling for retaining wall and RRIW for PTT at Fung Tak;
- Central Core, Ventilation Tunnel, C&S Works and ABWF Works 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 2 air quality and 2 noise monitoring stations 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 Action / Limit Level of regular construction noise was recorded during the reporting month.

Landscape and Visual Audit

Landscape and visual site audits in accordance with the requirements stipulated in the EM&A manual were conducted in the reporting month. Based on the site inspections, no substantial change of Landscape Resources, Landscape Character Areas and Visual Sensitive Receivers was noted.

Waste Disposal

Inert C&D Materials with an actual amount of 649 m^3 were generated and disposed of at public fill in TKO137FB/TM38FB. 279 m^3 of general refuse was generated

and disposed of at NENT/SENT/WENT landfill whilst 5,510kg of metals and 1,400kg of chemical waste was generated.

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 1 March 2017 and the final was undertaken on 29 March 2017. An IEC joint site audit was undertaken on 15 March 2017. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

One complaint was received during the reporting month.

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 [1]	**Major Works Undertaken**
Diamond Hill	Underground Remedial Works
Hin Keng	Tunnel Lining, Partition Walls, Dividing Slabs, Drains, Walkways and Site Formation
Fung Tak	Tunnels Connection, RC Concrete, ELS Work, Sheet piling for retaining wall and RRIW for PTT
Ma Chai Hang	Central Core, Ventilation Tunnel, C&S Works and ABWF Works
Shiu Chui 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
Project Proponent: MTRC		
Engineer's Representative	Sammi Wong	3767 0268
SCL Project-wide Environmental Team Leader	Felice Wong	2688 1283
Independent Environmental Checker: Meinhardt Infrastructure & Environment Ltd.		
Independent Environmental Checker	Fredrick Leong	2859 1739
Contractor: VINCI Construction Grands Projets		
Project Director	Francois Dudouit	3765 5610
IMS Manager	Keith Lee	3765 5657
Contractor's Environmental Team: Ove Arup & Partners Hong Kong Ltd.		
Designated Environmental Team Leader for Works Contract 1103	Jonathan Pyke	2268 3555

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
Air Quality	
DMS-1	C.U.H.K.A.A. Thomas Cheung School
DMS-2	Price Memorial Catholic Primary School
DMS-3(Note 2) / DMS-4(Note 3)	Hong Kong Sheng Kung Hui Nursing Home (Note 1)
Noise	
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School
NMS-CA-2	Price Memorial Catholic Primary School
NMS-CA-3(Note 2) / NMS-CA-4(Note 3)	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	4 Oct 2016	Throughout the Contract
Discharge License under WPCO	WT00014650-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00014648-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00015145-2013	Shui Chuen O	21 Feb 2013	28 Feb 2018
	WT00015513-2013	Ma Chai Hang	2 Apr 2013	30 Apr 2018
	WT00015430-2013	Fung Tak	18 Mar 2013	31 Mar 2018
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	351345	All	22 Oct 2012	15 Apr 2018
Construction Noise Permit	GW-RE0028-17	Ma Chai Hang	31 Jan 2017	30 July 2017
	GW-RE0003-17	Fung Tak	20 Jan 2017	19 July 2017
	GW-RN0667-16	Hin Keng	17 Sept 2016	16 Mar 2017
	GW-RN0570-16	Hin Keng	8 Aug 2016	Superseded
	GW-RN0124-17	Hin Keng	17 Mar 2017	16 Sept 2017
	GW-RN0770-16	Hin Keng	5 Nov 2016	4 May 2017
Chemical Waste Producer Registration	5213-759-V2179-01	Hin Keng	13 Dec 2012	Throughout the Contract
	5213-281-V2179-03	Fung Tak	28 Feb 2013	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	2 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 fiftieth 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 March 2017.

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 (February 2017)	14 March 2017

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
DMS -2	Price Memorial Catholic Primary School
DMS-3(Note 2) / DMS-4(Note 3)	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.

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, μg/m^3	148.7	167.4	159.1
Limit Level, μg/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, μg/m^3	283.9	276.2	278.4
Limit Level, μg/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, 3763
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 m^3/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^2 (63in^2);
- 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

March 2017 was characterised largely by fine and dry conditions associated with the northeast monsoon. On occasion, rainy conditions were observed during the passage of cold fronts and easterly airstreams.

3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 2, 8, 14, 20 and 25 and 31 March 2017. 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 and Sha Tin stations 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 (μg/m$^{3)}$		Action Level	Limit Level
	Average	Range(Note 1)		
DMS-1	65.5	50.7-81.6	148.7	260
DMS-2	60.9	47.5-79.4	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 Underground Remedial Works in Diamond Hill; Tunnel Lining, Partition Walls, Dividing Slabs, Drains, Walkways and Site Formation at Hin Keng; Tunnels Connection, RC Concrete, ELS works, Sheet piling for retaining wall and RRIW for PTT at Fung Tak and Central Core, Ventilation Tunnel, C&S Works and ABWF Works at Ma Chai Hang.

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	$L_{eq(30\ min)}$	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
NMS-CA-2	Price Memorial Catholic Primary School
NMS-CA-3(Note 2) / NMS-CA-4(Note 3)	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.

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 (Note 1)	Time Period (note 3)	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 (Note 2)
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 air-borne 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. Leq, 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
Integrated SLM	NA - 28	00162248	IEC 651 Type 1 IEC 804 Type 1
Integrated SLM	Bruel & Kjaer 2238	2654435	IEC 651 Type 1 IEC 804 Type 1
Sound level calibrator	Castle Group Ltd.	043328	IEC 942 Type 1
Sound level calibrator	Rion NC-74	34304660	IEC 942 Type 1

4.2.2 Maintenance and Calibration

The SLM and calibrator in compliance with the International Electrotechnical Commission (IEC) Publication 651:1979 (Type 1) and 804:1985 (Type 1) specifications according to the EM&A manual.

SLM complying with the standards of IEC 651 (Fast, Slow, Impulse rms detector tests) and IEC 804 (L_{eq} functions) and acoustical calibrator complying with IEC 942 were adopted for the noise measurement. All equipments 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 an 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

March 2017 was characterised largely by fine and dry conditions associated with the northeast monsoon. On occasion, rainy conditions were observed during the passage of cold fronts and easterly airstreams.

4.3.2 Noise Monitoring Results

Impact Monitoring

Monitoring of the construction noise level was conducted on 3, 9, 15, 21 and 30 March 2017. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix H** and are summarised in **Tables 4.5 - 4.6**. The graphical presentations of the monitoring results are provided in **Appendix H**.

Table 4.5 Summary of Impact Noise Monitoring at Location NMS-CA-1

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)
3-Mar-17	10:30-11:00	55.2	57.0	< Baseline Level	70/65
9- Mar -17	11:00-11:30	52.4		< Baseline Level	
15- Mar -17	11:00-11:30	56.9		< Baseline Level	
21-Mar -17	10:30-11:00	54.6		< Baseline Level	
30-Mar -17	12:00-12:30	56.0		< 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.

Table 4.6 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)
3-Mar-17	09:00-09:30	63.1	66.0	< Baseline Level	70/65
9-Mar -17	09:30-10:00	64.4		< Baseline Level	
15 Mar -17	09:30-10:00	59.4		< Baseline Level	
21-Mar -17	09:00-09:30	61.6		< Baseline Level	
30-Mar -17	10:00-10:30	58.6		< 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 exceedence of Action / 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 of the implementation of landscape and visual mitigation measures were conducted during the reporting month on 8 and 22 March 2017. No adverse impacts were identified with regards to landscape and visual.

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	649 m^3 (Total)	TKO137FB/TM38FB
Inert C&D Materials	0 m^3	Reused in the Contract
Chemical Waste	1400 kg	Disposed of by a licensed collector
Paper / cardboard packaging	0 kg	-
Plastic	0 kg	
Metal	5510 kg	
General Refuse	279 m^3	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 15 March 2017, 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
Air				
1 March 2017 & 22 March 2017	Ma Chai Hang	The contractor is reminded to cover stockpiles of dusty materials with tarpaulin sheeting.	Agreed with ET's Advice.	The Contractor rectified the issue and covered stockpiles with tarpaulin sheeting. Closed 8 March 2017.
8 March 2017	Fung Tak	The contractor is reminded to ensure that NRMM labels are affixed to working plants.	Agreed with ET's Advice.	The Contractor rectified the issue and ensured labels were affixed to working plants. Closed 15 March 2017.
15 March 2017	Fung Tak	The contractor is reminded to ensure that vehicles exiting the site are subject to proper wheel washing.	Agreed with ET's Advice.	The Contractor rectified the issue and provided ensured proper wheel washing. Closed 22 March 2017.
Water				
22 Feb 2017	Fung Tak	The contractor is reminded to ensure that the pH of the WWTP is within the acceptable range prior to discharge.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that the pH of the WWTP was within the acceptable range. Closed 1 March 2017.
15 March 2017	Hin Keng	The contractor is reminded to provide adequate mitigation measures in order to avoid water seepage.	Agreed with ET's Advice.	The contractor rectified the issue and adopted adequate mitigation measures to prevent water

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
				seepage. Closed 22 March 2017.
Waste Management				
22 Feb 2017	Fung Tak	The contractor is reminded to ensure that chemical containers are placed in the designated storage area after use.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that chemical constrainers were properly stored. Closed 1 March 2017.
8 March 2017	Ma Chai Hang & Fung Tak	The contractor is reminded to ensure that chemical containers are properly stored after use.	Agreed with ET's Advice.	The Contractor rectified the issue and ensured that chemicals were properly stored after use. Closed 15 March 2017.
15 March 2017	Hin Keng	The contractor shall ensure that chemical waste is properly disposed of.	Agreed with ET's Advice.	The Contractor rectified the issue and ensured that chemical waste was properly disposed of. Closed 22 March 2017.
15 March 2017	Hin Keng	The contractor is reminded to ensure that stockpiles of refuse are regularly cleared from site and properly collected and disposed of.	Agreed with ET's Advice.	The Contractor rectified the issue and cleared the refuse. Closed 22 March 2017.
22 March 2017	Ma Chai Hang	The contractor is reminded to ensure that stockpiles of refuse are regularly cleared from site and properly collected and disposed of.	Agreed with ET's Advice.	The Contractor rectified the issue and cleared the refuse. Closed 29 March 2017.
15 March 2017	Hin Keng	The contractor is reminded to practice proper housekeeping and ensure that their site is kept organised and tidy.	Agreed with ET's Advice.	The Contractor rectified the issue and practiced proper housekeeping. Closed 22 March 2017.
Landscape and Visual				
15 March 2017	Hin Keng	The contractor is reminded to ensure that the fencing of the tree protection zone is properly erected.	Agreed with ET's Advice.	The Contractor rectified the issue and ensured that the fencing was properly erected. Closed 22 March 2017.

9.2 Summary of Environmental Complaint

One environmental complaint was recorded in the reporting month. The updated statistical summary of complaint is presented in **Table 9.2**. The updated complaint logs for the Project in the reporting month is shown in **Appendix L**.

Table 9.2 Summary of Complaints

Reporting Period	Complaint Statistics	
	Number	Cumulative
01/03/17 – 31/03/17	1	20

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 [1]	**Major Works Undertaken**
Diamond Hill	Underground Remedial Works
Hin Keng	Tunnel Lining, Partition Walls, Dividing Slabs, Drains, Walkways and Site Formation
Fung Tak	Tunnels Connection, RC Concrete, ELS Work, Sheet piling for retaining wall and RRIW for PTT
Ma Chai Hang	Central Core, Ventilation Tunnel, C&S Works and ABWF Works
Shiu Chui 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. Four environmental site audits were conducted in the reporting month.

No exceedence of Action Level / 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.

One 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

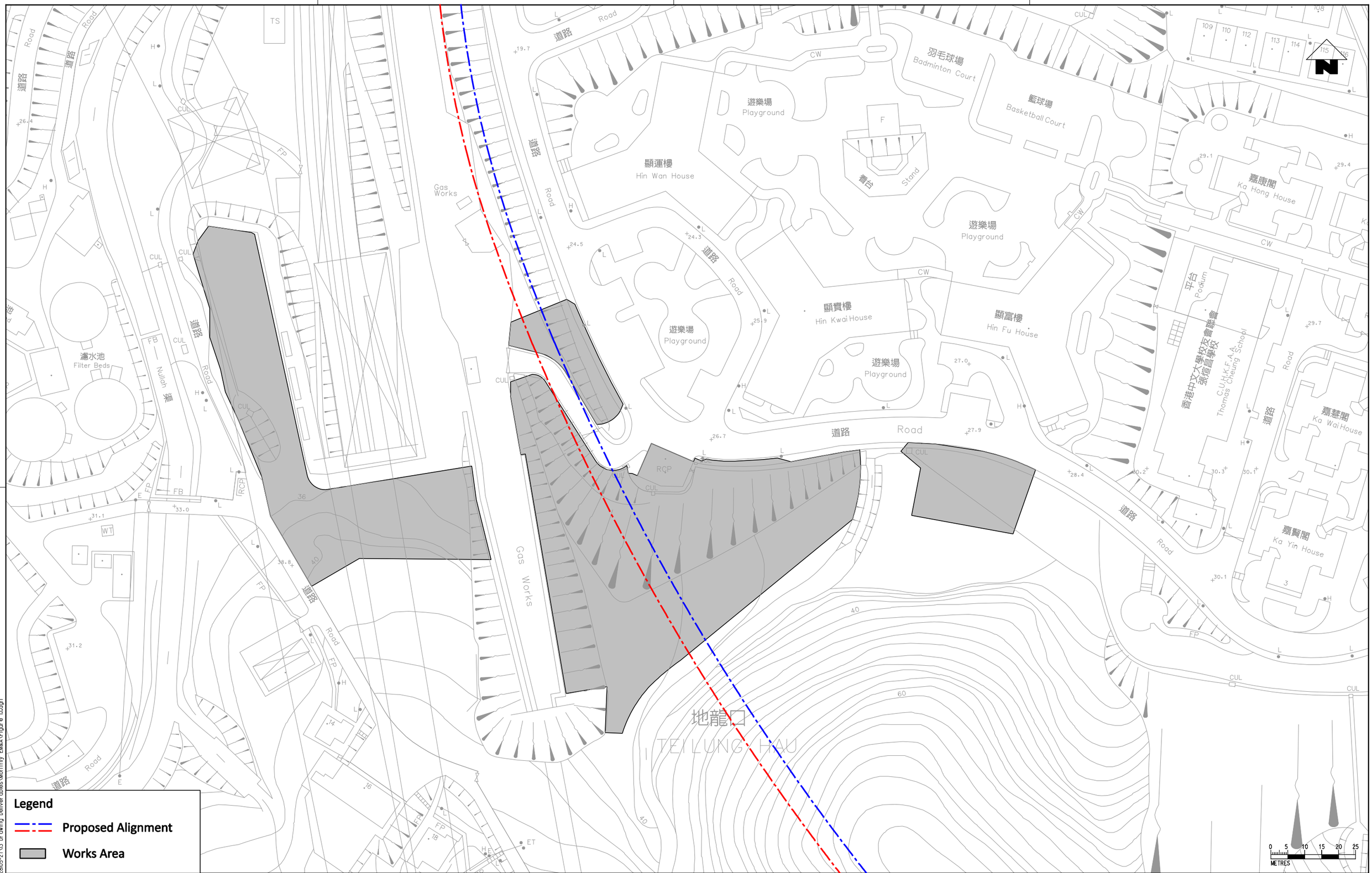
(1) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Final Environmental Impact Assessment Report. October 2011.

(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



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DATE	12/12

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CADD REF.

TITLE

CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- General Site Layout of Hin Keng Works Area
(Sheet 1 of 6)

SCALE	DRAWING NO.	REV.
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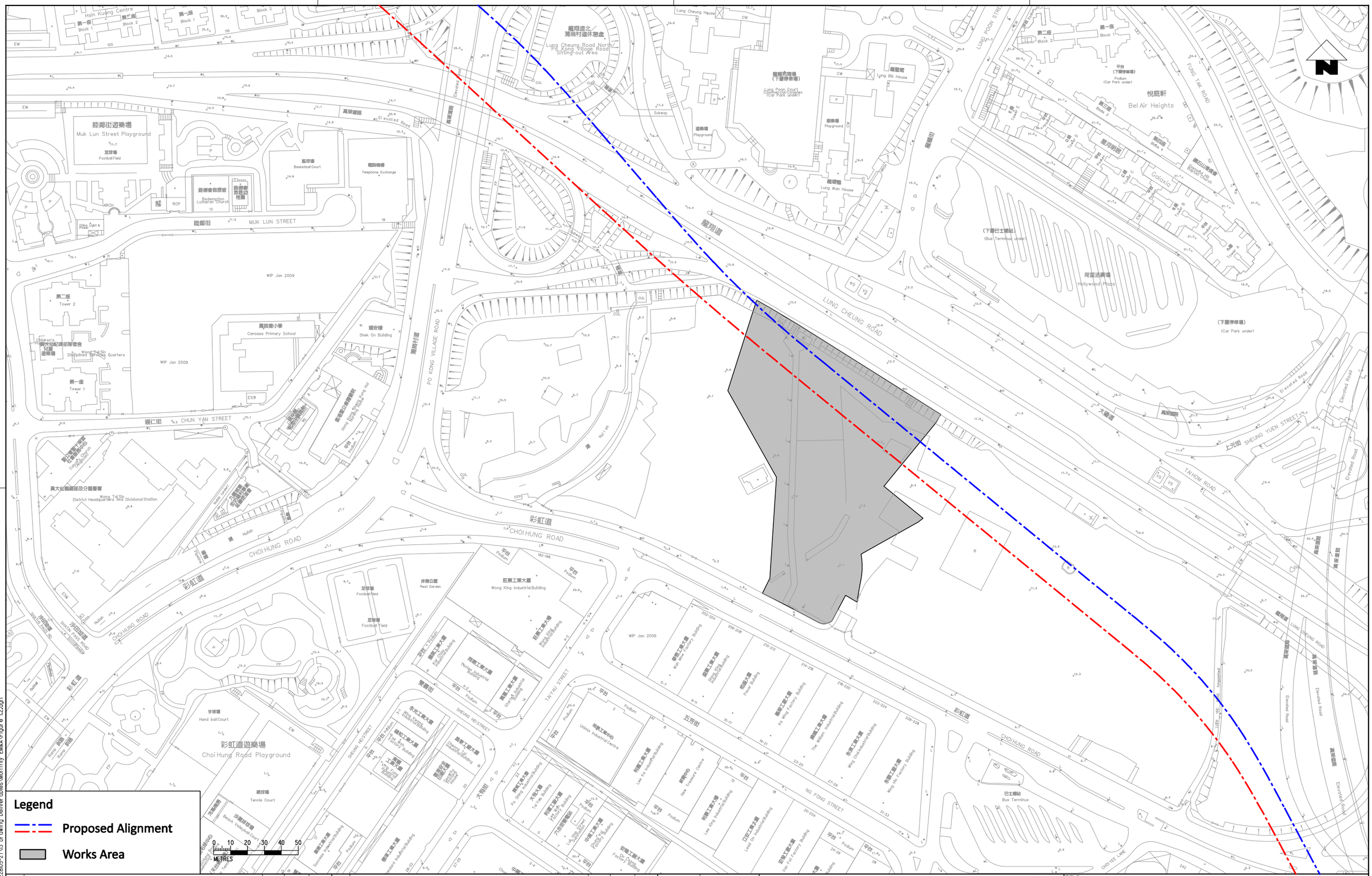

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APPROVED	ST
DATE	12/12

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- General Site Layout of Diamond Hill Works Area
(Sheet 2 of 6)

SCALE	DRAWING NO.	REV.
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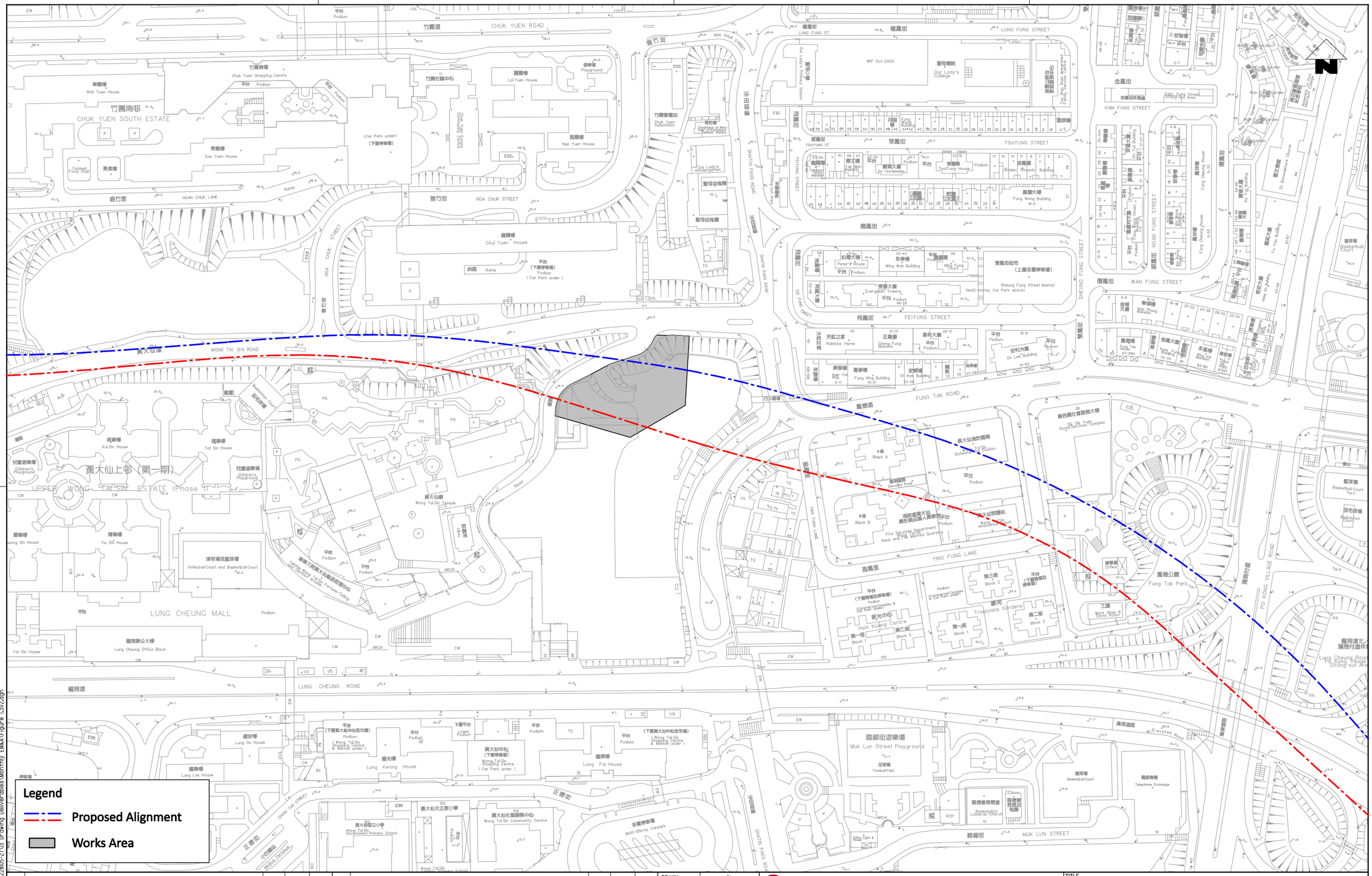

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas - Site Layout Plan of Fung Tak EAP/EEP Building (Sheet 3 of 6)

SCALE	DRAWING NO.	REV.
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REV	DESCRIPTION	BY	DATE	APPROVED

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
– Site Layout Plan of Ma Chai Hang Shaft
(Sheet 4 of 6)

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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)

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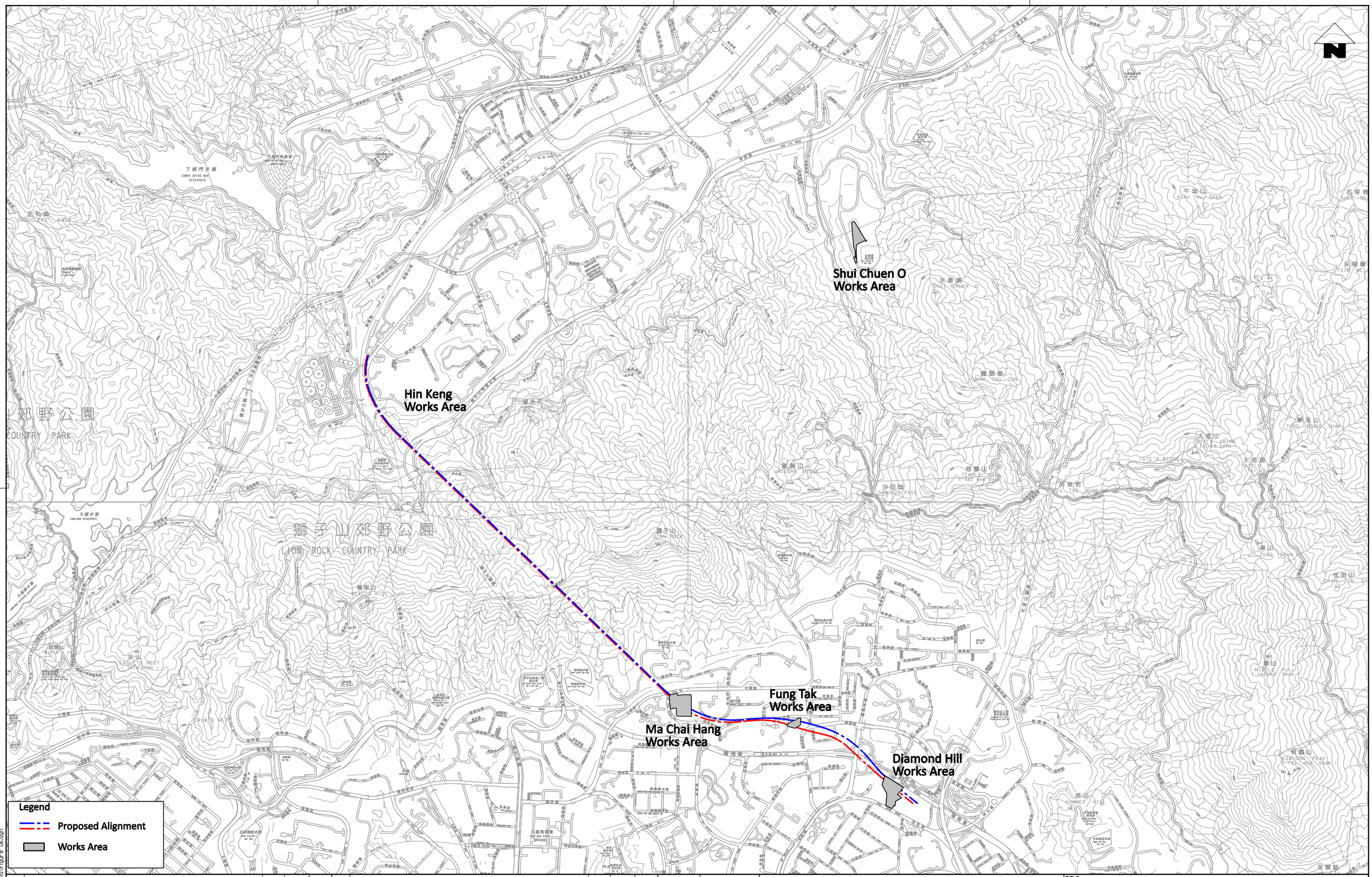

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CONTRACT 1103

HIN KENG TO DIAMOND HILL TUNNELS

Locations of Project Works Areas
- General Alignment of Contract 1103
(Sheet 6 of 6)

SCALE	DRAWING NO.	REV.
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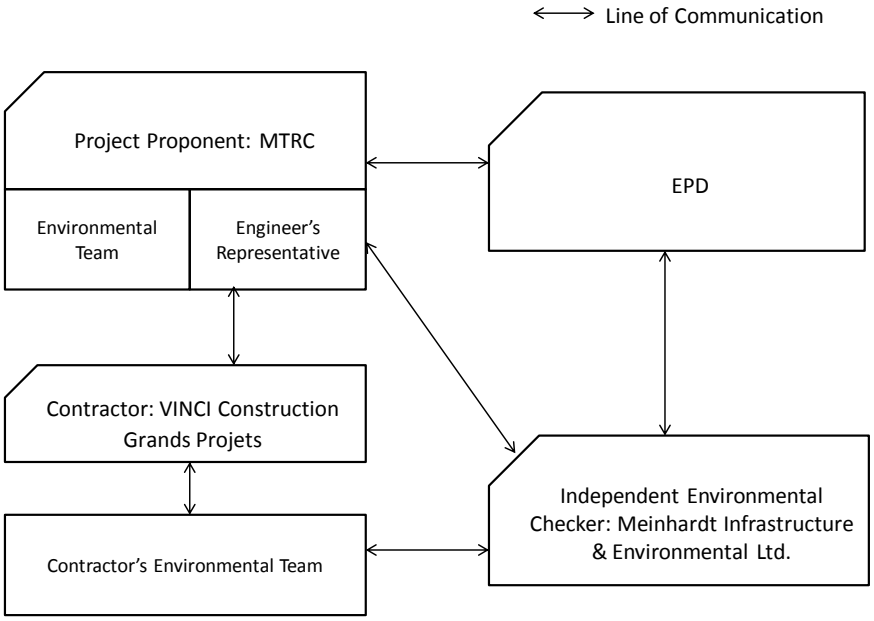
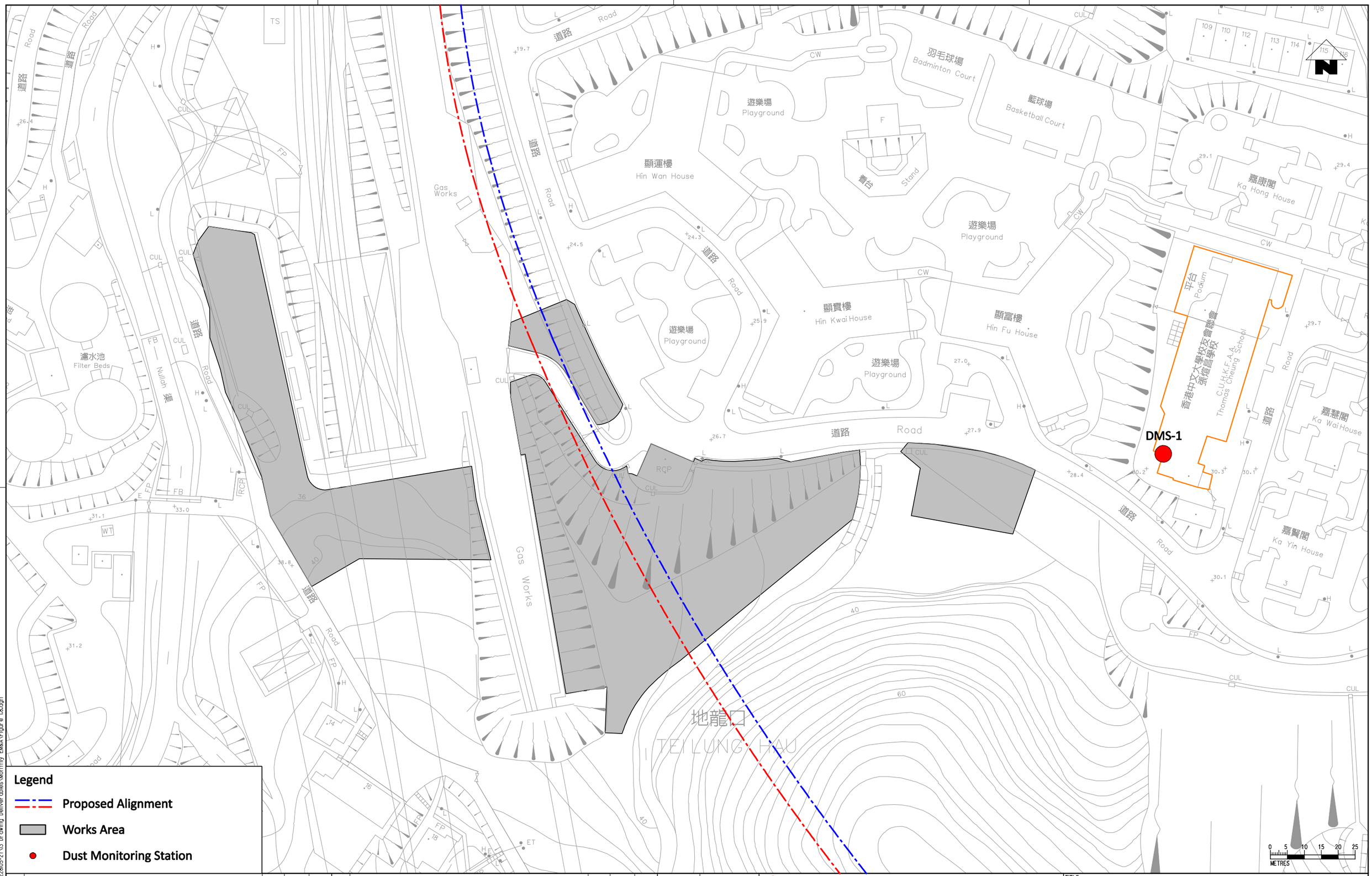
Figure 1.7 - Project Organisation for Environmental Works





Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Proposed Dust Monitoring Stations
(Sheet 1 of 3)

SCALE	DRAWING NO.	REV.
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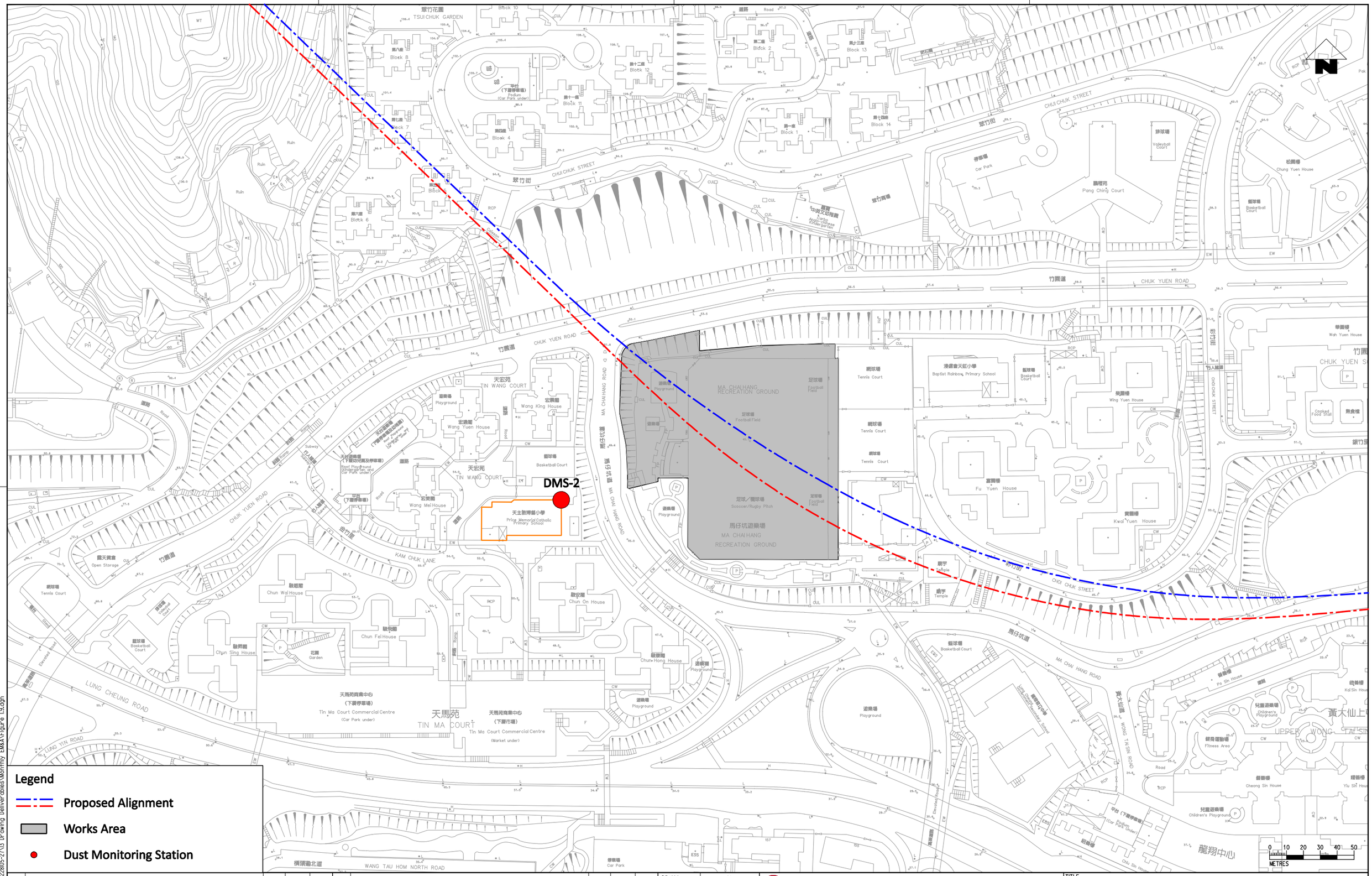

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Proposed Dust Monitoring Stations
(Sheet 2 of 3)

SCALE	DRAWING NO.	REV.
1:2000 (A3)	Figure 1.9	A

DMS-3/DMS-4

Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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METRES

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

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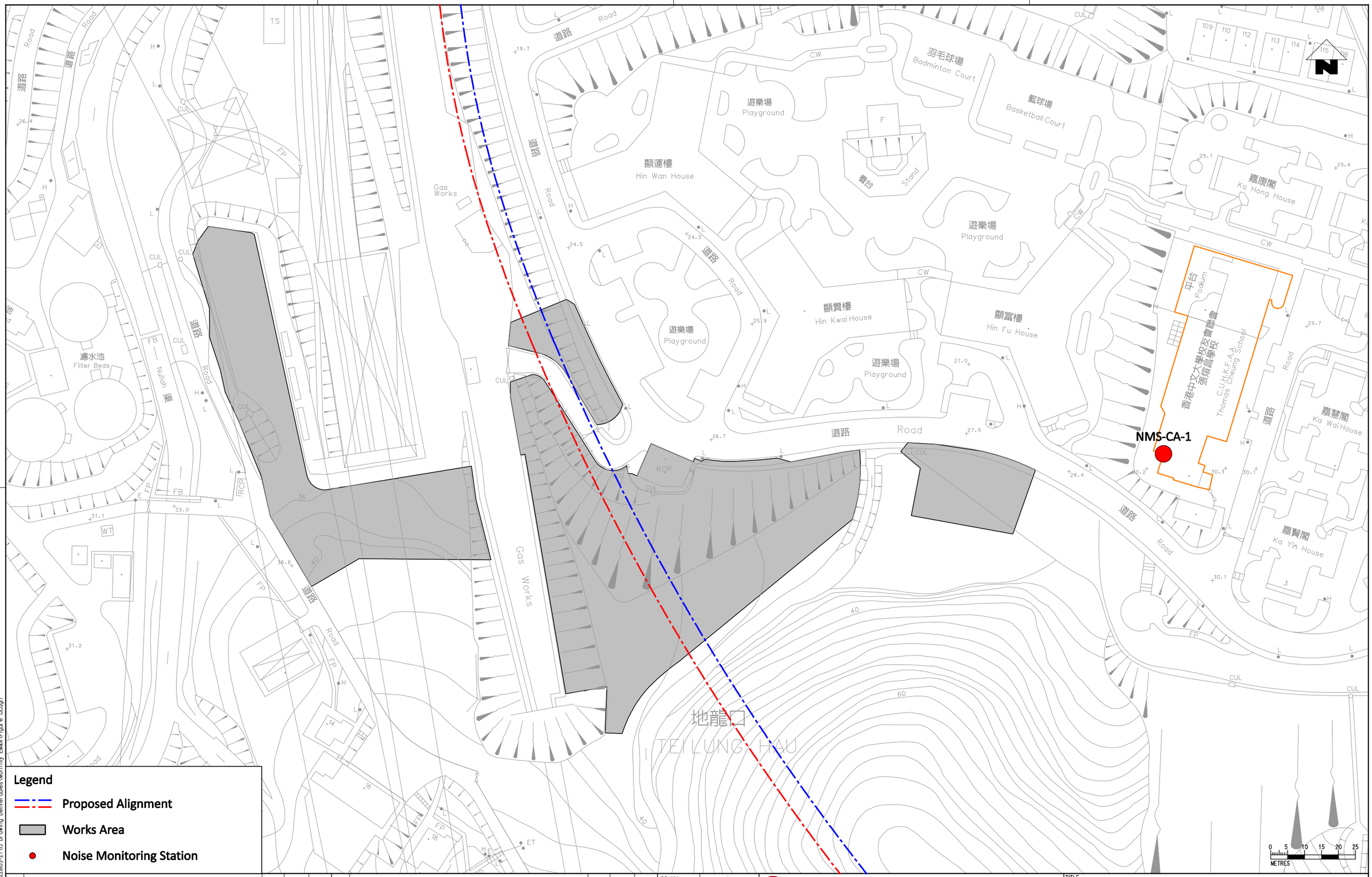

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TITLE

CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 1 of 3)

SCALE	DRAWING NO.	REV.
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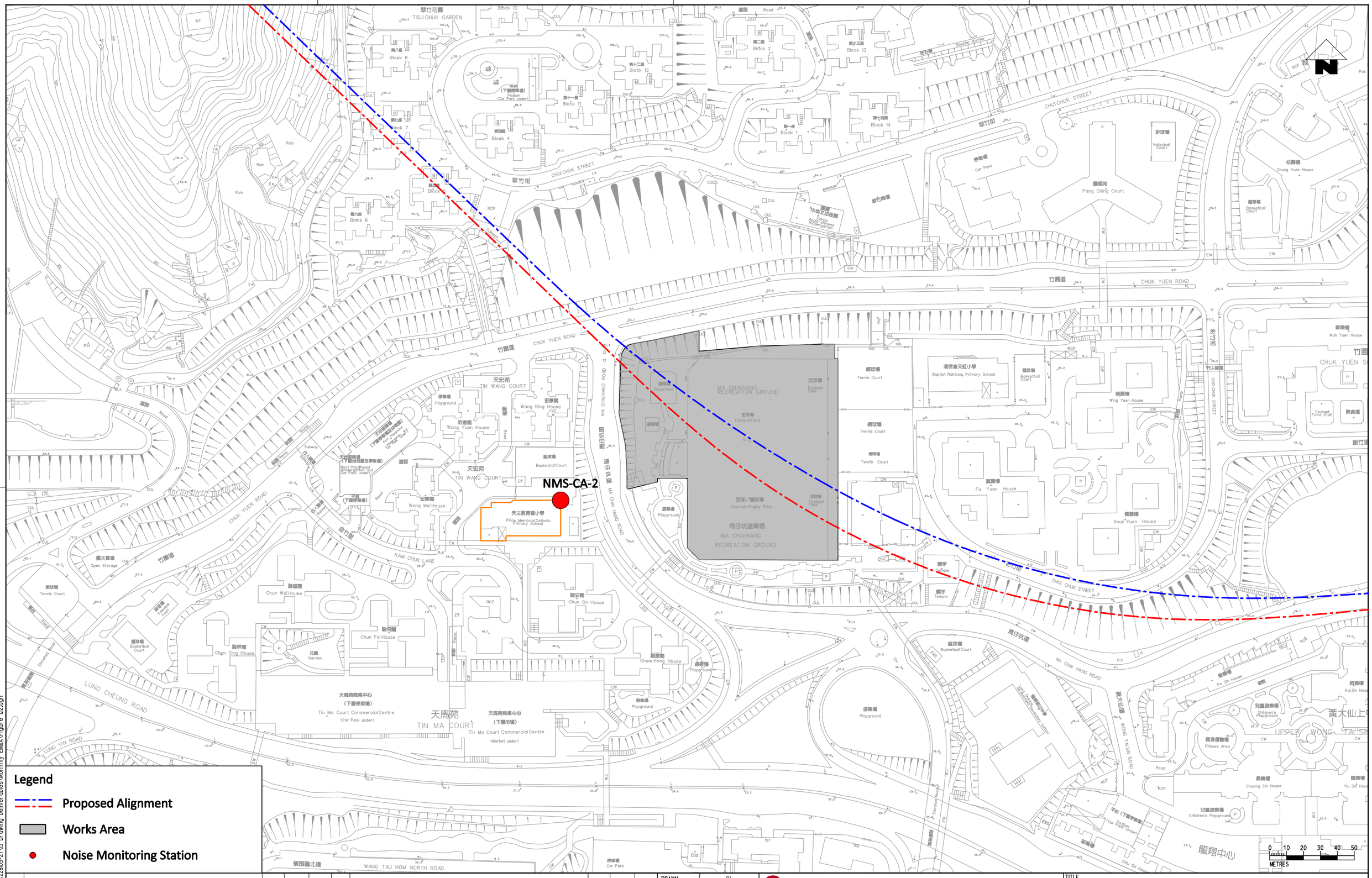

Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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DATE	12/12

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TITLE

CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 2 of 3)

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NMS-CA-3/NMS-CA-4

Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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A	FIRST ISSUE	GL	12/12	ST

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DATE	12/12

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TITLE
CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 3 of 3)

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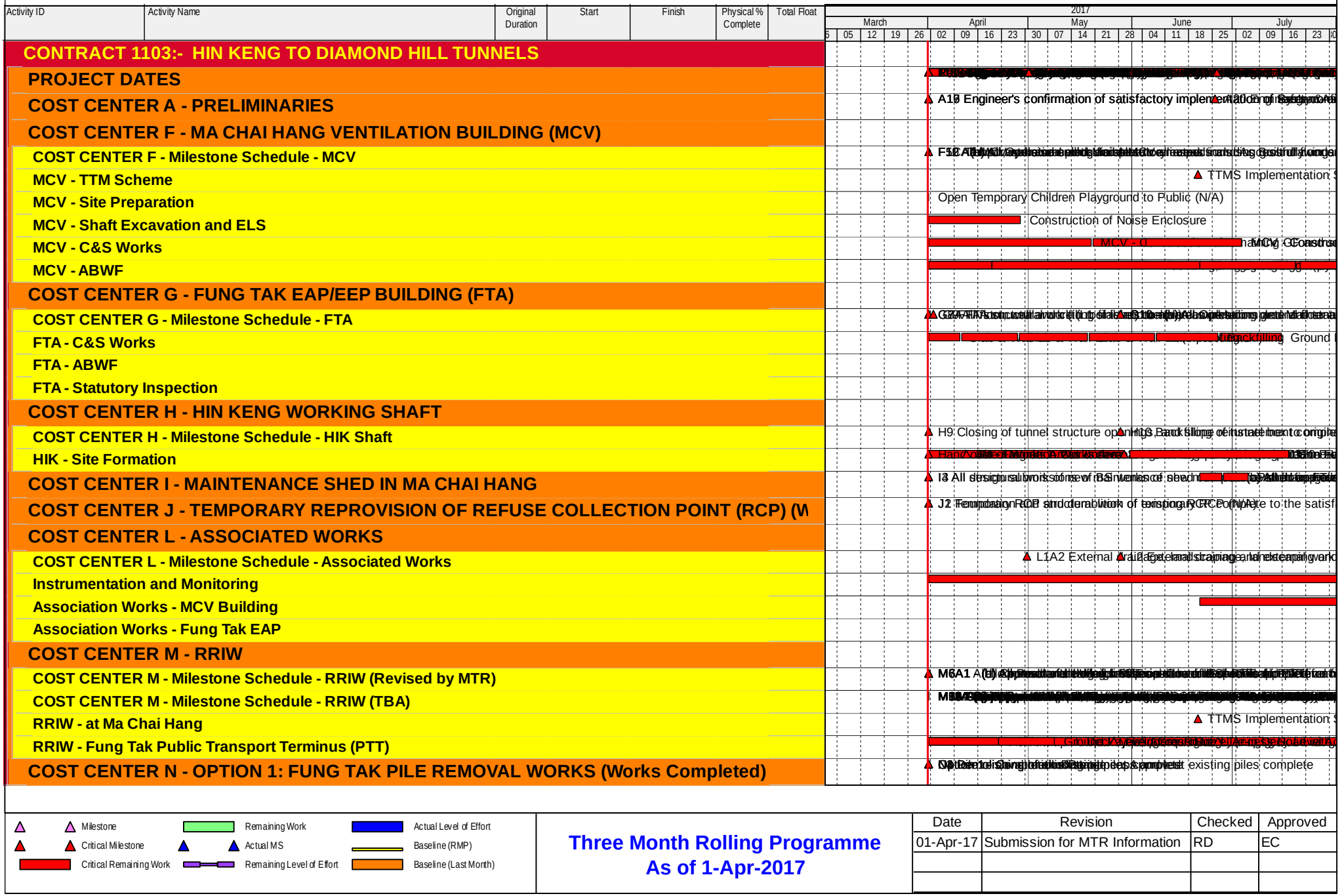
Appendix A

Construction Programme



Three Month Rolling Programme
As of 1-Apr-2017

Date	Revision	Checked	Approved
01-Apr-17	Submission for MTR Information	RD	EC

Appendix B

Environmental Monitoring Programme in Reporting Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Impact Monitoring Schedule - March 2017

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

	Public Holiday
	Monitoring Day

Monitoring Details

Monitoring	Locations	Parameters
Air Quality	DMS-1 - C.U.H.K.A.A Thomas Cheung School, DMS-2 - Price Memorial Catholic Primary School	24-hour TSP
Noise	NMS-CA-1 - C.U.H.K.A.A Thomas Cheung School, NMS-CA-2 - Price Memorial Catholic Primary School	$L_{Aeq(30\ min)}$, L_{10}, L_{90}

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
Ecology (Pre-Construction Phase)							
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	• AFCD's requirements • EIAO • Country Parks Ordinance	✓
	E2	<u>Habitat Loss</u> A detailed vegetation survey should be conducted in the Hin Keng Portal area to locate and enumerate individuals of *Aquilaria sinensis* 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	• AFCD's requirements	✓
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	• AFCD's requirements	N/A

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
Ecology (Construction Phase)							
S5.7	E5	<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, 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. The following good site practices should also be implemented: • 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; • Avoidance of soil storage against trees or close to waterbodies in particular the Tei Lung Hau stream; • 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; • No on-site burning of waste; • Waste and refuse in appropriate receptacles.	Minimize ecological impacts	All construction sites	Construction stage		✓ ✓ ✓ ✓ ✓

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> • 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. • 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.	• Avoid indirect water impact to any wetland habitats or wetland fauna • Minimize the drawdown of water table	Works area in Hin Keng	Construction stage	• TCW No. 5/2005	✓ ✓

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
Landscape and Visual (Construction Phase)							
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • 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. <u>No-intrusion Zone</u> • 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. <u>Protection of Retained Trees</u> • 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. • The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees	Minimize visual & landscape impact	Within Project Site	Construction stage	TM-EIAO	✓ Rdr Rdr ✓

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	• <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. • <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. • <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.	Minimize visual & landscape impact	Within Project Site	Detailed design and construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	✓ ✓ ✓

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
Air Quality (Construction Phase)							
-	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and • plant should be serviced regularly to avoid emission of • black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	All construction sites	Construction stage	• APCO	Rdr
		Open burning shall be prohibited	Reduce air pollution emission from work site	All construction sites	Construction stage	• APCO	✓
Construction Dust Impact							
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	Rdr
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 1.5 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	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	✓

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	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • 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; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • 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; • 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; • 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	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 Rdr ✓ ✓ ✓ Rdr ✓

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
		period; • 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; • 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; • 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; • 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; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • 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;					✓ ✓ N/A ✓ ✓ ✓

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
		• 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; • 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 • 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.					✓ ✓ N/A
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	✓

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
Construction Noise (Airborne)							
S8.3.6	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • 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; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	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	✓

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	✓

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
Water Quality (Construction Phase)							
S10.7.1	W1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>*Construction Runoff and Site Drainage*</u> • 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. • 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. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the	To minimize water quality impact from construction site runoff and general construction activities	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	✓ Rdr ✓

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
		commencement of construction. • 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. • 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. • 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. • 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be					✓ ✓ Rdr ✓ ✓

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
		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.					✓
		• 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.					✓
		• 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.					✓
		• 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.					✓
		• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.					✓
		• All fuel tanks and storage areas should be provided with locks					Rdr

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
		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. • 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. • Adopt best management practices					✓ Rdr
S10.7.1	W2	*Tunnelling Works* • Cut-&-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. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • 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. • 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.	To minimize construction water quality impact from tunneling works	All tunneling portion	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-water • TM-EIAO	✓ ✓ ✓ ✓

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
S10.7.1	W3	*Sewage Effluent* • 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.	To minimize water quality from sewage effluent	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	✓
S10.7.1	W4	*Groundwater from Contaminated Area:* • 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. • 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. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the	To minimize groundwater quality impact from contaminated area	Excavation areas where contamination is found.	Construction stage	• Water Pollution Control Ordinance • TM-water • TM-EIAO	N/A N/A N/A

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
		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, 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	In order to prevent accidental spillage of chemicals, the following is recommended: • 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. • 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. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	Rdr ✓ Rdr

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Waste Management (Construction Phase)							
S11.4.1.1	WM1	*On-site sorting of C&D material* • 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.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	✓
S11.5.1	WM2	*Construction and Demolition Material* • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	✓ ✓

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
		promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&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				• ETWB TCW No. 19/2005	✓ ✓ ✓ ✓ ✓
S11.5.1	WM3	<u>*C&D Waste*</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, 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. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	✓ ✓

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	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • 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. • 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	All construction sites	Construction stage	• Waste Disposal Ordinance	✓ Rdr ✓ ✓
S11.5.1	WM5	Excavated Contaminated Soils 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.	✓

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	<u>*Chemical Waste*</u> • 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. • 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. • 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. • 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.	Control the chemical waste and ensure proper storage, handling and disposal.	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	Obs Rdr ✓ Rdr

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	• EIAO Guidance Note No.4/2010 • TM-EIAO	✓
S14.2 – 14.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 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.	Perform environmental monitoring & auditing	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	✓ ✓ ✓

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.10.2.1 and A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.2	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	N/A
Chapter 13.13	A13A.10.2.1 and A13A.10.2.5	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		N/A
Chapter 13.13	A13A.10.2.1	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.		N/A
Chapter 13.13	A13A.10.2.1	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		N/A
Chapter 13.13	A13A.10.2.1	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		

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.					N/A
Chapter 13.13	A13A.10.2.1	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement.	-	Construction phase		N/A
Chapter 13.13	A13A.10.2.1	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		N/A
Chapter 13.13	A13A.10.2.1	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		N/A
Chapter 13.13	A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.3	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		N/A

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.10.2.3	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		N/A
Chapter 13.13	A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.2	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		N/A
Chapter 13.13	A13A.10.2.2	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		N/A
Chapter 13.13	A13A.10.2.2	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		N/A
Chapter 13.13	A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.4	Ensure that packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the	-	Construction phase		N/A

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
			transport of detonator				
Chapter 13.13	A13A.10.2.4	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		N/A
Chapter 13.13	A13A.10.2.5	Ensure cartridged 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		N/A
Chapter 13.13	A13A.10.2.3	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		N/A
Chapter 13.13	A13A.10.2.3	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		N/A
Chapter 13.13	A13A.10.2.2	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 Government.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		N/A

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.10.2.3	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		N/A
Chapter 13.13	A13A.10.2.3	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		N/A
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		N/A
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		N/A
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		N/A
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		N/A
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 adjacent contracts.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		N/A
Chapter	A13B.7	Shotfirer to be provided with a lightning detector, and appropriate	To ensure safe use of	Along tunnel	Construction		N/A

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
13.13	.2	control measures should be in place.	explosives	alignment	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		N/A
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		N/A
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		N/A
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		N/A
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
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	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		N/A

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
		of the SCL train traffic in order to prevent the trains moving into the affected areas.)					
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		N/A

Appendix D

Calibration Certificates for Air Monitoring Equipment

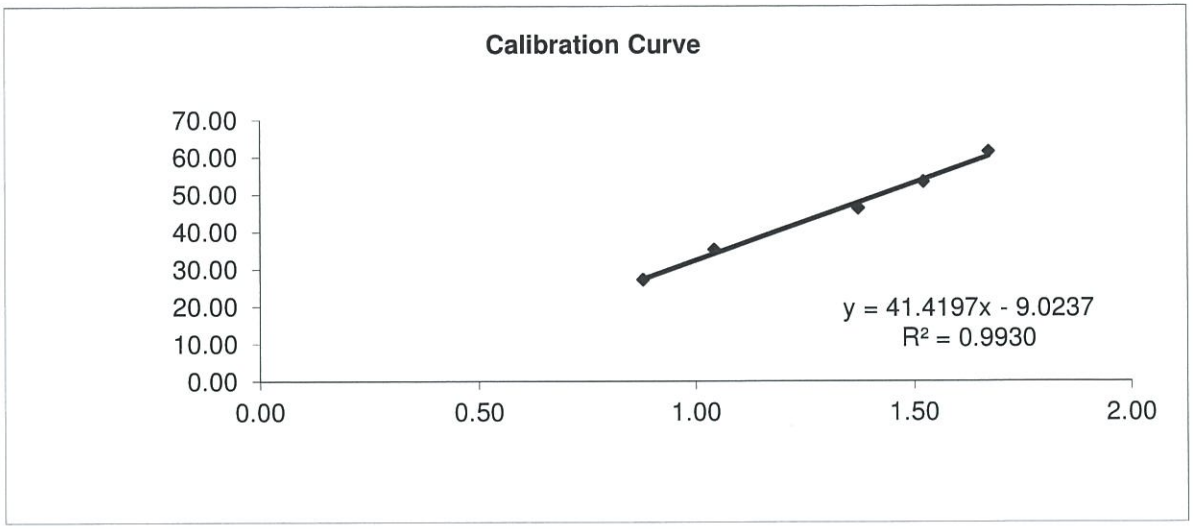
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	6-Jan-17	**Barometric pressure**	760 mm Hg
Next Calibration date	7-Mar-17	**Tempature (°C)**	21 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	294 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3763	**T_{std}**	298 K

Calibrator model	TE-5025A
Calibrator serial number	2421
Slope of the standard curve, m_s	2.07019
Intercept of the standard curve, b_s	-0.04612

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.10	27.00	0.88	27.18
7	4.40	35.00	1.04	35.24
10	7.70	46.00	1.37	46.31
13	9.50	53.00	1.52	53.36
18	11.50	61.00	1.67	61.41



Linear Regression

Sampler slope (m) :	**41.4197**
Sampler intercept (b) :	**-9.0237**
Correlation coefficient (R^2) :	**0.9930**

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

Performed by: _____ Date: 6/1/2017

Checked by: _____ Date: 7/1/2017.

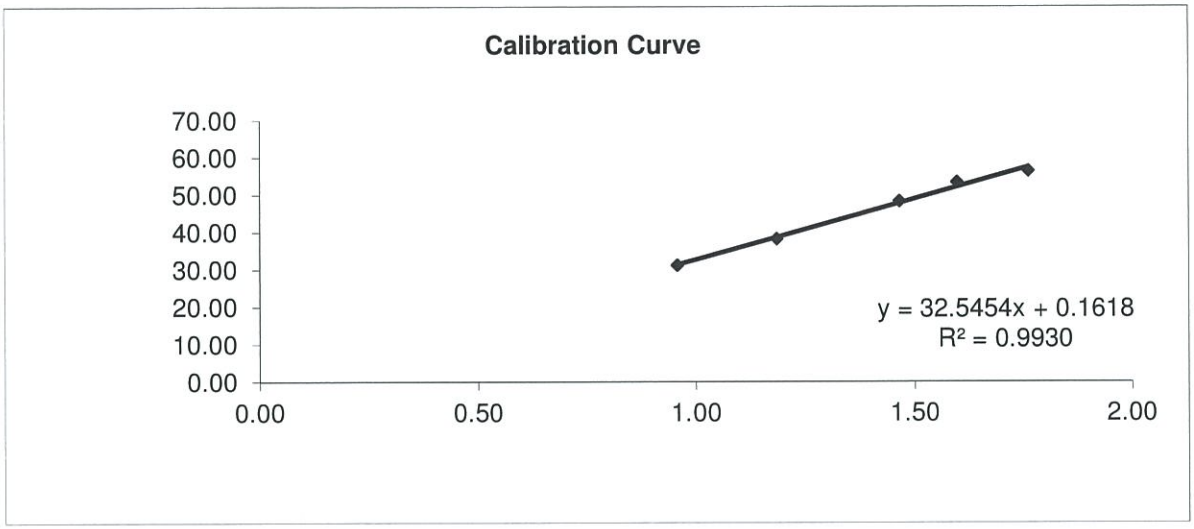
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	6-Jan-17	**Barometric pressure**	760 mm Hg
Next Calibration date	7-Mar-17	**Tempature (°C)**	21 °C
Sampler location	DMS2 - Price Memorial Catholic Prir	**Tempature (K)**	294 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3761	**T_{std}**	298 K

Calibrator model	TE-5025A
Calibrator serial number	2421
Slope of the standard curve, m_s	2.07019
Intercept of the standard curve, b_s	-0.04612

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.70	31.00	0.96	31.21
7	5.70	38.00	1.18	38.26
10	8.80	48.00	1.46	48.33
13	10.50	53.00	1.60	53.36
18	12.80	56.00	1.76	56.38



Linear Regression

Sampler slope (m) :	**32.5454**
Sampler intercept (b) :	**0.1618**
Correlation coefficient (R^2) :	**0.9930**

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

Performed by: _____ Date: 6/1/2017

Checked by: _____ Date: 7/1/2017

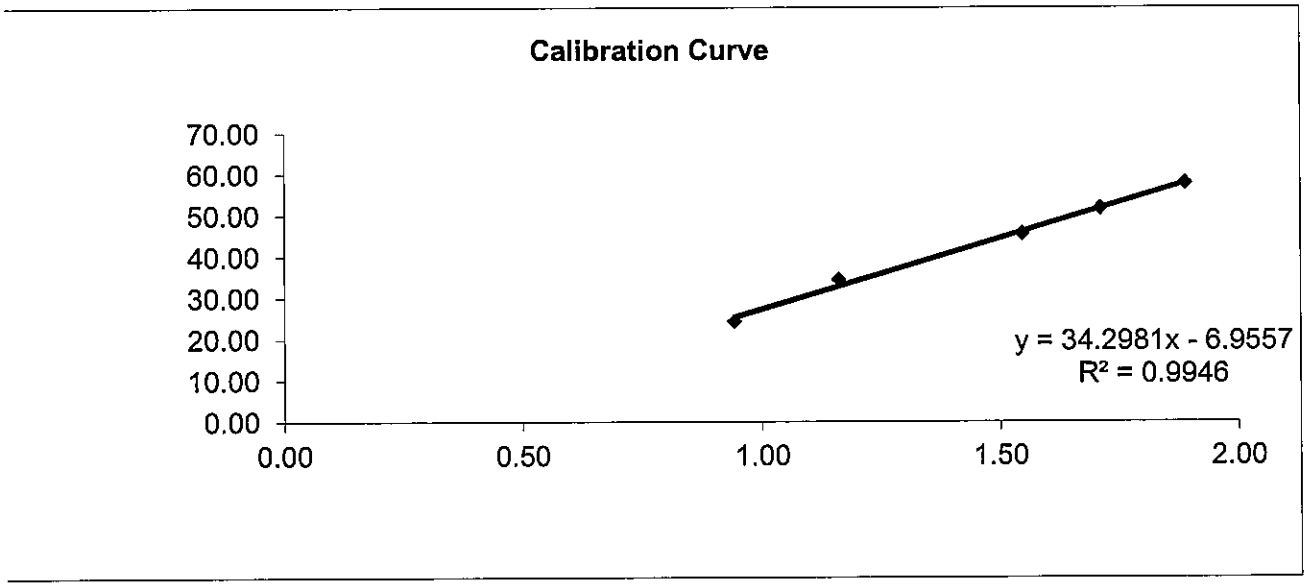
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	7-Mar-17	**Barometric pressure**	762 mm Hg
Next Calibration date	6-May-17	**Tempature (°C)**	17.9 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	290.9 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3763	**T_{std}**	298 K

Calibrator model	TE-5025A
Calibrator serial number	2421
Slope of the standard curve, m_s	2.00576
Intercept of the standard curve, b_s	0.00519

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.50	24.00	0.94	24.32
7	5.30	34.00	1.16	34.46
10	9.40	45.00	1.55	45.61
13	11.50	51.00	1.71	51.69
18	14.00	57.00	1.89	57.77



Linear Regression

Sampler slope (m) :	**34.2981**
Sampler intercept (b) :	**-6.9557**
Correlation coefficient (R^2) :	**0.9946**

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

Performed by: _____ Date: 7-March-2017

Checked by: _____ Date: 7 Mar 2017

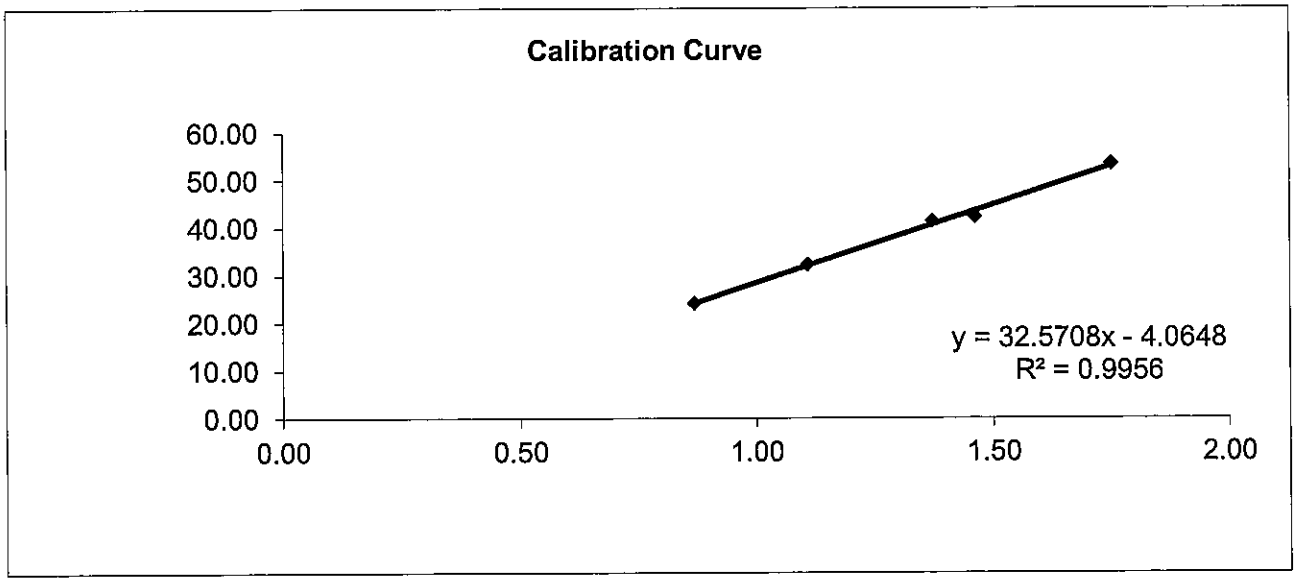
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	7-Mar-17	**Barometric pressure**	760 mm Hg
Next Calibration date	6-May-17	**Tempature (°C)**	21 °C
Sampler location	DMS2 - Price Memorial Catholic Pri	**Tempature (K)**	294 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3761	**T_{std}**	298 K

Calibrator model	TE-5025A
Calibrator serial number	2421
Slope of the standard curve, m_s	2.00576
Intercept of the standard curve, b_s	0.00519

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.00	24.00	0.87	24.16
7	4.90	32.00	1.11	32.22
10	7.50	41.00	1.37	41.28
13	8.50	42.00	1.46	42.28
18	12.20	53.00	1.75	53.36



Linear Regression

Sampler slope (m) :	**32.5708**
Sampler intercept (b) :	**-4.0648**
Correlation coefficient (R^2) :	**0.9956**

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

Performed by: _____ Date: 7-March-2017

Checked by: _____ Date: 7 Mar 2017

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jan 12, 2016 Rootsmeter S/N 0438320 Ta (K) - 291
Operator Tisch Orifice I.D. - 2421 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4210	3.2	2.00
2	NA	NA	1.00	1.0040	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8550	8.8	5.50
5	NA	NA	1.00	0.7120	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0019	0.7050	1.4186		0.9957	0.7007	0.8828
0.9976	0.9936	2.0062		0.9914	0.9875	1.2485
0.9955	1.1049	2.2430		0.9893	1.0980	1.3959
0.9943	1.1630	2.3525		0.9882	1.1558	1.4640
0.9892	1.3893	2.8372		0.9831	1.3807	1.7656
Qstd slope (m) =		2.07019		Qa slope (m) =		1.29632
intercept (b) =		-0.04612		intercept (b) =		-0.02870
coefficient (r) =		0.99983		coefficient (r) =		0.99983
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

TISCH Environmental

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513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jan 03, 2017 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2421 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4090	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8820	7.9	5.00
4	NA	NA	1.00	0.8430	8.8	5.50
5	NA	NA	1.00	0.6940	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9832	0.6978	1.4054		0.9957	0.7066	0.8911
0.9790	0.9879	1.9875		0.9914	1.0004	1.2603
0.9769	1.1076	2.2221		0.9893	1.1216	1.4090
0.9758	1.1575	2.3305		0.9881	1.1722	1.4778
0.9706	1.3985	2.8107		0.9829	1.4162	1.7823
Qstd slope (m) =		2.00576		Qa slope (m) =		1.25597
intercept (b) =		0.00519		intercept (b) =		0.00329
coefficient (r) =		0.99997		coefficient (r) =		0.99997
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Appendix E

Dust Results

Location: DMS-1 - C.U.H.K.A.A. Thomas Cheung School

Details of 24-Hour TSP Monitoring

Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103592	Mar-17	2-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	764.7	764.5	19.9	17.4	40.0	40.0	2.8743	2.9823	0.1080	1.3054	1.3102	1.3078	6038.39	6062.39	1440.00	1883.23	57.3	148.7	260.0
103594	Mar-17	8-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	763.2	761.8	16.3	17.0	38.0	38.0	2.8975	3.0428	0.1453	1.2530	1.2506	1.2518	6062.40	6086.40	1440.00	1802.59	80.6	148.7	260.0
103481	Mar-17	14-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	761.9	763.7	19.1	16.8	44.0	44.0	2.8430	2.9749	0.1319	1.4211	1.4277	1.4244	6086.41	6110.41	1440.00	2051.14	64.3	148.7	260.0
128152	Mar-17	20-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	761.4	761.3	21.9	22.9	46.0	46.0	2.7910	2.9148	0.1238	1.4724	1.4701	1.4713	6110.42	6134.42	1440.00	2118.60	58.4	148.7	260.0
128154	Mar-17	25-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	763.0	766.7	20.2	15.8	40.0	40.0	2.8061	2.9017	0.0956	1.3035	1.3151	1.3093	6134.43	6158.43	1440.00	1885.39	50.7	148.7	260.0
103483	Mar-17	31-Mar-17	0:00	0:00	DMS1	Fine	Normal Operation	761.5	765.0	20.1	18.7	42.0	42.0	2.8475	3.0078	0.1603	1.3606	1.3663	1.3635	6158.44	6182.44	1440.00	1963.37	81.6	148.7	260.0

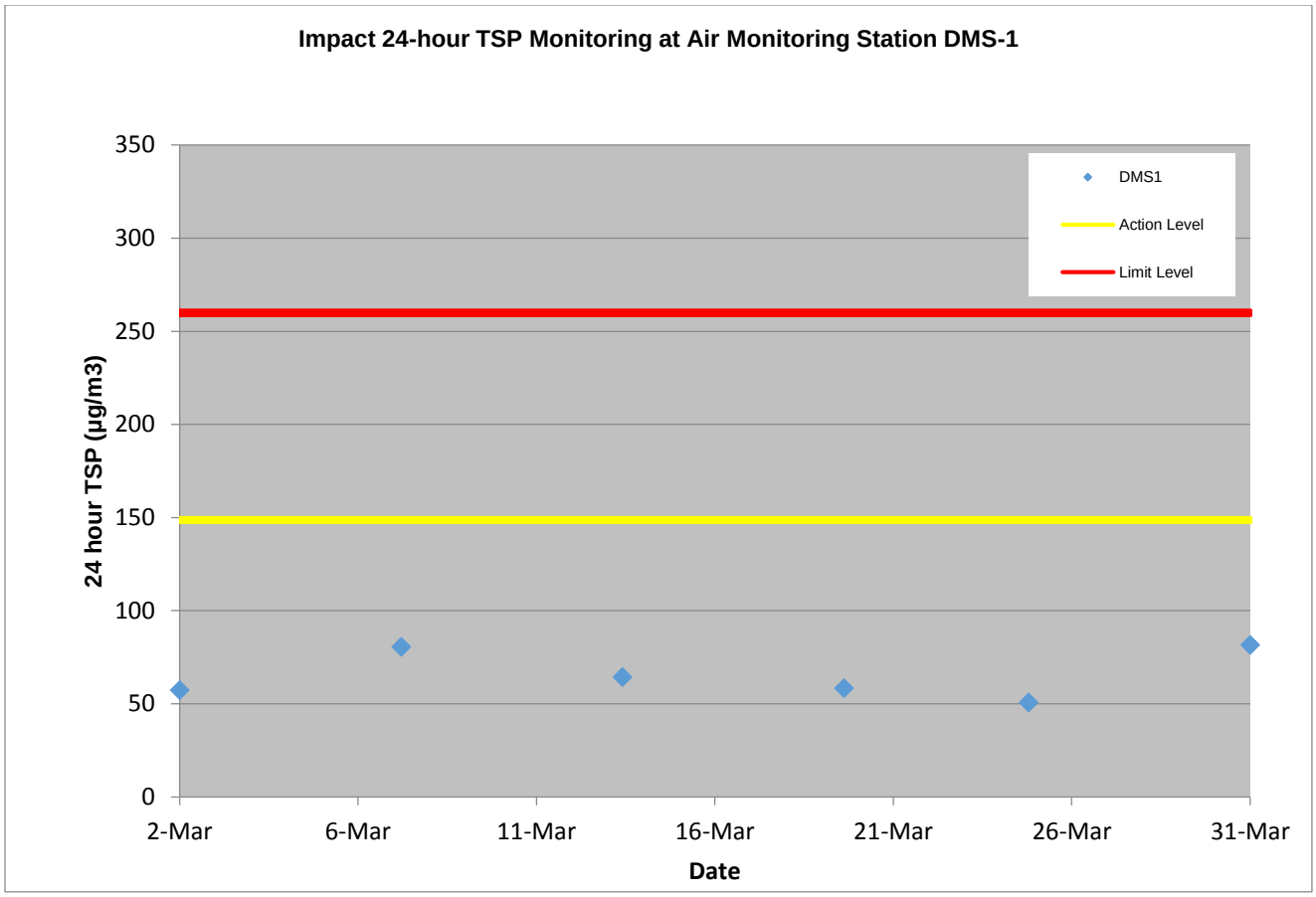
Average (µg/m3)	65.5
Max (µg/m3)	81.6
Min (µg/m3)	50.7

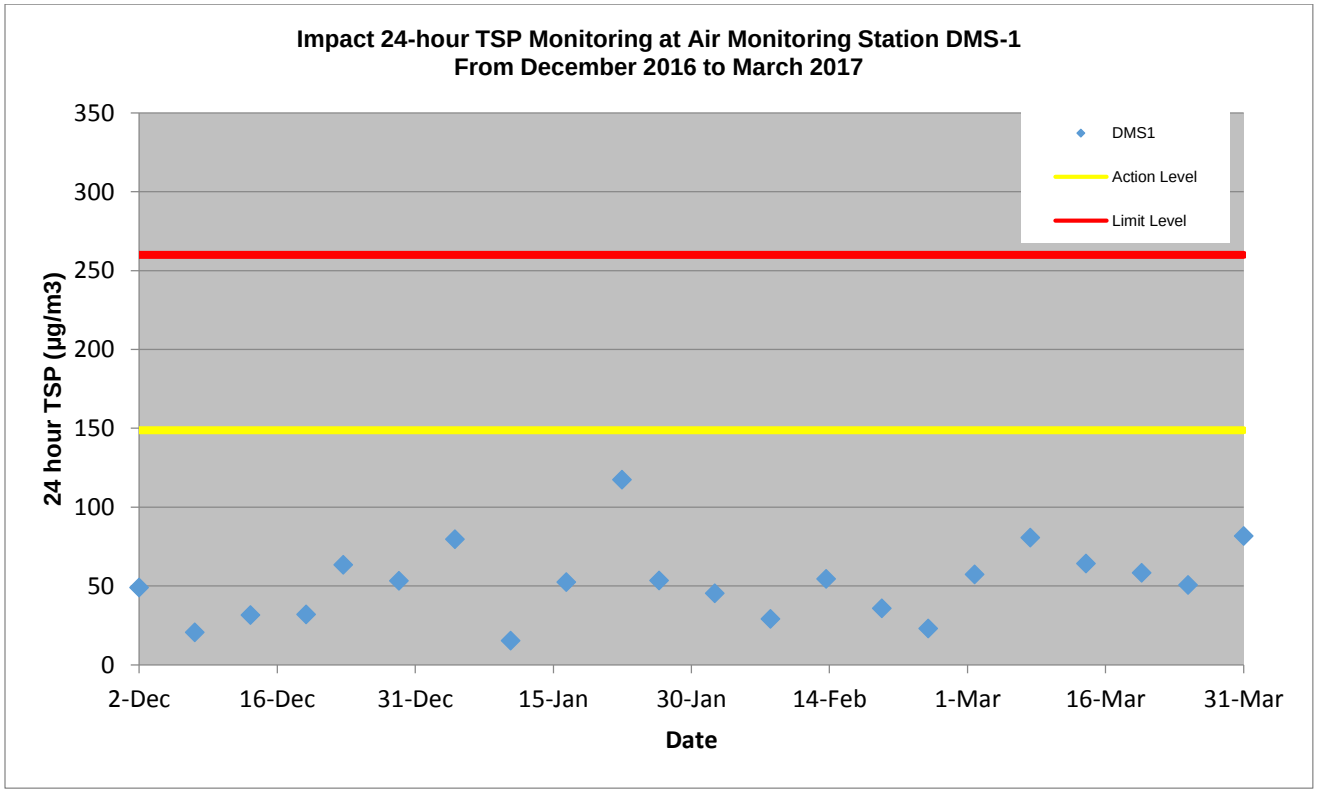
Location: DMS-2 Price Memorial Catholic Primary School

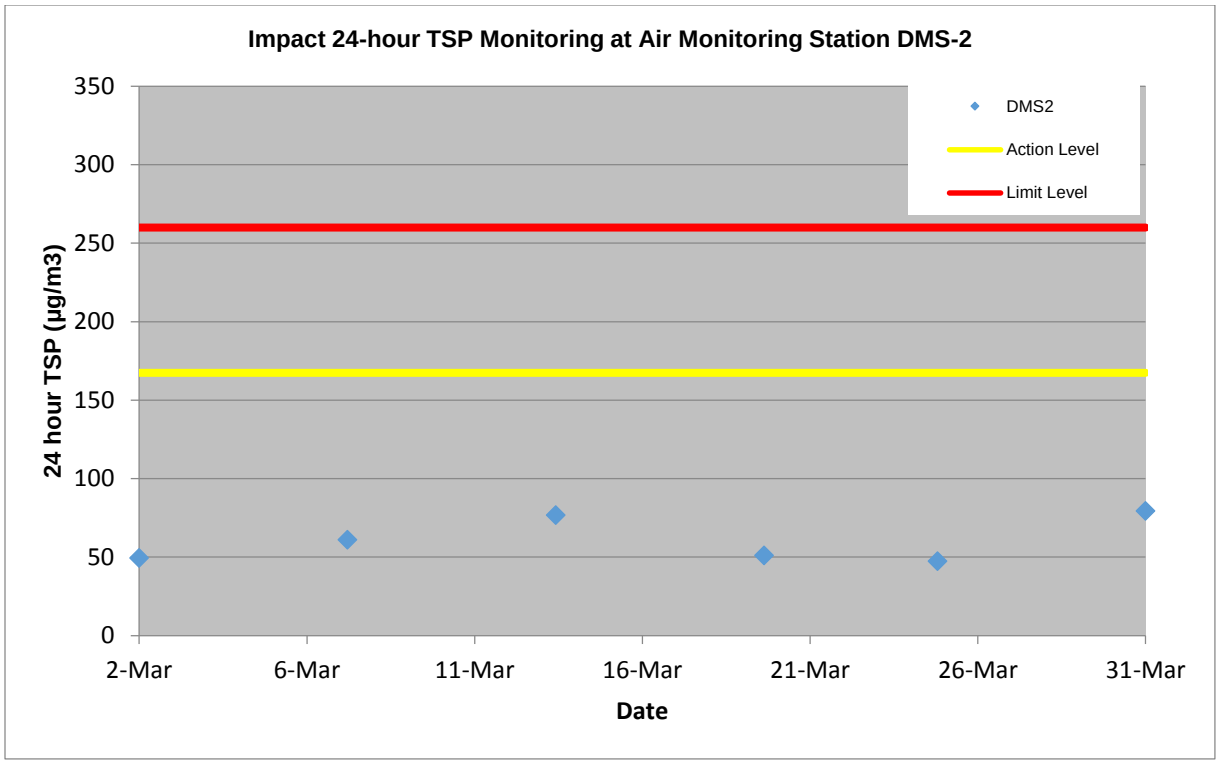
Details of 24-Hour TSP Monitoring

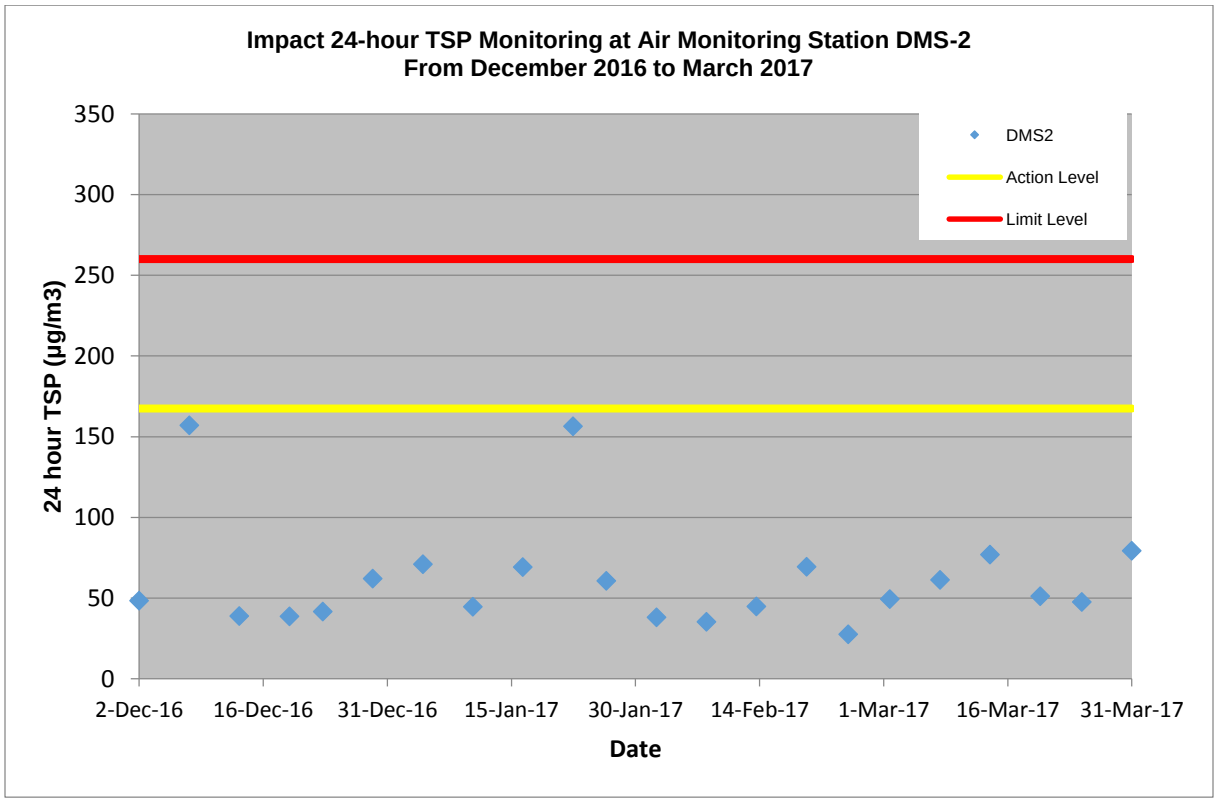
Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103593	Mar-17	2-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	764.7	764.5	19.9	17.4	38.0	38.0	2.9018	2.9937	0.0919	1.2888	1.2936	1.2912	5425.42	5449.42	1440.00	1859.3	49.4	167.4	260.0
103595	Mar-17	8-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	763.2	761.8	16.3	17.0	40.0	40.0	2.8939	3.0133	0.1194	1.3561	1.3535	1.3548	5449.43	5473.43	1440.00	1950.9	61.2	167.4	260.0
103596	Mar-17	14-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	761.9	763.7	19.1	16.8	44.0	44.0	2.8858	3.0491	0.1633	1.4710	1.4779	1.4745	5473.44	5497.44	1440.00	2123.21	76.9	167.4	260.0
128151	Mar-17	20-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	761.4	761.3	21.9	22.9	48.0	48.0	2.7738	2.8904	0.1166	1.5853	1.5828	1.5841	5497.45	5521.45	1440.00	2281.03	51.1	167.4	260.0
128153	Mar-17	25-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	763.0	766.7	20.2	15.8	44.0	44.0	2.8023	2.9033	0.1010	1.4694	1.4829	1.4762	5521.46	5545.46	1440.00	2125.66	47.5	167.4	260.0
128136	Mar-17	31-Mar-17	0:00	0:00	DMS2	Fine	Normal Operation	761.5	765.0	20.1	18.7	46.0	46.0	2.7695	2.9448	0.1753	1.5291	1.5357	1.5324	5545.47	5569.47	1440.00	2206.66	79.4	167.4	260.0

Average (µg/m3)	60.9
Max (µg/m3)	79.4
Min (µg/m3)	47.5


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
2-Mar
6-Mar
11-Mar
16-Mar
21-Mar
26-Mar
31-Mar
Date
DMS1
Action Level
Limit Level


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
From December 2016 to March 2017
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
2-Dec
16-Dec
31-Dec
15-Jan
30-Jan
14-Feb
1-Mar
16-Mar
31-Mar
Date
DMS1
Action Level
Limit Level


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
2-Mar
6-Mar
11-Mar
16-Mar
21-Mar
26-Mar
31-Mar
Date
DMS2
Action Level
Limit Level

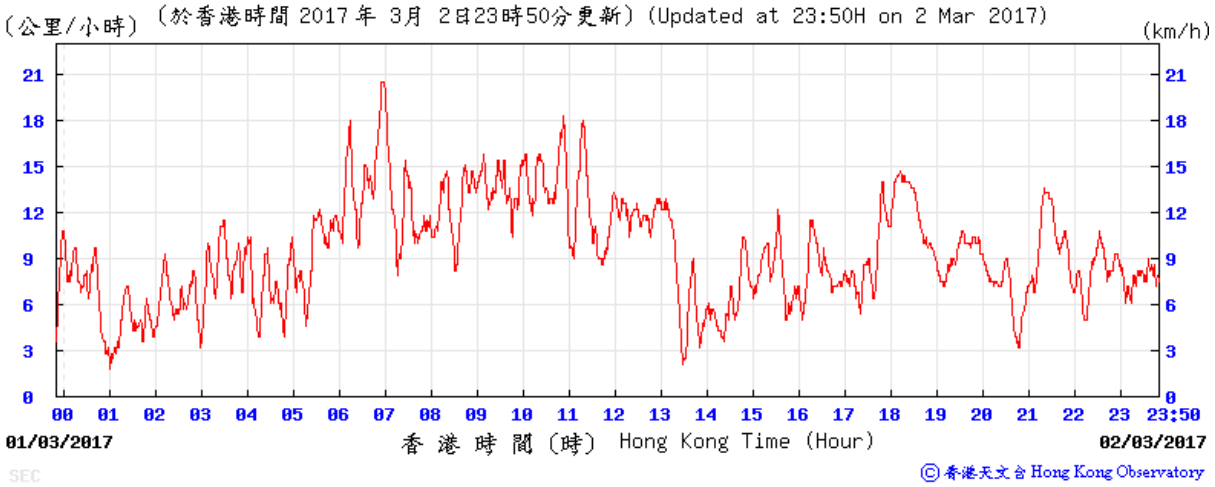

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
From December 2016 to March 2017
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
2-Dec-16
16-Dec-16
31-Dec-16
15-Jan-17
30-Jan-17
14-Feb-17
1-Mar-17
16-Mar-17
31-Mar-17
Date
DMS2
Action Level
Limit Level

Appendix F

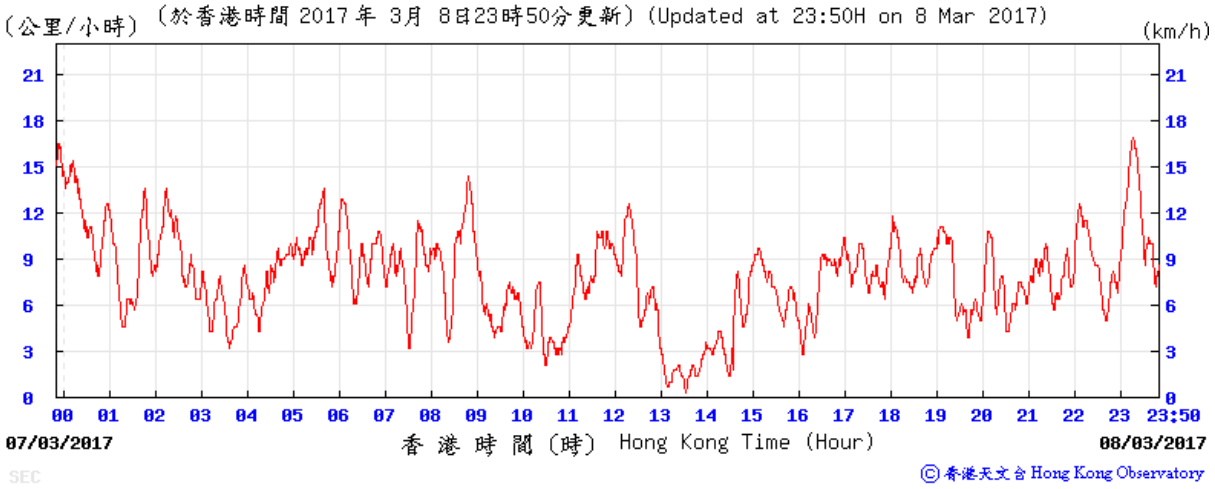
Wind data

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

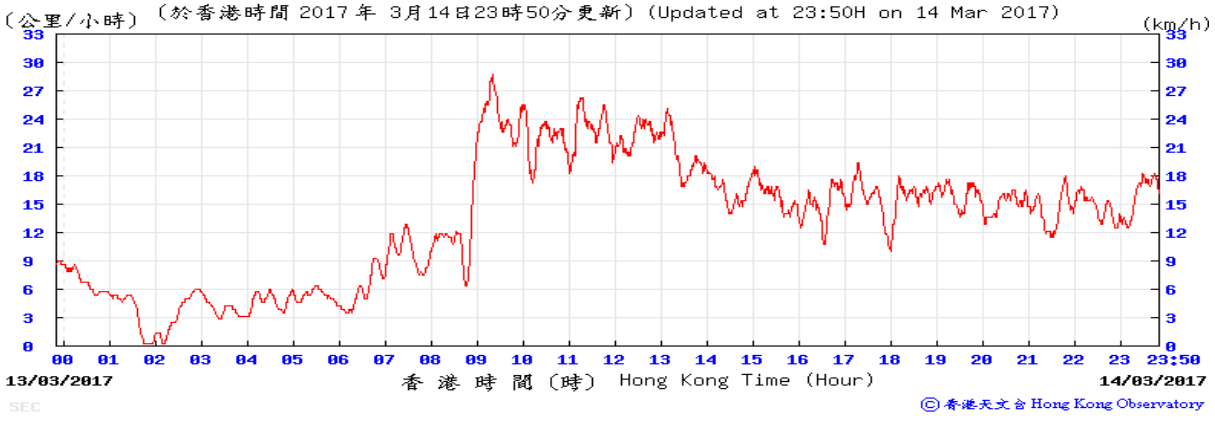
2 March 2017



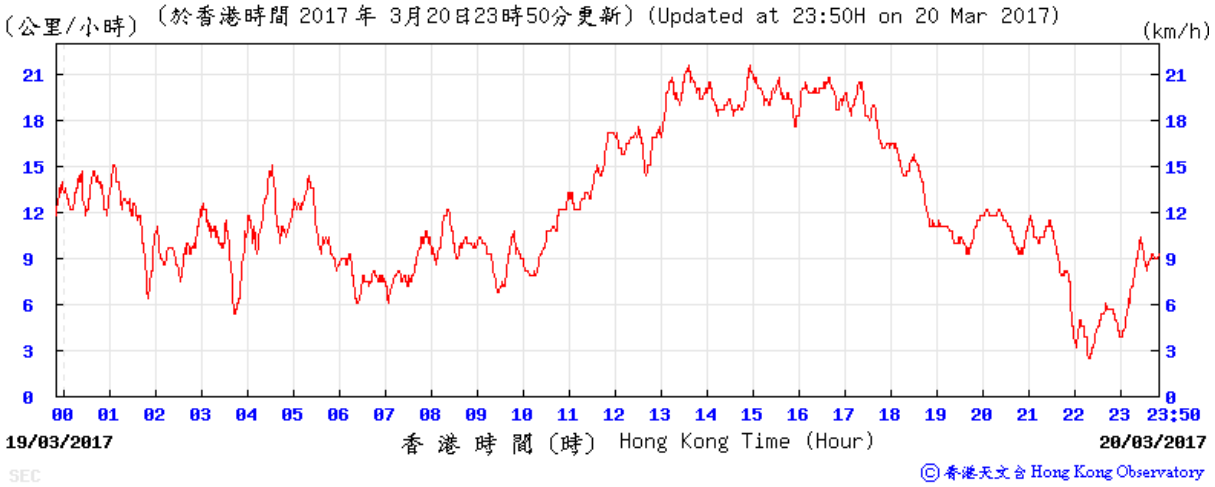
8 March 2017



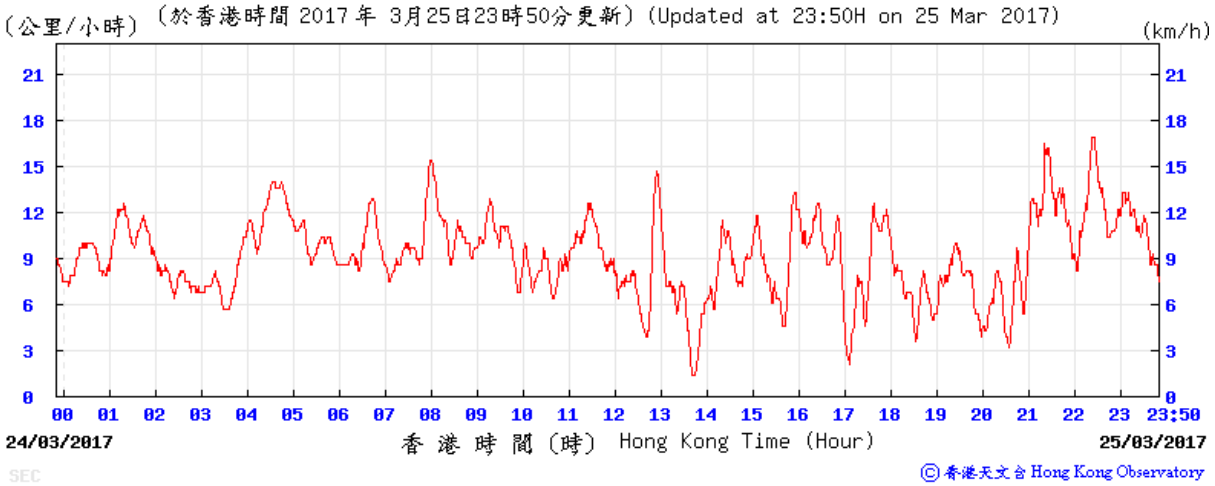
14 March 2017



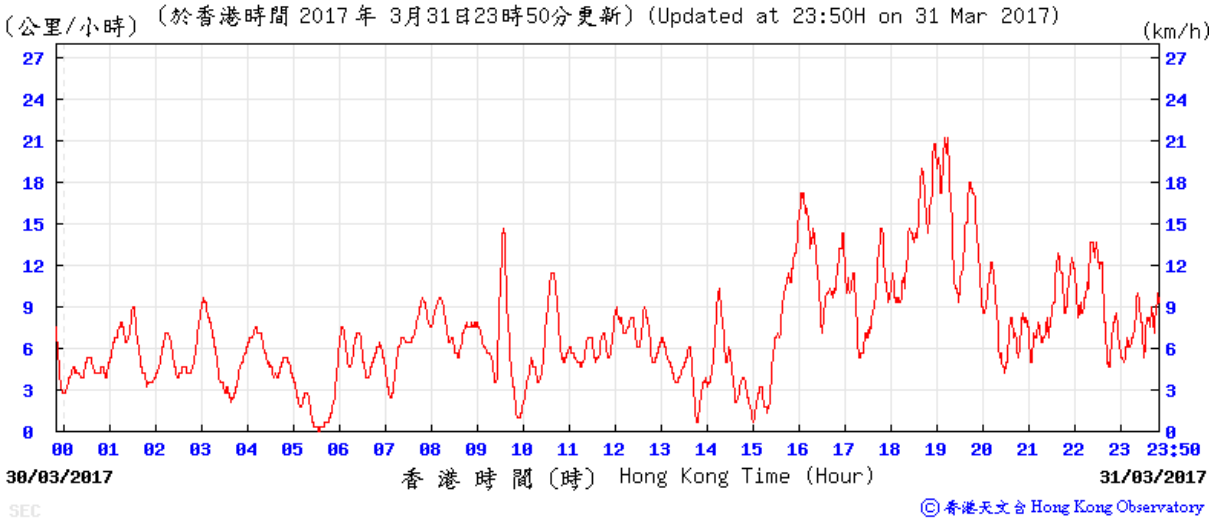
20 March 2017



25 March 2017

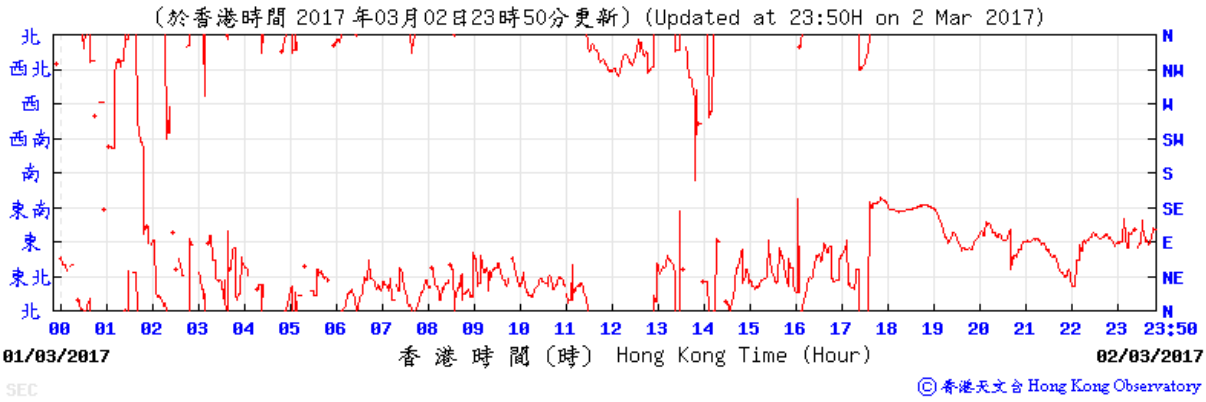


31 March 2017

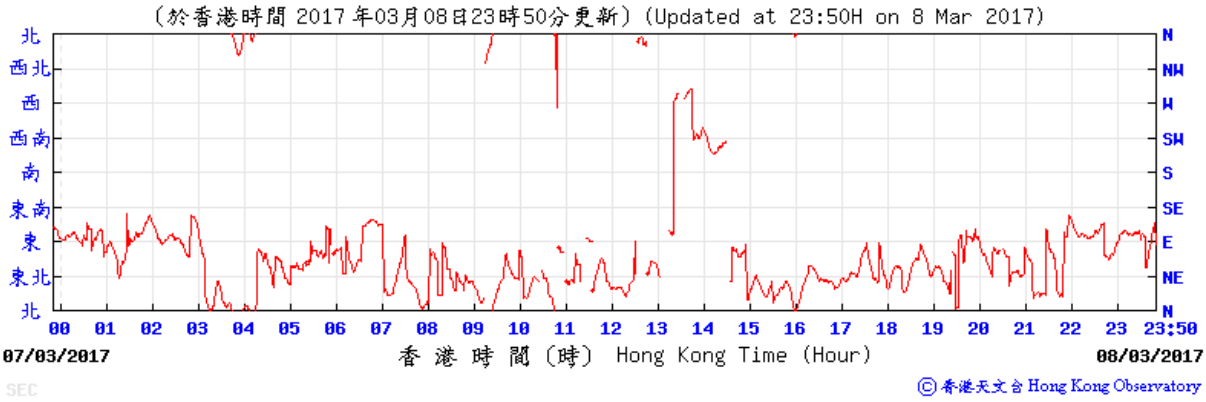


Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

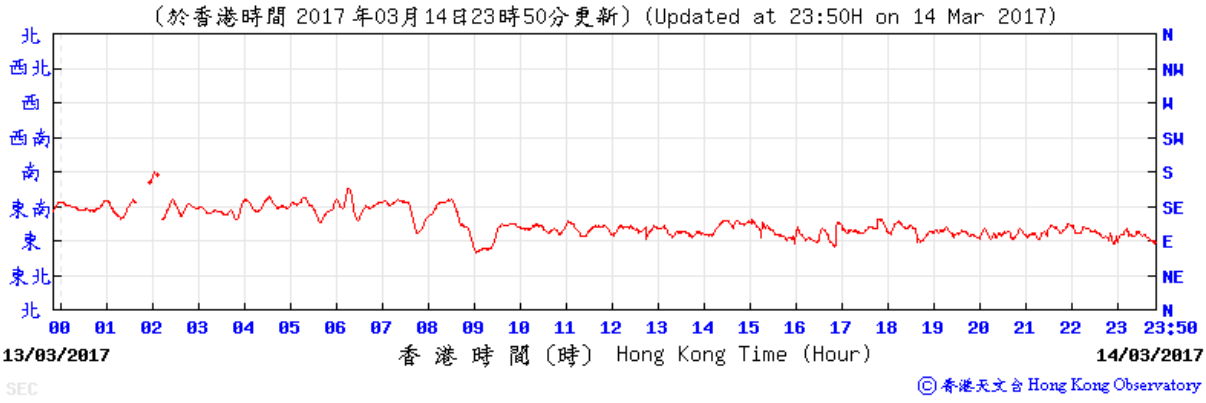
2 March 2017



8 March 2017



14 March 2017



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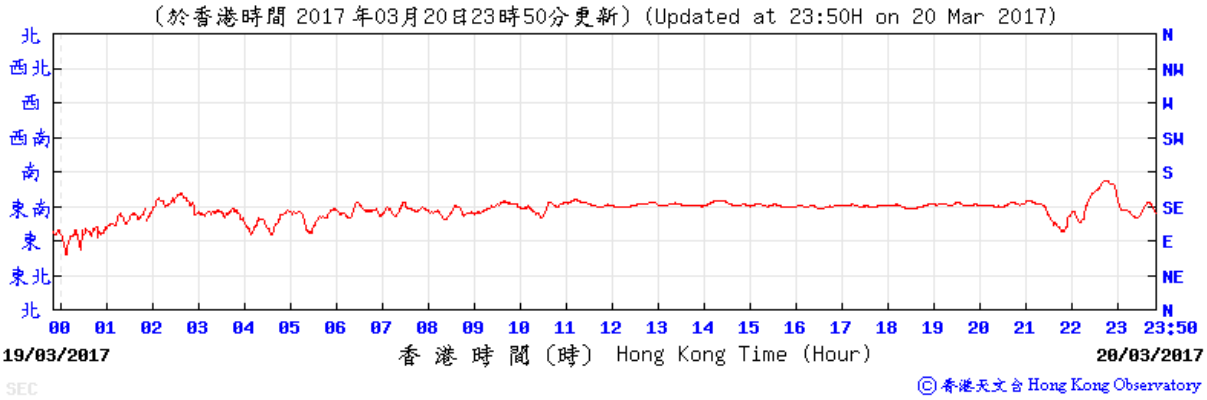

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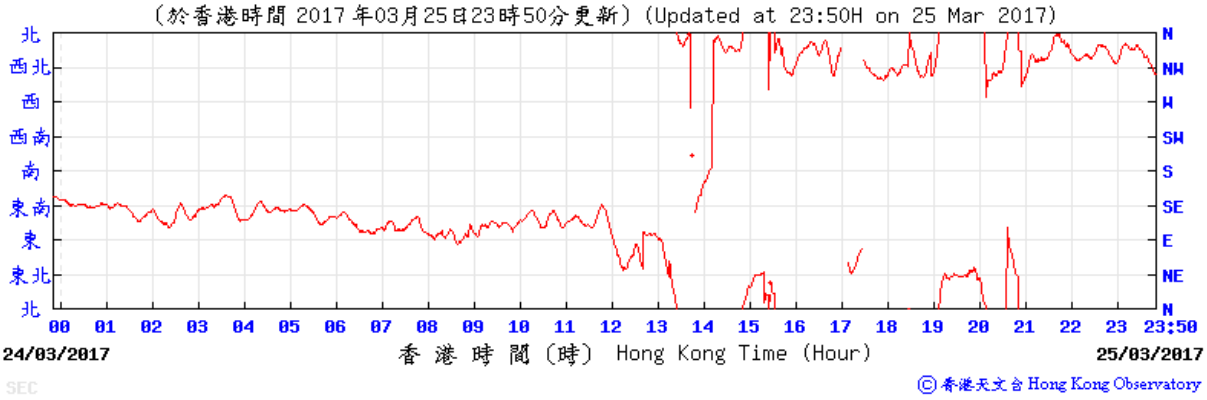

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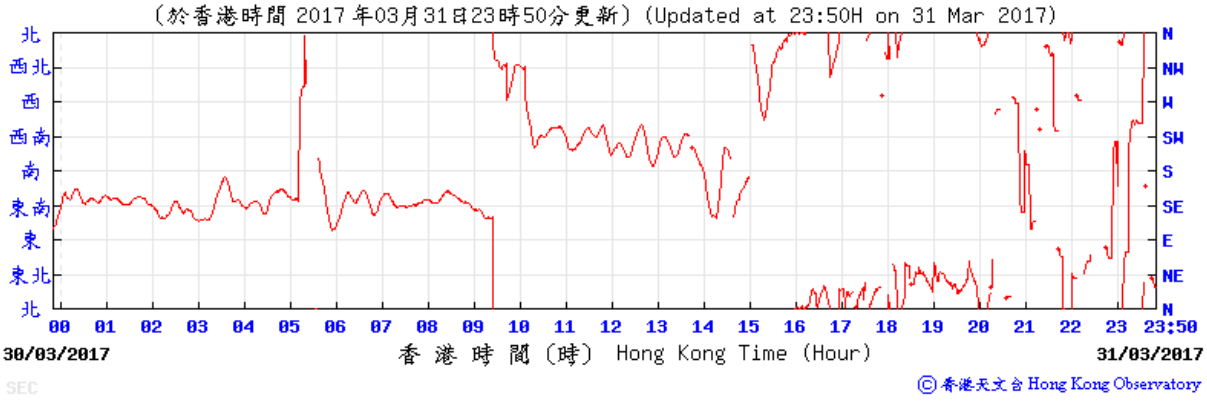
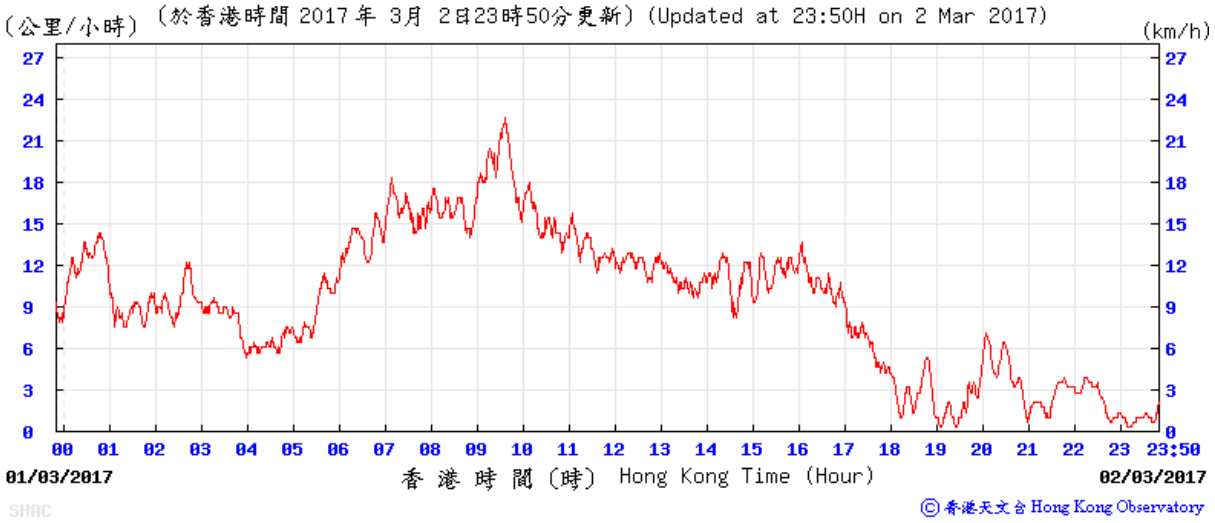


Average wind speed obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

2 March 2017



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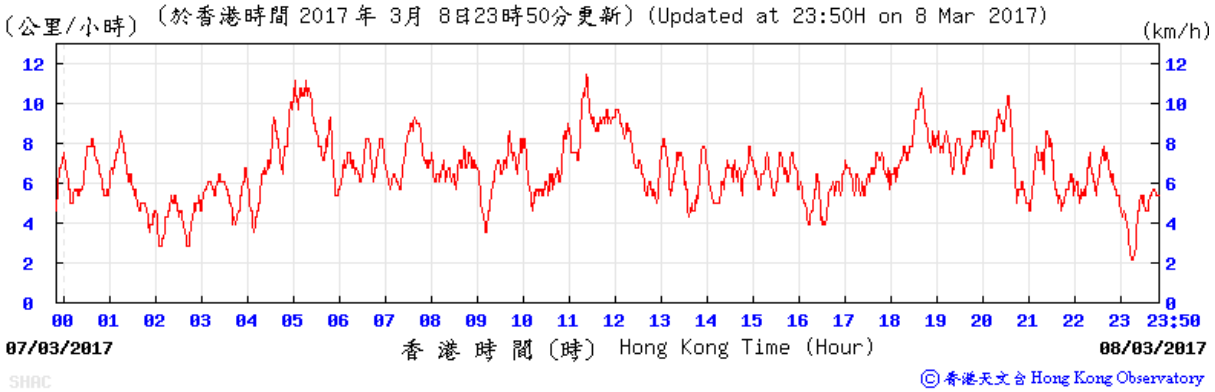

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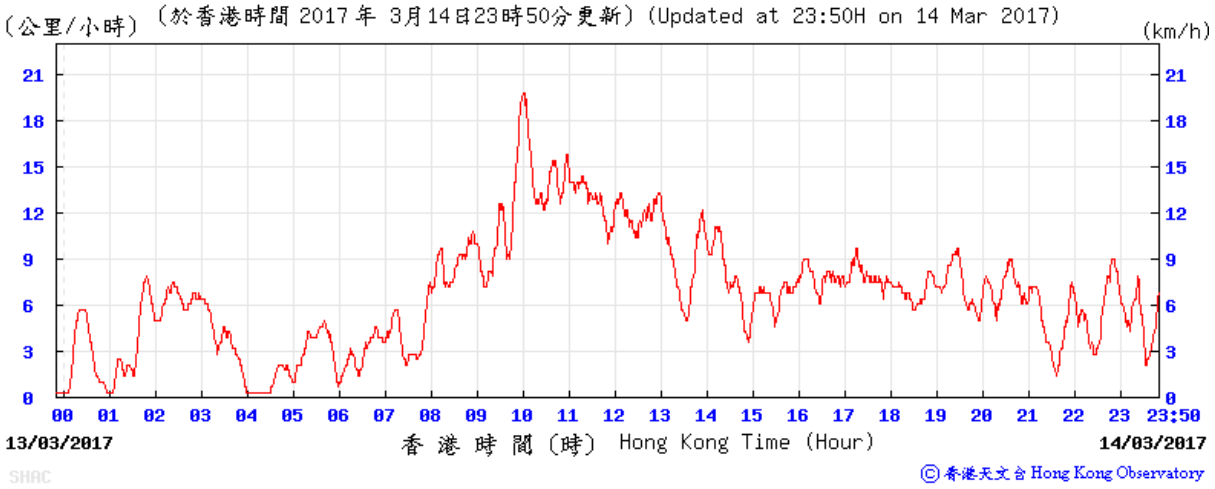

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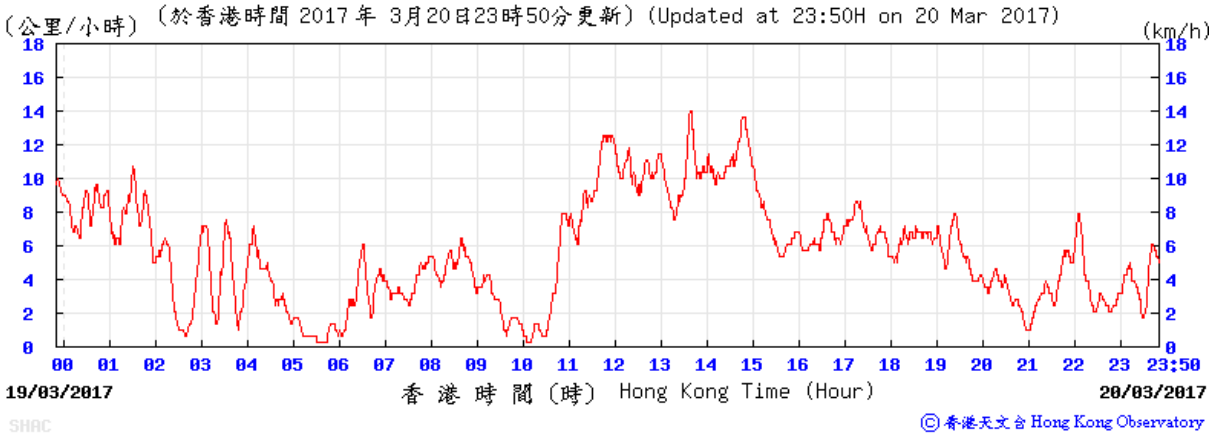

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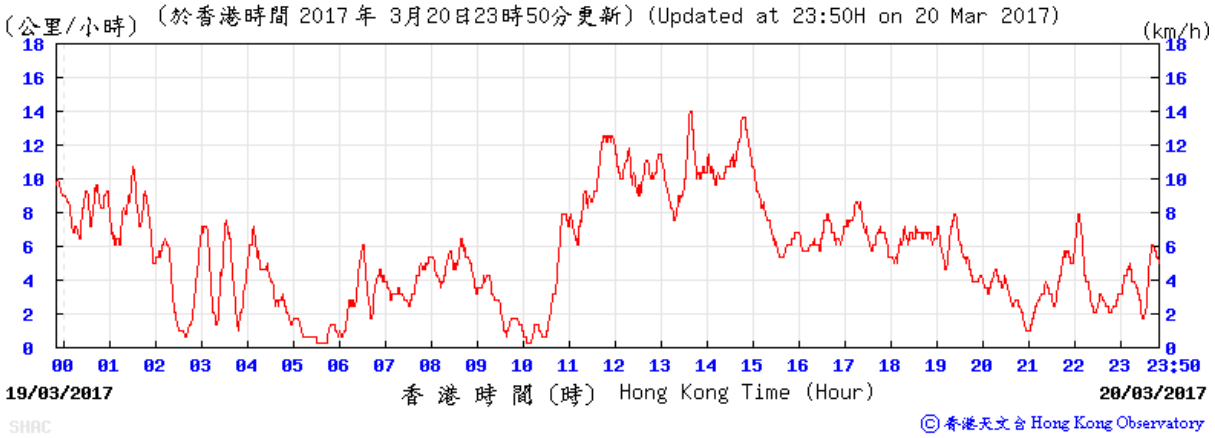

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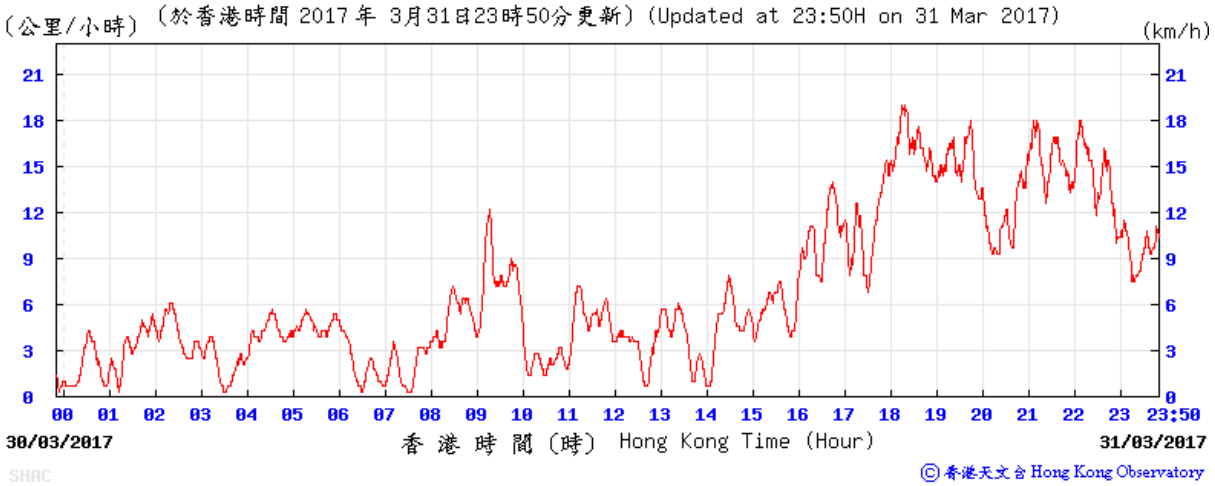
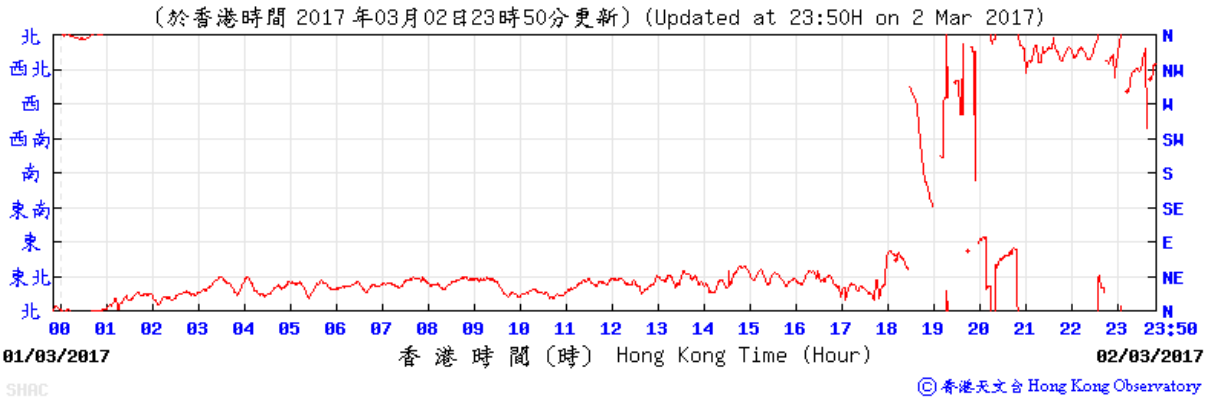
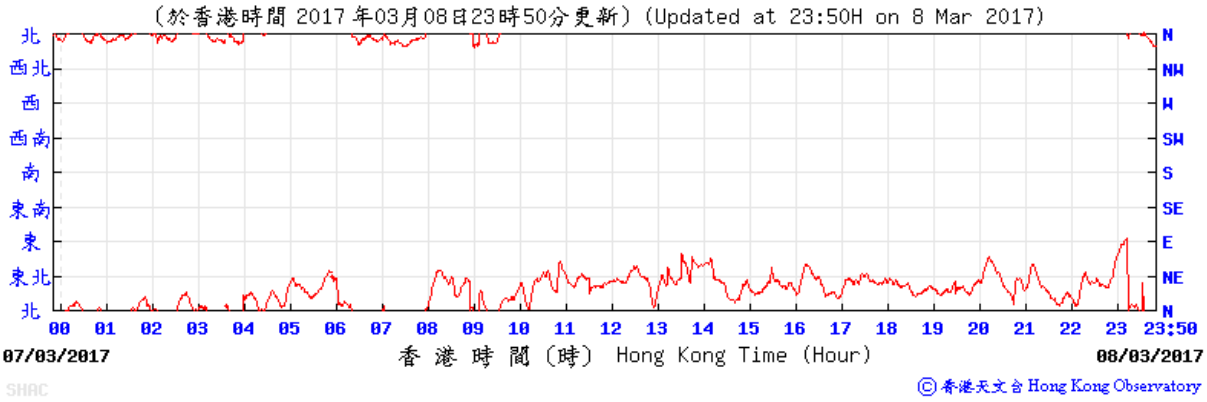


Average wind direction obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

2 March 2017



8 March 2017



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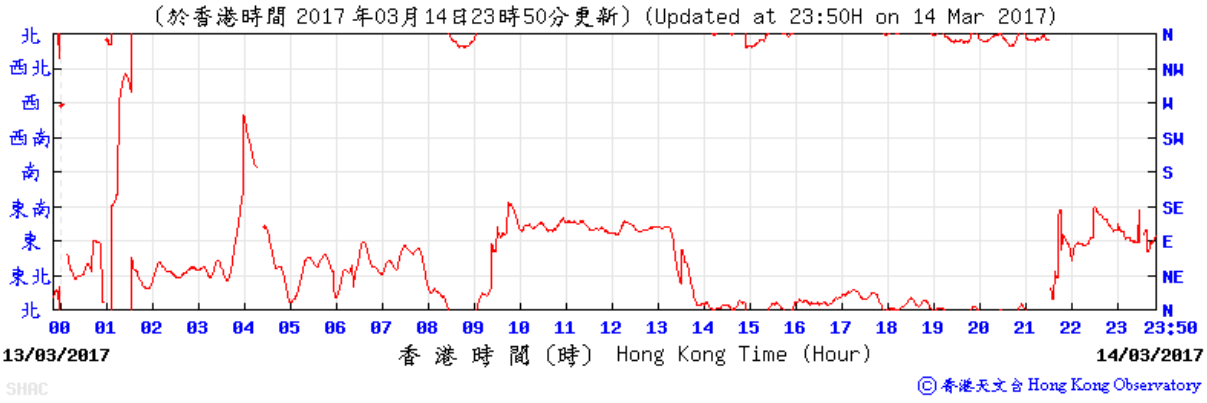
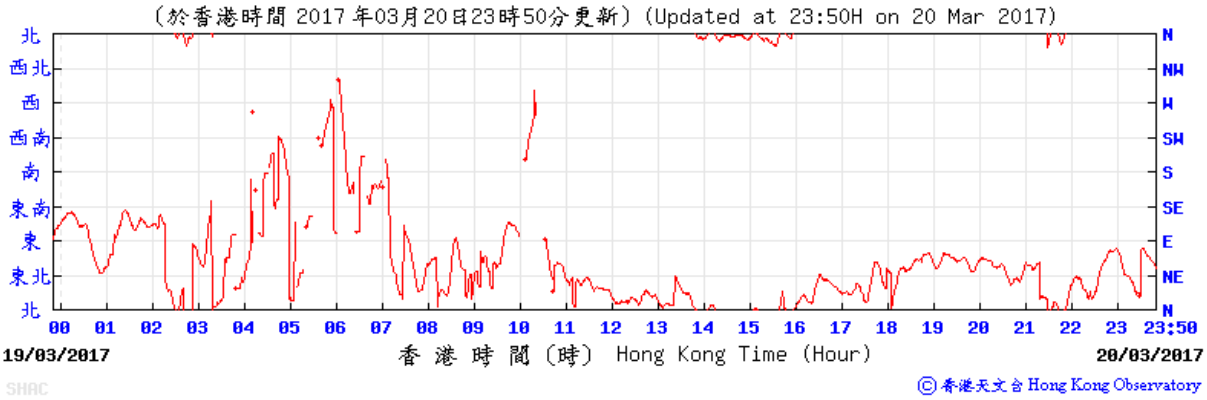


20 March 2017



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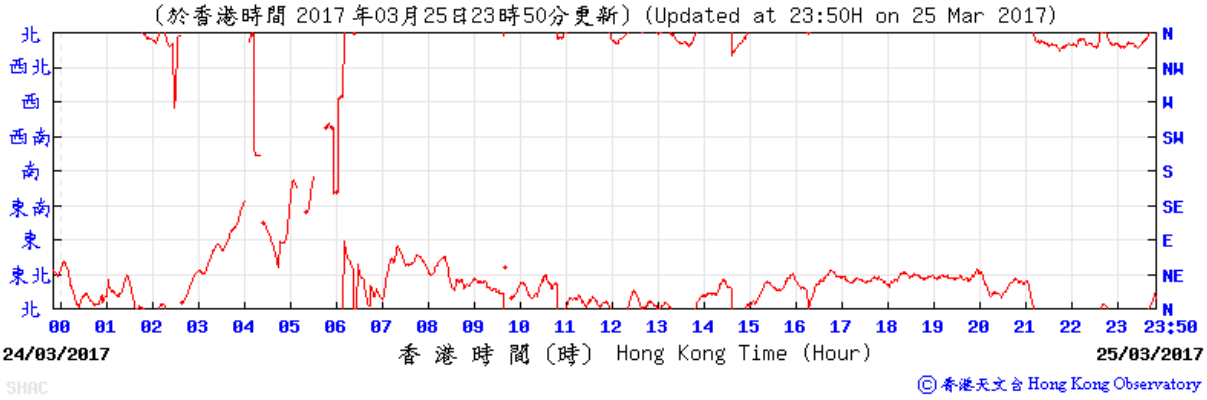
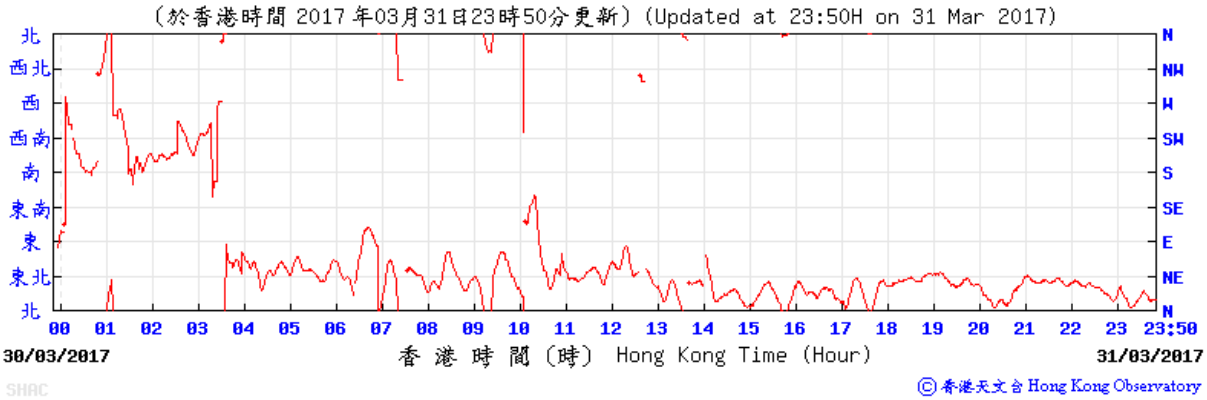


31 March 2017



Appendix G

Calibration Certificates of Noise Monitoring Equipment

TEST REPORT
for
PRECISION
SOUND LEVEL METER
(With 1/3 octave real-time analyzer)

Model : NA－28

Serial No. : 00162248

Microphone No. : 08922

Preamplifier No. : 52341

Condition : Temperature 24 ℃

Humidity 37 %RH

Date : March, 24, 2016

Signature :

RION CO., LTD.

1. Frequency weightings (Fig. 1) Pass

Frequency weighting A

Frequency weighting C

Frequency weighting Z

2. Level linearity error of Level range control (dB)

Frequency weighting : C

Reference level : 94.0 dB(Reference level range : 20-120 dB)

Level range (dB)	Input signal level (dB)	Deviation		Tolerance limits (dB)
		1000 Hz	8000 Hz	
30-130	104.0	**0.0**	**0.0**	± 0.3
20-120	94.0	Ref.		
20-110	84.0	**0.0**	**0.0**	± 0.3
20-100	74.0	**0.0**	**0.0**	
20-90	64.0	**0.0**	**0.0**	
20-80	54.0	**0.0**	**0.0**	

3. Level linearity error (dB)

1) Sound level meter mode

Frequency weighting : A

Reference level : 94.0 dB (at 1000 Hz, 12500 Hz), 54.0 dB (at 31.5 Hz)

Input signal level (dB)	Deviation(dB)			Tolerance limits (dB)
	31.5 Hz	1000 Hz	12500 Hz	
130.0	—	**0.0**	—	± 0.3
125.7	—	—	**0.0**	
104.0	—	**0.0**	—	± 0.2
94.0	—	Ref.		Ref.
54.0	Ref.	—	—	
25.0	**0.1**	**0.2**	**0.1**	± 0.3

2) Analysis mode (dB)

Reference level : 94.0 dB, Frequency weighting : Z

Input signal level (dB)	Deviation(dB)			Tolerance limits (dB)
	16 Hz	1000 Hz	16000 Hz	
130.0	**0.0**	**0.0**	**0.0**	± 0.4
94.0	Ref.			
35.0	**0.3**	**0.1**	**0.0**	± 0.4

4. Response to repeated to toneburst

Reference level : 130.0 dB (level range : 30-130 dB)

Input signal level : 130.0 dB + 10 dB

Frequency weighting : A, Time-weighting : S(Slow)

Toneburst : Frequency : 2000Hz, duration : 5 ms, period : 25 ms

Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
133.0	**133.0**	**0.0**	± 0.5

5. Toneburst response (Time weighted sound level)

Reference level : 127.0 dB (level range : 30-130 dB)

Input signal level : 127 dB

Frequency weighting : A, Time-weighting : F(Fast)

Toneburst : Frequency : 4000Hz, duration : 0.25 ms

Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
100.0	**99.9**	**−0.1**	± 1.0

6. Toneburst response (Sound exposure level L_E)

Reference level : 127.0 dB (level range : 30-130 dB)

Input signal level : 127 dB

Frequency weighting : A

Toneburst : Frequency : 4000Hz, duration : 0.25 ms

Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
91.0	**90.9**	**−0.1**	± 1.0

7. Peak sound level (dB)

Reference level : 137.0 dB (level range : 30-130 dB)

Input signal level : 137 dB

Frequency weighting : C

Peak sound level	Frequency	Input Signals	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
*L*cpeak	31.5 Hz	1-cycle	139.5	**140.2**	**0.7**	± 2.0
	500 Hz	Half-cycle (Positive-going)	139.4	**139.1**	**-0.3**	± 1.0
		Half-cycle (Negative-going)	139.4	**139.1**	**-0.3**	

8. 1/1,1/3 Octave band filter characteristics (dB)

Reference level : 120.0 dB (level range : 20-120 dB)

Input signal level : 120.0 dB (at 1000 Hz)

Frequency weighting : Z

1) 1/1 Octave band filter (singleness)

Nominal midband frequency	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
500 Hz	-39.9	**-39.8**	**0.1**	± 0.3
1000 Hz	Ref.			
2000 Hz	-39.7	**-39.7**	**0.0**	± 0.3

2) 1/3 Octave band filter (singleness)

Nominal midband frequency	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
500 Hz	-49.8	**-49.8**	**0.0**	± 0.3
630 Hz	-38.0	**-38.0**	**0.0**	
800 Hz	-19.2	**-19.2**	**0.0**	
1000 Hz	Ref.			
1250 Hz	-19.3	**-19.3**	**0.0**	± 0.3
1600 Hz	-38.0	**-38.0**	**0.0**	
2000 Hz	-49.7	**-49.7**	**0.0**	

3) 1/1 Octave -band filters (all at once)

Nominal midband frequency	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
500 Hz	-39.7	**-39.6**	**0.1**	± 0.3
1000 Hz	Ref.			
2000 Hz	-39.7	**-39.7**	**0.0**	± 0.3

4) 1/3 Octave-band filters (all at once)

Nominal midband frequency	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
500 Hz	-50.3	**-50.4**	**-0.1**	± 0.3
630 Hz	-38.2	**-38.2**	**0.0**	
800 Hz	-19.6	**-19.6**	**0.0**	
1000 Hz	Ref.			
1250 Hz	-19.3	**-19.3**	**0.0**	± 0.3
1600 Hz	-38.0	**-38.0**	**0.0**	
2000 Hz	-49.8	**-49.8**	**0.0**	

9. Inherent noise level (dB)

Frequency weighting	Indication (dB)		Tolerance limits (dB)
	20-120 dB	20-100 dB	
A	**10.8**	**10.6**	≦14 dB
C	**14.4**	——	≦22 dB
Z	**22.6**	**22.1**	≦27 dB

10. Instrumental error

± 0.7dB (Reference level : 84.0dB) 0.1 dB

Applicable standards

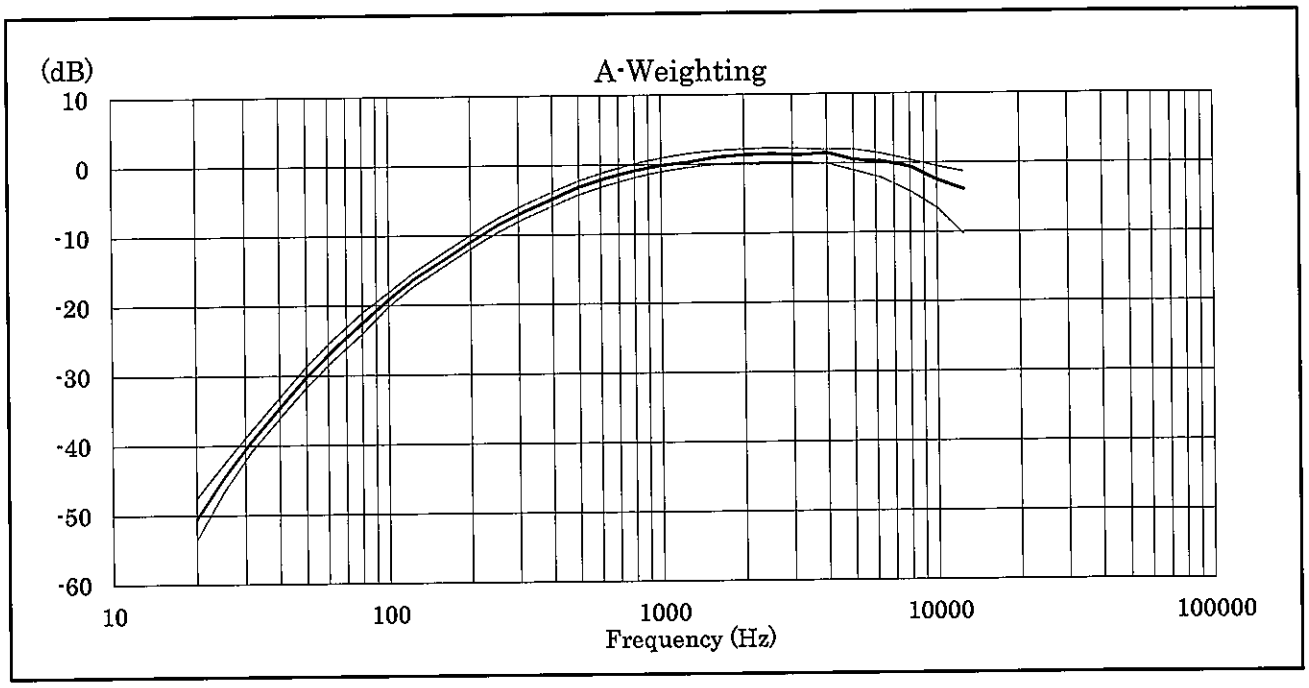
JIS C 1509-1 : 2005 class 1
JIS C 1513 : 2002 class 1
JIS C 1514 : 2002 class 1
IEC 61672-1 : 2013 class 1
IEC 61672-1 : 2002 class 1
IEC 61260-1 : 1995 class 1
ANSI/ASA S1.4-2014/Part 1 class 1
ANSI S1.11-2004 class 1

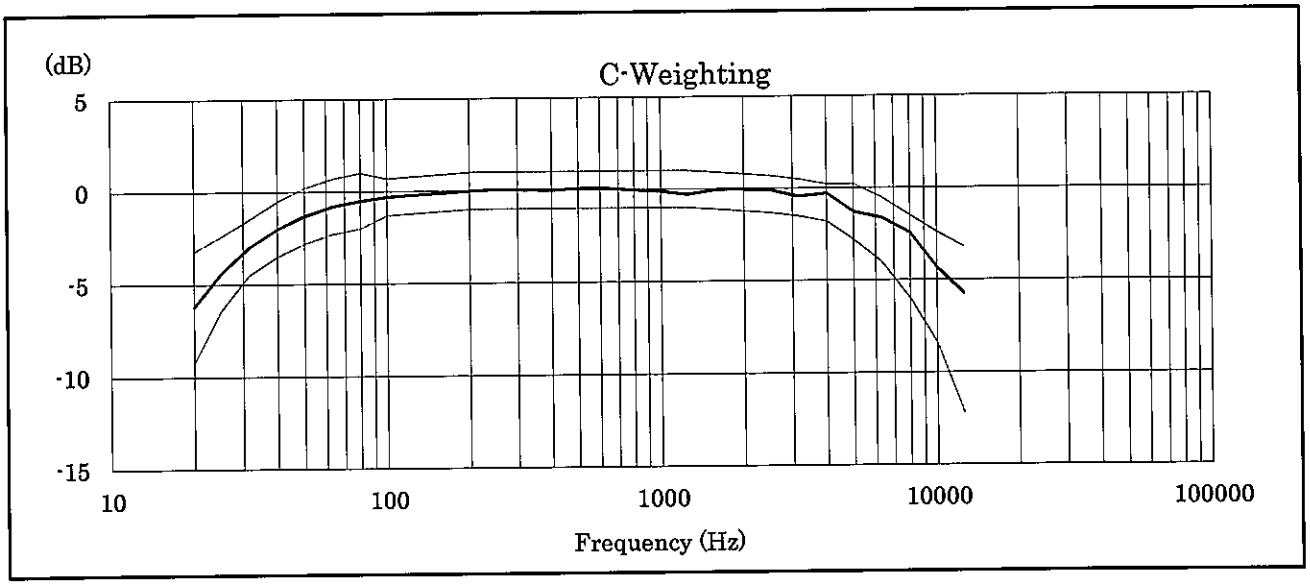
RION

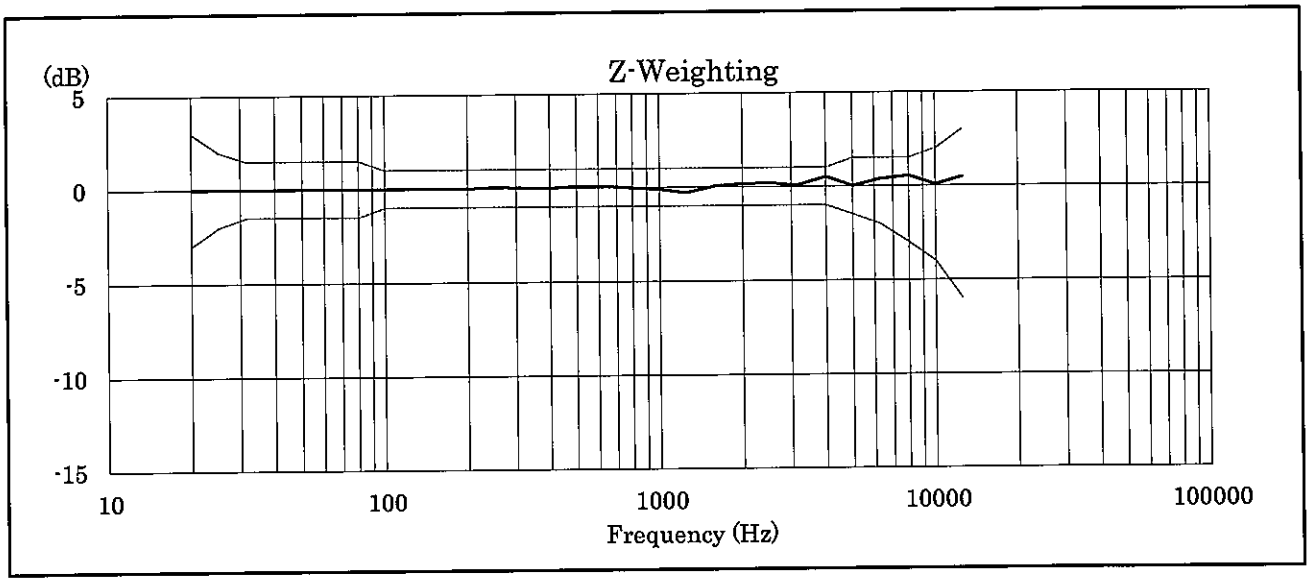
NA-28 (Fig. 1)

No. 00162248

Relative free field frequency response







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Tel : (852) 2873 6860
Fax : (852) 2555 7533

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0323 02-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Castle Group Ltd.
Type/Model No.:	GA607
Serial/Equipment No.:	043328
Adaptors used:	-

Item submitted by

Curstomer:	Gammon Building Construction Limited
Address of Customer:	-
Request No.:	TEPC160327A
Date of receipt:	23-Mar-2016

Date of test: 24-Mar-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2239857	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	1015 ± 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: Huang JianMin/Feng Jun Qi **Date:** 29-Mar-2016 **Company Chop:**

SOILS AND MATERIALS ENGINEERING COMPANY LTD 綜合試驗有限公司

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

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0323 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.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.84	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 = 0.002 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 = 1000.1 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 = 2.4 %**

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: Fung Chi Yip **Date:** 24-Mar-2016

Checked by: Lam Tze Wai **Date:** 29-Mar-2016

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.

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. : C170448
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0144) Date of Receipt / 收件日期 : 19 January 2017

Description / 儀器名稱	:	Integrating Sound Level Meter
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	2238
Serial No. / 編號	:	2654435
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 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 25 January 2017

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
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany

Tested By 測試 : H T Wong
Technical Officer

Certified By 核證 : K C Lee
Project Engineer

Date of Issue 簽發日期 : 27 January 2017

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
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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. : C170448
證書編號

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

2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.1

6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (Db)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

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

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Certificate No. : C170448
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6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.1	Ref.
	L_{ASP}		S			94.1	± 0.1
	L_{AIP}		I			94.2	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.1	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.1	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.5	-8.6 ± 1.0
					500 Hz	90.9	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C170448
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.2	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.1	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	89.7	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	69.8	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2793331

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

- Uncertainties of Applied Value :

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

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

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

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

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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. : C166973
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-2820) Date of Receipt / 收件日期 : 9 December 2016

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 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 December 2016

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
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 19 December 2016

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
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Certificate No. : C166973
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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	C163709
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	± 0.3	± 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 ± 1 %	± 1

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

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

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

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Appendix H

Noise Results

Location: NMS-CA-1 - C.U.H.K.A.A Thomas Cheung School

Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
3-Mar-17	10:30-11:00	55.2	70.0	60.5	50.0	57.0	< Baseline Level
9-Mar-17	11:00-11:30	52.4	70.0	53.8	51.3	57.0	< Baseline Level
15-Mar-17	11:00-11:30	56.9	70.0	58.5	54.5	57.0	< Baseline Level
21-Mar-17	10:30-11:00	54.6	70.0	56.0	52.0	57.0	< Baseline Level
30-Mar-17	12:00-12:30	56.0	70.0	57.8	53.9	57.0	< Baseline Level

Max	**L_{Aeq},30min**	56.9
Min	**L_{Aeq},30min**	52.4

Notes: (*): Façade correction is included
(#): Baseline Corrected Level = Measured Noise Level - Baseline Noise Level

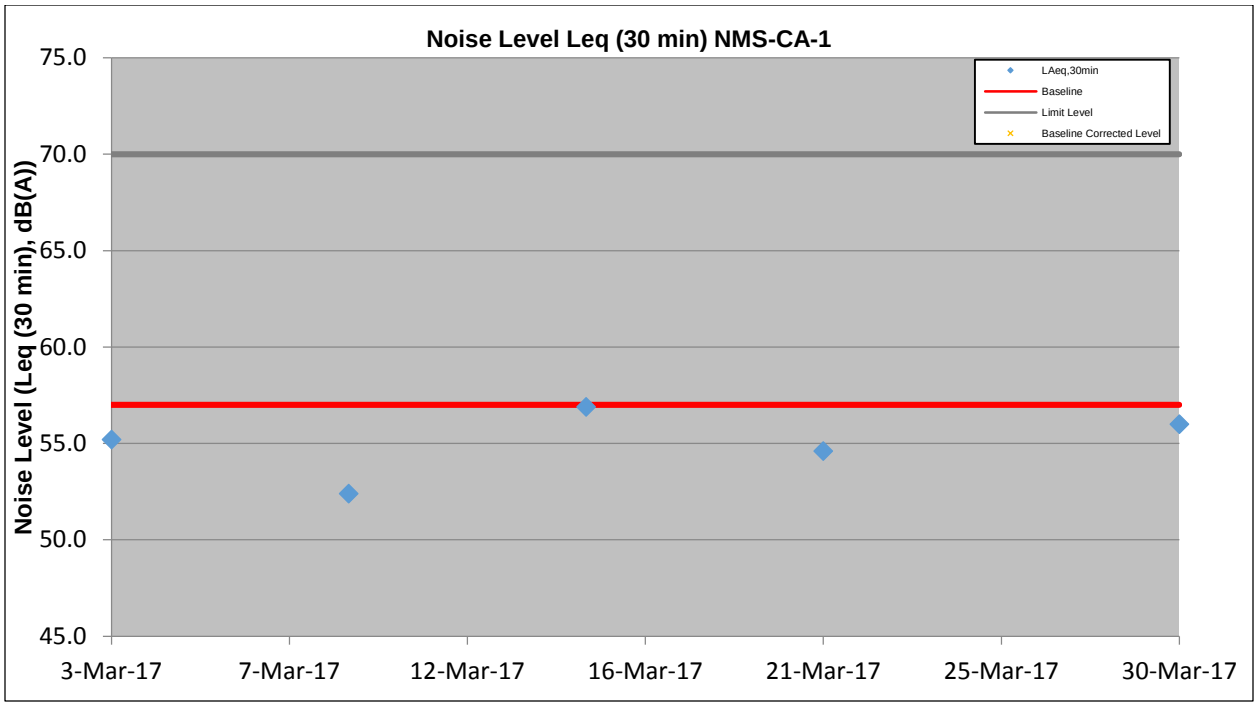
Location: NMS-CA-2 - Price Memorial Catholic Primary School

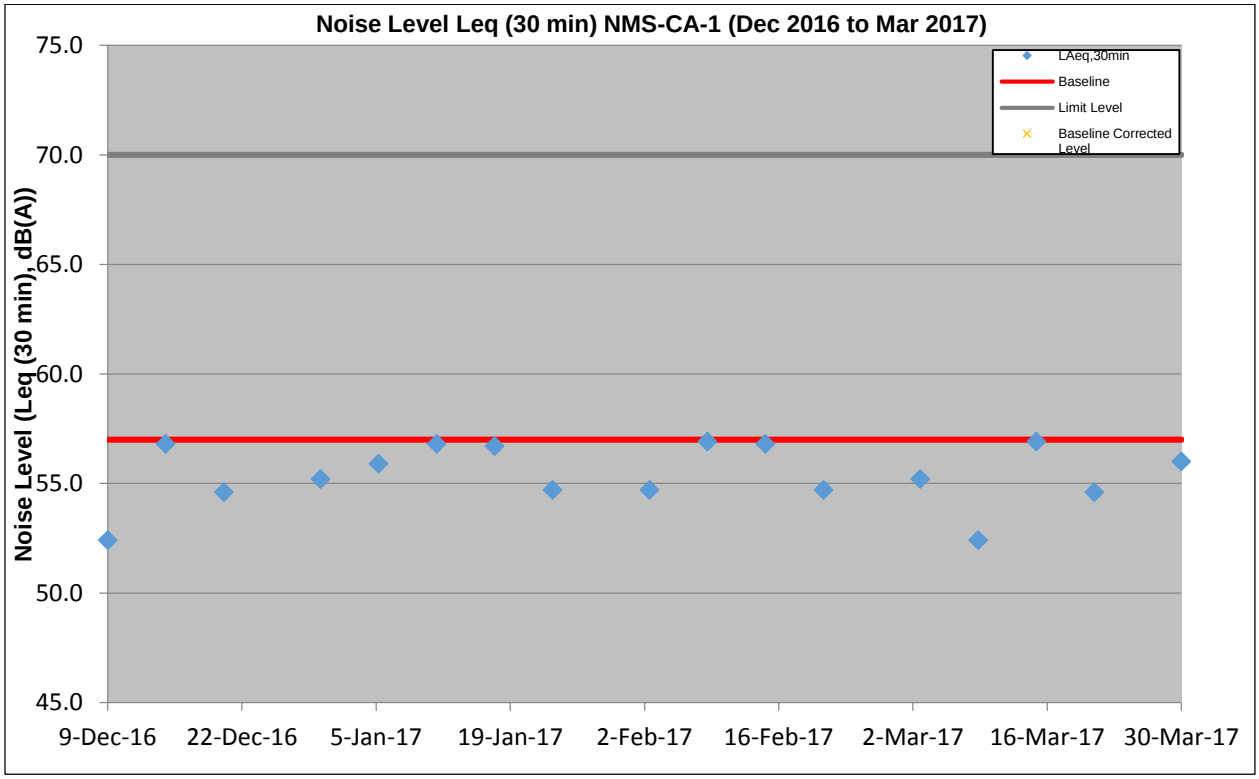
Daytime Noise Monitoring Results

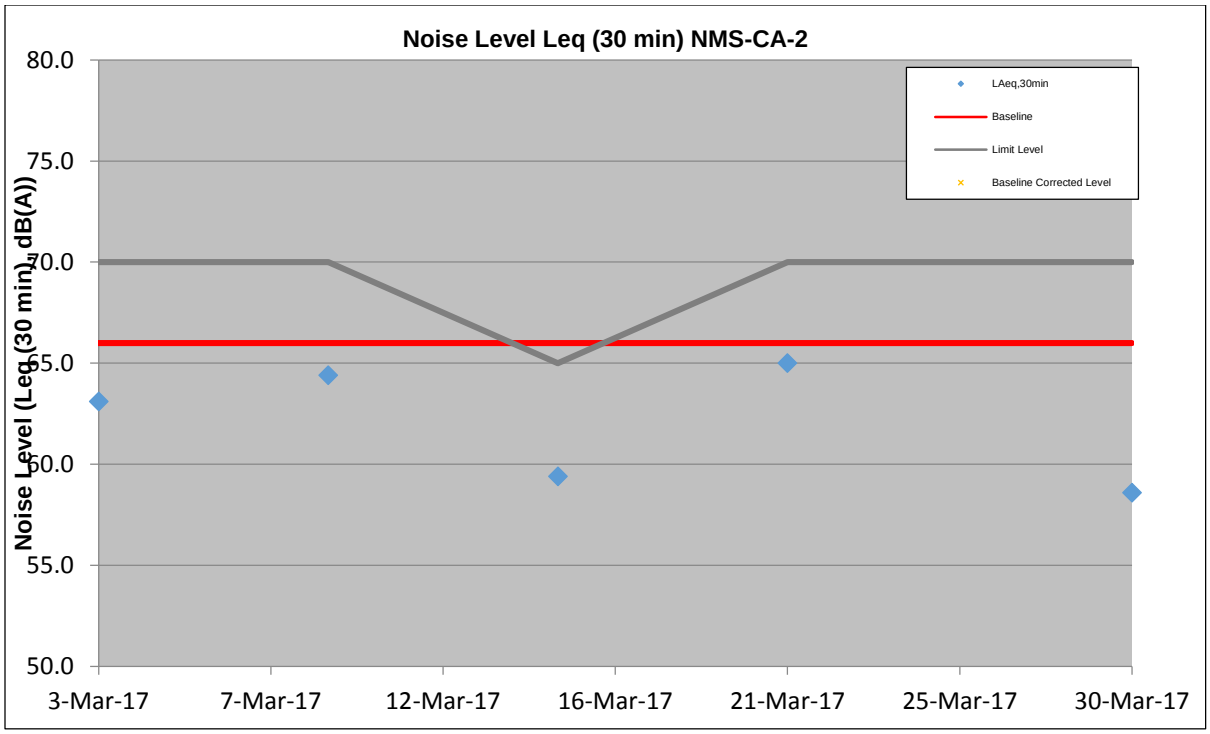
Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
3-Mar-17	09:00-09:30	63.1	70.0	64.5	58.5	66.0	< Baseline Level
9-Mar-17	09:30-10:00	64.4	70.0	65.0	60.2	66.0	< Baseline Level
15-Mar-17	09:30-10:00	59.4	65.0	61.0	57.5	66.0	< Baseline Level
21-Mar-17	09:00-09:30	61.6	70.0	64.0	58.5	66.0	< Baseline Level
30-Mar-17	10:00-10:30	58.6	70.0	60.7	57.8	66.0	< Baseline Level

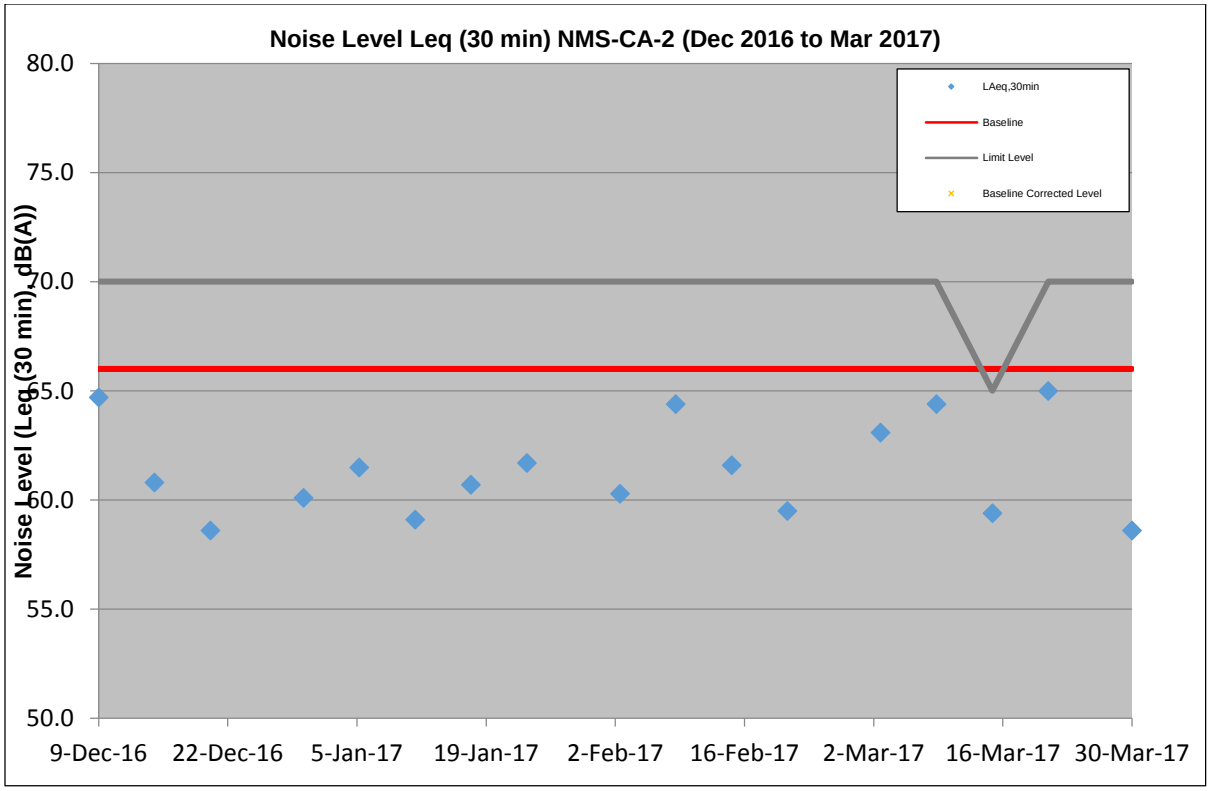
Max	**L_{Aeq},30min**	64.4
Min	**L_{Aeq},30min**	58.6

Notes: (*): Façade correction is included
(#): Baseline Corrected Level = Measured Noise Level - Baseline Noise Level


Noise Level Leq (30 min) NMS-CA-1
Noise Level (Leq (30 min), dB(A))
75.0
70.0
65.0
60.0
55.0
50.0
45.0
3-Mar-17
7-Mar-17
12-Mar-17
16-Mar-17
21-Mar-17
25-Mar-17
30-Mar-17
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-1 (Dec 2016 to Mar 2017)
Noise Level (Leq (30 min), dB(A))
75.0
70.0
65.0
60.0
55.0
50.0
45.0
9-Dec-16
22-Dec-16
5-Jan-17
19-Jan-17
2-Feb-17
16-Feb-17
2-Mar-17
16-Mar-17
30-Mar-17
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
3-Mar-17
7-Mar-17
12-Mar-17
16-Mar-17
21-Mar-17
25-Mar-17
30-Mar-17
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2 (Dec 2016 to Mar 2017)
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
9-Dec-16
22-Dec-16
5-Jan-17
19-Jan-17
2-Feb-17
16-Feb-17
2-Mar-17
16-Mar-17
30-Mar-17
LAeq,30min
Baseline
Limit Level
Baseline Corrected 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
Action Level				
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	1. Inform the IEC, Contractor 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. 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(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.
2.	Exceedance for two or more consecutive samples	1. Notify IEC, Contractor and EPD; 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, Contractor 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. Notify the Contractor, IEC and ET; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 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 and Action Plan for Airborne Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 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. 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. 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. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 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, Contractor 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. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source 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 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event / Action Plan for Landscape and Visual

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

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

Appendix J

Waste Flow Table

Contract No.:MTR-SCL1103

Monthly Summary Waste Flow Table for 2017

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^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0.926	0.000	0.000	0.000	0.542	0.384	0.000	0.000	0.000	0.000	0.173
Feb	1.060	0.000	0.000	0.000	0.486	0.574	0.000	0.000	0.000	0.000	0.268
Mar	4.872	0.000	0.000	0.000	0.649	4.223	5.510	0.000	0.000	1.400	0.279
Apr											
May											
Jun											
Sub-total	6.858	0.000	0.000	0.000	1.677	5.180	5.510	0.000	0.000	1.400	0.720
July											
August											
September											
October											
November											
December											
Total	6.858	0.000	0.000	0.000	1.677	5.180	5.510	0.000	0.000	1.400	0.720

Comments:

1) Assumption: The densities of Rock, Soil, Mixed Rock and Soil, and Regular Spoil are 2.0 ton/m3; the density of general refuse is 1.0 ton/m3; the density of waste oil is 1.0 ton/m3.

2) The cut-off date of waste amount in Mar is 31/03/2017 for TKO137FB/TM38FB, NENT/SENT/WENT landfill.

3) The amount of waste in Mar is 279.22 tons for NENT/SENT/WENT Landfill, 1297.82 tons for TKO137FB/TM38FB.

4) The amount of C&D material reused in the Contract in Mar is 0 trucks, approximately 0 tons, for cut-off date as 31/03/2017.

5) The amount of chemical waste in Mar is 1400L for cut-off date as 31/03/2017.

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 - April 2017

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

	Public Holiday
	Monitoring Day

Monitoring Details

Monitoring	Locations	Parameters
Air Quality	DMS-1 - C.U.H.K.A.A Thomas Cheung School, DMS-2 - Price Memorial Catholic Primary School	24-hour TSP
Noise	NMS-CA-1 - C.U.H.K.A.A Thomas Cheung School, NMS-CA-2 - Price Memorial Catholic Primary School	$L_{Aeq(30\ min)}$, L_{10}, L_{90}

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 (March 2017)

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date Complaint Received from EPD	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date Complaint Received by ET	ET's Investigation Date	Investigation/Mitigation Measures	Status
ENV-CR-066	-	-	24 March 2017	19 March 2017	Ma Chai Hang	Ma Chai Hang	Noise complaint received from EPD about construction noise emanated from the construction activities of SCL site near Ma Chai Hang Recreation Ground (1103) on Sunday morning (i.e. about 8:30 am, 19 March 2017).	24 March 2017	24 March 2017	After receipt of the complaint, investigation was conducted by the Contractor and the findings are summarized as follows: a) The tower crane was used to transport powered mechanical equipment on 19 Mar 2017. b) All the construction works within Ma Chai Hang construction sites fully complied with the relevant construction noise permits, GW-RE0028-17. To further minimize the noise generated to the public, the existing noise mitigation measures would be enhanced as summarized in follows: a) Toolbox talk will be conducted to all level of workers on site to ensure site operation in compliance with valid CNP; b) Random checks on site arrangement will be conducted to ensure all CNPs conditions are fully complied; c) Minimize to use the tower crane in early morning on Sunday and public holiday as far as possible.	Closed

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
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
Total	20	0	0

Appendix D

49th 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. 49

[Period from 1 to 31 March 2017]

Works Contract 1106 – Diamond Hill Station

(April 2017)

Certified by: _____Dr. Priscilla Choy_____

Position: ___Environmental Team Leader___

Date: _____12th April 2017_____

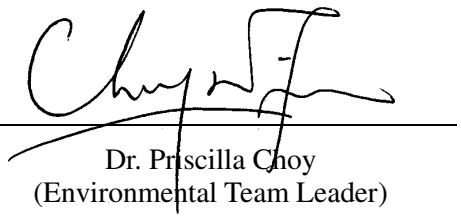
Leader Joint Venture

Shatin to Central Link – Contract 1106 Diamond Hill Station

Monthly Environmental Monitoring and Audit Report For March 2017

(Version 3.0)

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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 49th 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 1st to 31st March 2017.

Summary of Construction Works undertaken during the Reporting Month

2. The major site activities undertaken in the reporting month include:

- Construction of Level U1 wall and structural steel erection;
- ABWF works at SCL-DIH station area;
- Foundation works, temporary road works, TTA for site access and temporary footpath diversion at Lung Cheung Road and Choi Hung Road;
- Excavation and lateral support works at Lung Cheung Road;
- Grouting works at MOE near Entrance B; and
- Excavation and lateral support works at Entrance A2.

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(1)/NMS-CA-4(2) (H.K. Sheng Kung Hui Nursing Home) 4 times
- NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) 4 times
- NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) 4 times

- Construction Dust (24-hour TSP) Monitoring

Dust Monitoring Station ID

- DMS-3(1) /DMS-4(2) (H.K. Sheng Kung Hui Nursing Home) 5 times
- DMS-4(1)/ DMS-3(2) (Block 1, Rhythm Garden) 5 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 25 April 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.

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. Regular maintenance and inspection works of the two historic buildings were carried out in accordance with the approved Conservation Plan.

Waste Management

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 912 m^3 of inert C&D materials were generated from the Project and were sent to Tseung Kwan O Area 137 Fill Bank during the reporting month. 163 m^3 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, 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 9 and 23 March 2017. 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 2, 9, 16, 23 and 30 March 2017. The representative of the IEC joined the site inspection on 30 March 2017. 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:

- Superstructure works of SCL DIH station;
- ABWF works at SCL-DIH station area;
- Foundation works, temporary road works, TTA for site access and temporary footpath diversion at Lung Cheung Road and Choi Hung Road;
- Excavation and lateral support works at Lung Cheung Road;
- Grouting works at MOE near Entrance B; and
- Excavation and lateral support works at Entrance A2.

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 49th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1st to 31st March 2017.

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. 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**.

- Construction of Level U1 wall and structural steel erection;
- ABWF works at SCL-DIH station area;
- Foundation works, temporary road works, TTA for site access and temporary footpath diversion at Lung Cheung Road and Choi Hung Road;
- Excavation and lateral support works at Lung Cheung Road;
- Grouting works at MOE near Entrance B; and
- Excavation and lateral support works at Entrance A2.

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-S3711-02	28/01/2015	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00025615-2016	24/10/2016	31/01/2018	Valid
WT00016920-2013	06/09/2013	30/09/2018	Valid
Construction Noise Permit (CNP)			
GW-RE1043-16	25/10/2016	23/04/2017	Valid
GW-RE0001-17	06/01/2017	05/03/2017	Expired on 05/03/2017

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(1)(3)/ NMS-CA-4 (2)(3)	Hong Kong Sheng Kung Hui Nursing Home	Façade
NMS-CA-4(1)/ NMS-CA-3(2)	Block 1, Rhythm Garden (north-eastern façade)	Façade
NMS-CA-5 (1) (4)/ NMS-CA-2(2)(4)	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 $L_{eq,\ 5\text{-}min}$ 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 (Pending)

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 957 (Serial no.: 21455)
	SVAN 957 (Serial no.: 21459)
	SVAN 957 (Serial no.: 21460)
	SVAN 957 (Serial no.: 23853)
Calibrator	SV30A (Serial no.: 24791)
	SV30A (Serial no.: 24780)
	4231 (Serial no.: 2326353)
	4231 (Serial no.: 2412367)

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(1)(3)/ DMS-4(2)(3)/	Hong Kong Sheng Kung Hui Nursing Home
DMS-4(1) / DMS-3(2)	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(1)	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 and 0993	2

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 μm 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 ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±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 m^3/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 ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±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 and inspection works of the two historic buildings shall be carried out in accordance with the approved Conservation Plan.

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 (February 2017)	14th March 2017

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 12 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(1)/ NMS-CA-4(2) (Hong Kong S.K.H Nursing Home) and NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) in March 2017 exceeded the daytime construction noise criterion except 10 March 2017 for Block 1, Rhythm Garden (northern façade). However, the results are not considered as exceedance since the measured results were below the baseline noise levels. The noise monitoring results recorded at NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) in March 2017 did not exceed the daytime construction noise criterion.

5.3 Based on observation during the on-site monitoring, road traffic nearby, piling works in other construction site at 210-212 Choi Hung Road and foundation works in other construction site at former Tai Hom Village in March 2017 are considered as potential noise source other than construction works of the Project that affects the monitoring results in the reporting month.

5.4 The noise monitoring results together with their graphical presentations are presented in **Appendix F**(3).

5.5 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

5.6 A total of 10 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**(3) 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 (Pending)

Parameter	Minimum µg/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
24-hr TSP (DMS-3(1)/ DMS-4(2))	52.6	82.8	71.3	159.1	260
24-hr TSP (DMS-4(1)/ DMS-3(2))	53.4	69.4	63.4	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).

5.7 Based on observation during the on-site monitoring, road traffic emission nearby, piling works in other construction site at 210-212 Choi Hung Road and foundation works in other construction site at former Tai Hom Village in March 2017 are considered as potential dust source other than construction works of the Project that affects the monitoring results in the reporting month.

5.8 Wind monitoring data were obtained from Kai Tak Meteorological Station of Hong Kong Observatory and shown on **Appendix E**.

5.9 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

5.10 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 25 April 2013 and completed in September 2013 in accordance with the Licence granted and the approved AAP. The finalized report was submitted to AMO on 27 February 2017.

5.11 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. Regular maintenance and inspection works of the two historic buildings were carried out in accordance with the approved Conservation Plan.

Waste Management

5.12 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**. 912 m^3 of C&D materials was generated during the reporting period and were disposed as public fill. 163 m^3 of general refuse were generated during the reporting month. No chemical waste was collected by licensed collector during the reporting month. No paper/ cardboard packaging, 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) [a]	C&D Materials (non-inert) [b]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2017	*912 m^3*	*163 m^3*	*0 kg*	*0 kg*	*0 kg*	*0 kg*

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, which *912* m^3 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

5.13 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 9 and 23 March 2017. 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 2, 9, 16, 23 and 30 March 2017. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 29 March 2017. Site visit was conducted by EPD on 29 March 2016 in the reporting month. 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
Water Quality	2 March 2017	Observation: To remove the sediment accumulated in the wheel washing bay with sufficient frequency.	The item was remarked as 170309-R01.
	9 March 2017	Reminder: To remove the sediment in the wheel washing bay with sufficient frequency to avoid accumulation.	As observed on 16 March 2017, the sediment was removed.
Noise	16 March 2017	Reminder: The breaker head should be wrapped with acoustic material to minimize the noise generation during operation.	The item was remarked as 170323-R01.
	23 March 2017	Reminder: Acoustic material should be wrapped on the breaker head to minimize the noise generation, and sufficient water spray should be provided during breaking.	As observed on 30 March 2017, the breaker was removed. According to the Contractor, the breaker was wrapped properly and sufficient watering was provided during operation.
Landscape and Visual	23 February 2017	Observation: An existing tree was observed without proper protection. The Contractor was reminded to provide proper fencing to the existing tree.	As observed on 2 March 2017, the retained tree was properly fenced off.
Cultural Heritage	---	---	---
Air Quality	9 March 2017	Reminder: To cover the stockpile of dusty material in ex-1103 site.	As observed on 16 March 2017, sufficient water spray was provided.
	23 March 2017	Reminder: Acoustic material should be wrapped on the breaker head to minimize the noise generation, and sufficient water spray should be provided	As observed on 30 March 2017, the breaker was removed. According to the Contractor, the breaker was wrapped properly and sufficient watering was

Parameters	Date	Observations and Recommendations	Follow-up
		during breaking.	provided during operation.
	30 March 2017	Reminder: To provide sufficient water spray to the stockpiles on the site area near the Tai Hum footpath.	The follow up action will be reported in the next reporting month.
Waste/ Chemical Management	---	---	---
Permits/ Licenses	23 February 2017	Reminder: The updated EP should be displayed at the entrance of construction site.	As observed on 2 March 2017, updated EP was displayed at the entrance of construction site.

7 EIRONMENTAL 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 complaints were 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:

- Superstructure works of SCL DIH station;
- ABWF works at SCL-DIH station area;
- Foundation works, temporary road works, TTA for site access and temporary footpath diversion at Lung Cheung Road and Choi Hung Road;
- Excavation and lateral support works at Lung Cheung Road;
- Grouting works at MOE near Entrance B; and
- Excavation and lateral support works at Entrance A2.

Key Issues in the Next Month

8.2 Key issues to be considered in the coming month include:

- Dust arising from loading, unloading, transfer, handling or storage of bulk cement or dry PFA and excavated materials;
- 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 1st to 31st March 2017 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 inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 There was no Project related environmental complaint, and no successful prosecution or notification of summons received during 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:

Water Quality

- The sediment in the wheel washing bay should be removed with sufficient frequency.

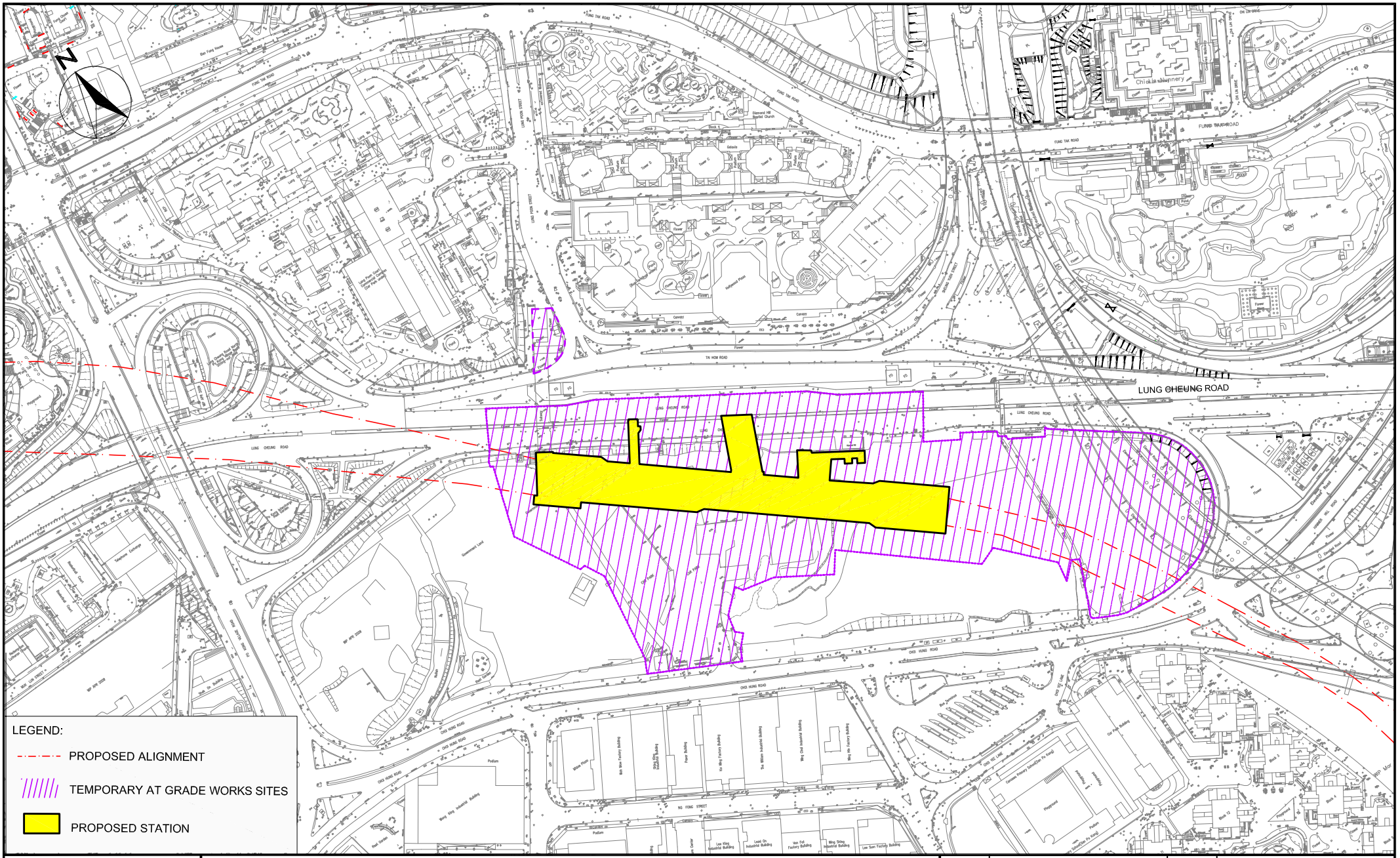
Air Quality

- Sufficient water spraying should be provided to dusty stockpile, as well as during breaking works.

Construction Noise Impact

- The breaker head should be wrapped with acoustic material to minimize noise generation.

FIGURES



CINOTECH
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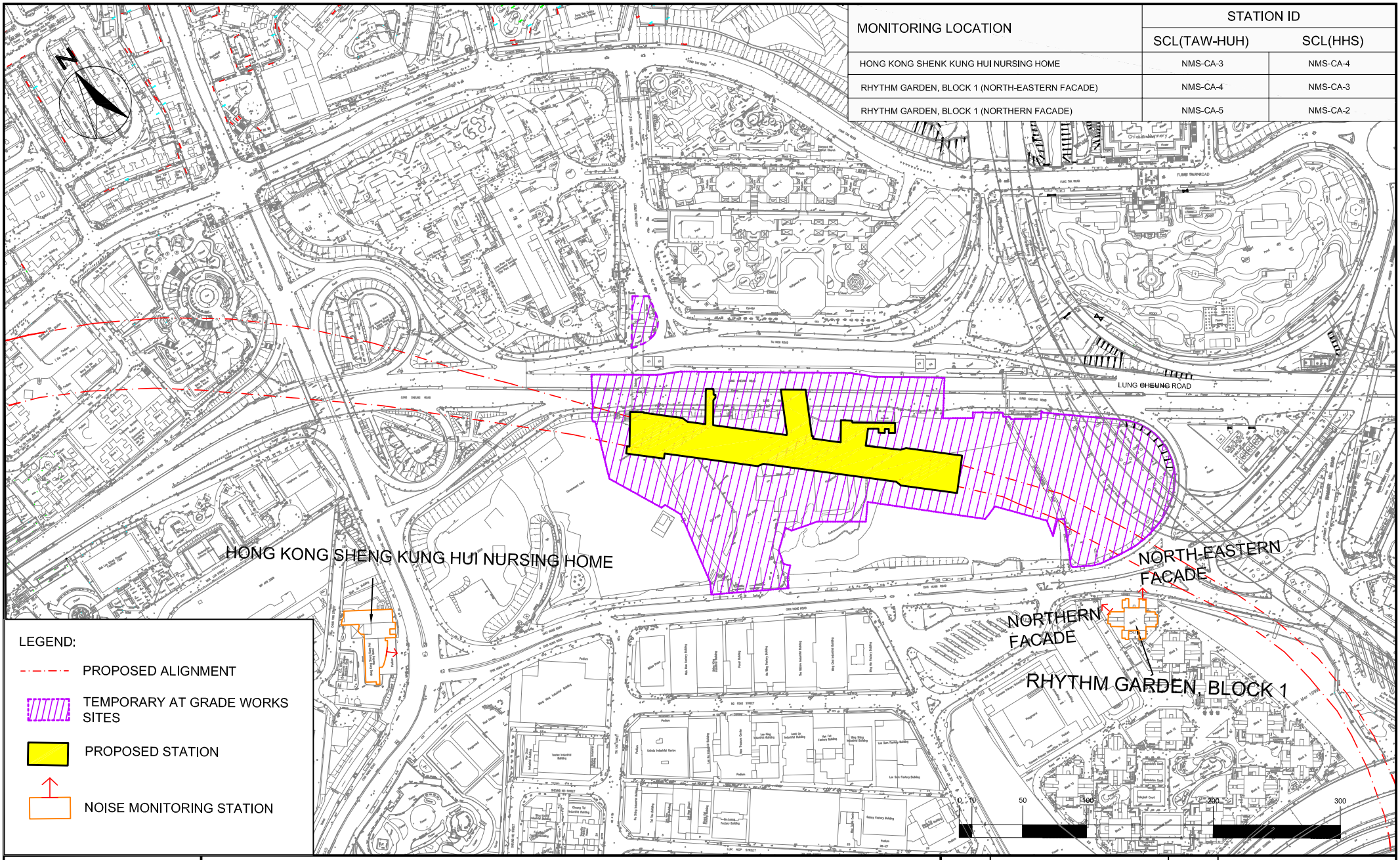
SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

SITE LAYOUT PLAN

SCALE	1:80	DATE	SEP 2016
CHECK	BW	DRAWN	JW
JOB No.	MA12051	FIGURE NO. 1	REV -



MONITORING LOCATION	STATION ID	
	SCL(TAW-HUH)	SCL(HHS)
HONG KONG SHENK KUNG HUI NURSING HOME	NMS-CA-3	NMS-CA-4
RHYTHM GARDEN, BLOCK 1 (NORTH-EASTERN FACADE)	NMS-CA-4	NMS-CA-3
RHYTHM GARDEN, BLOCK 1 (NORTHERN FACADE)	NMS-CA-5	NMS-CA-2

LEGEND:

- PROPOSED ALIGNMENT
- TEMPORARY AT GRADE WORKS SITES
- PROPOSED STATION
- NOISE MONITORING STATION

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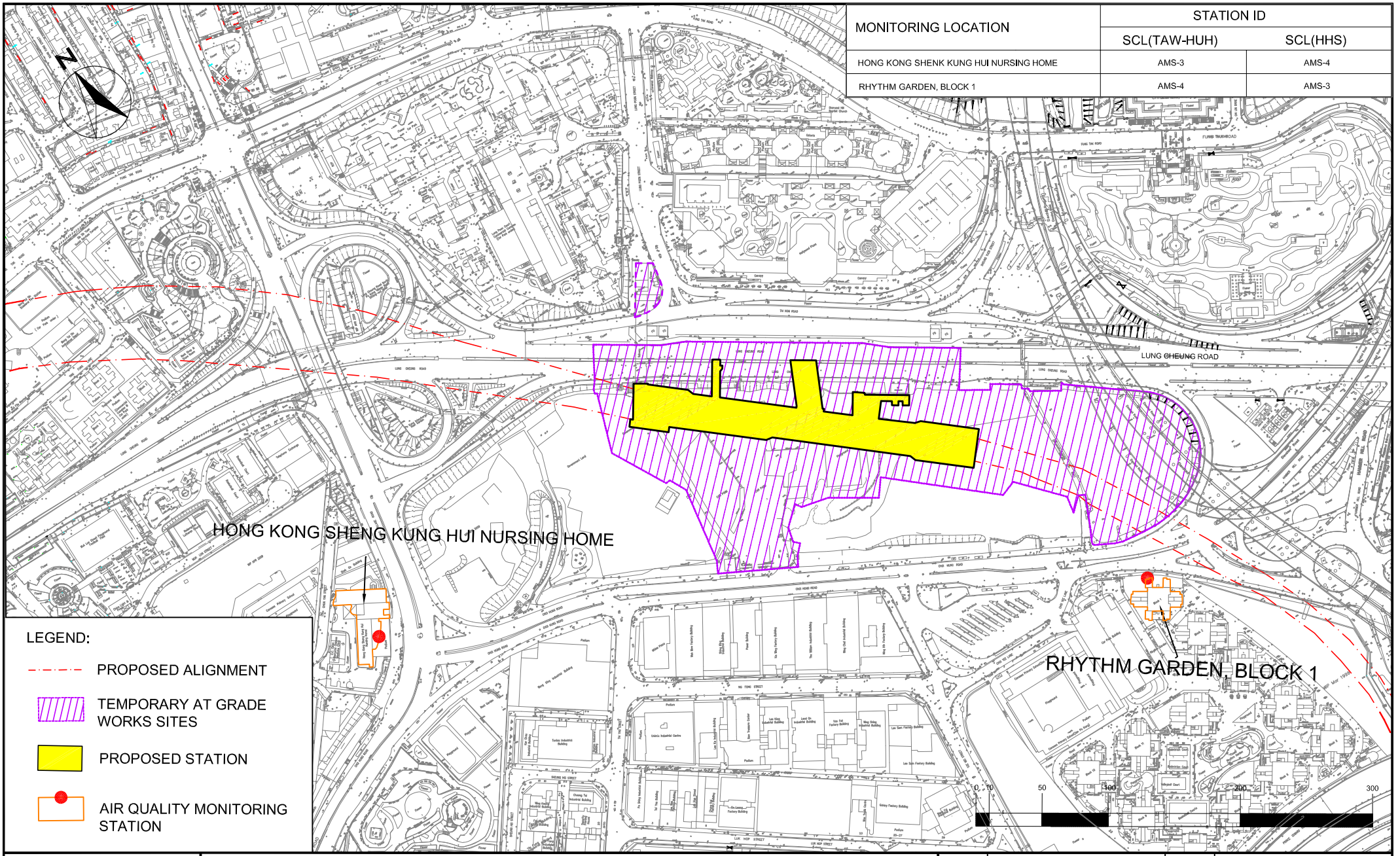
SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

LOCATION OF NOISE MONITORING STATIONS(CONSTRUCTION AIRBORNE NOISE)

SCALE	1:100	DATE	SEP 2016
CHECK	BW	DRAWN	JW
JOB No.	MA12051	FIGURE NO. 2	REV -



MONITORING LOCATION	STATION ID	
	SCL(TAW-HUH)	SCL(HHS)
HONG KONG SHENK KUNG HUI NURSING HOME	AMS-3	AMS-4
RHYTHM GARDEN, BLOCK 1	AMS-4	AMS-3

LEGEND:

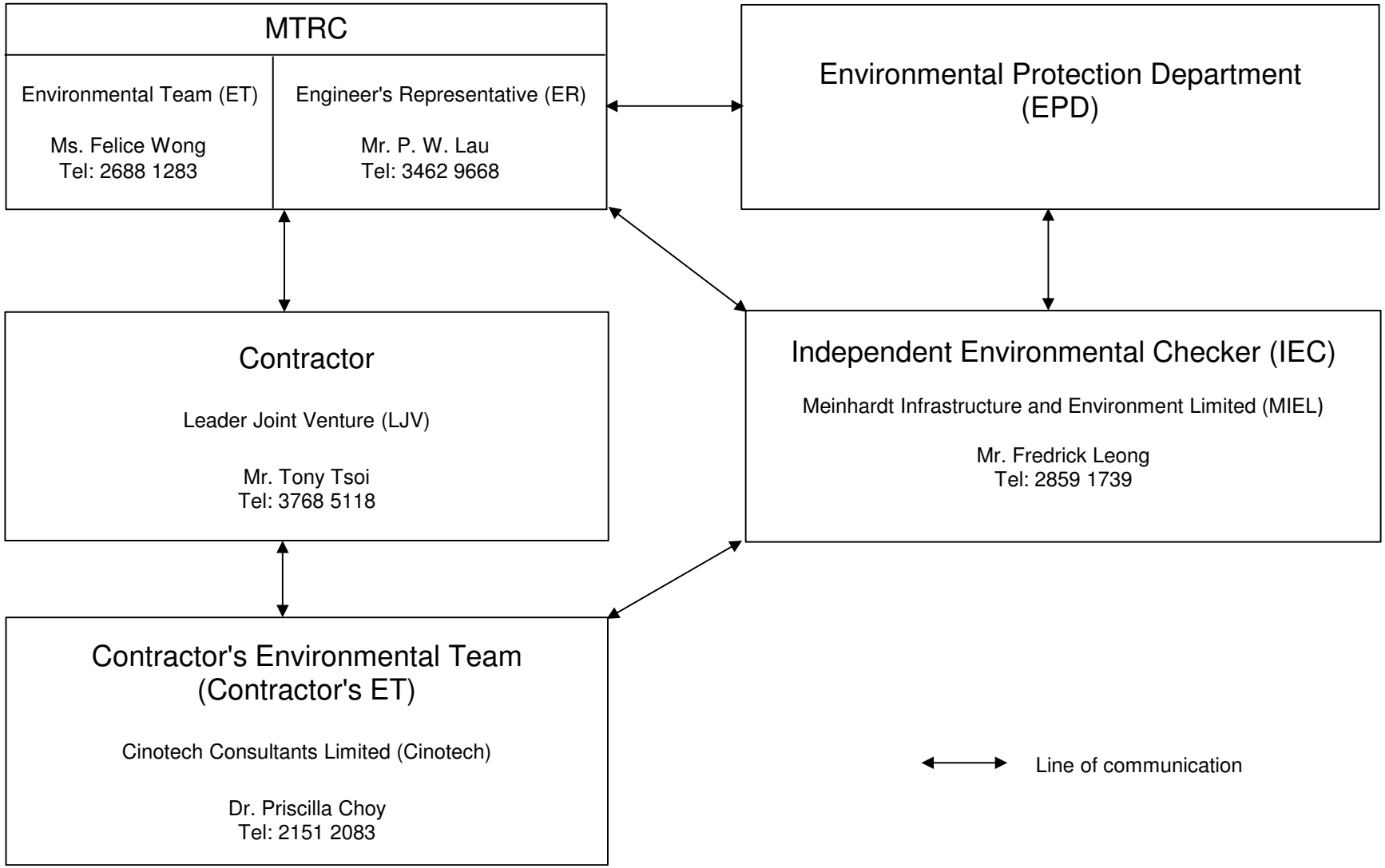
- PROPOSED ALIGNMENT
- TEMPORARY AT GRADE WORKS SITES
- PROPOSED STATION
- AIR QUALITY MONITORING STATION

CINOTECH
Cinotech Consultants Limited

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

LOCATION OF AIR QUALITY MONITORING STATIONS

SCALE	1:100	DATE	SEP 2016
CHECK	BW	DRAWN	JW
JOB No.	MA12051	FIGURE NO. 3	REV -



Title	MTR SCL Works Contract 1106 Diamond Hill Station Organisation Chart and Key Contact of the Project	Scale: N.T.S Date: Mar-17	Proposal No.: MA12051 Figure: 4

CINOTECH

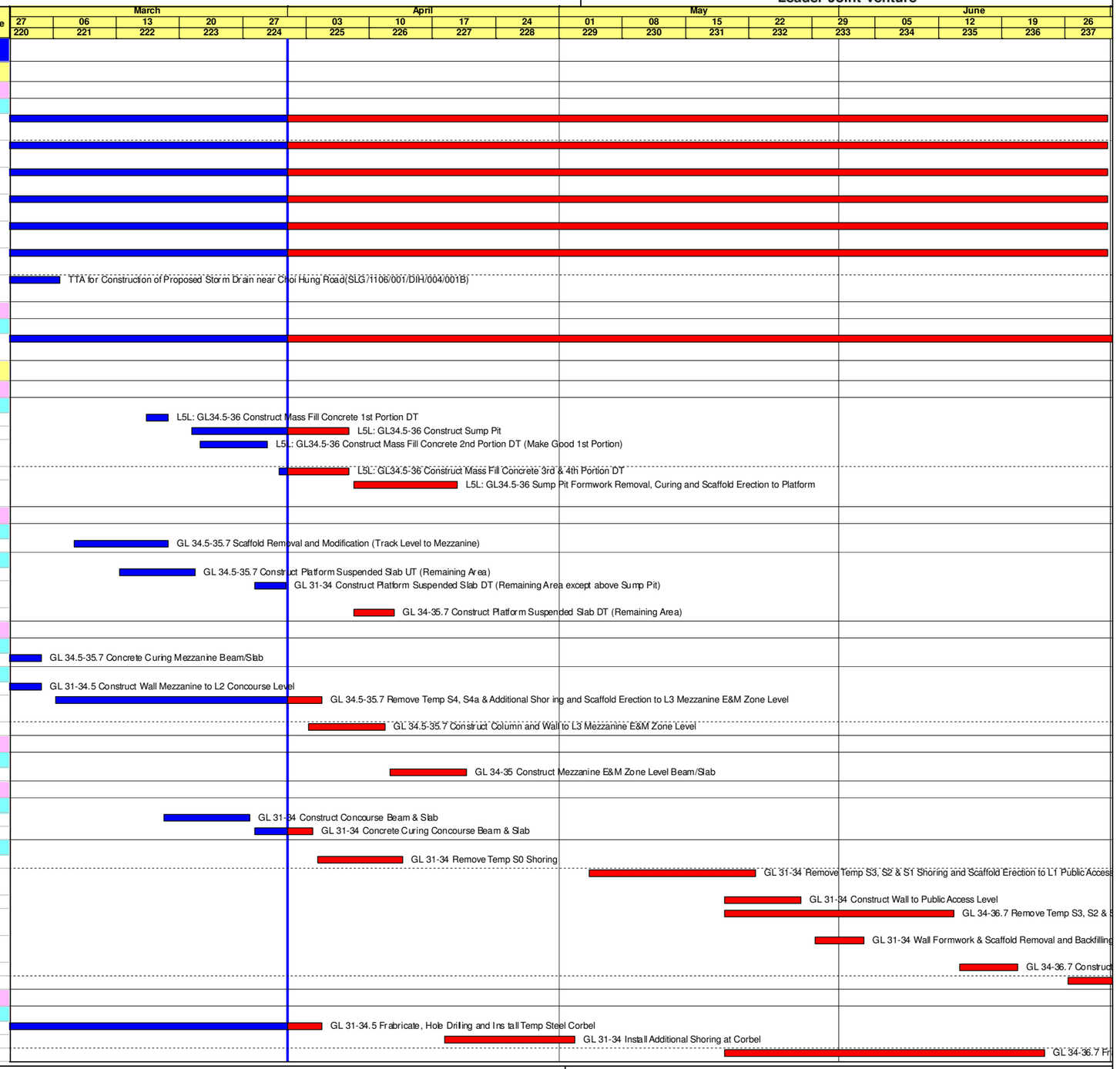
APPENDIX A
TENTATIVE CONSTRCUTION PROGRAMME

MTR

Contract 1106 - Diamond Hill Station

LEADER
Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
Cost Centre B: SCL- DIH Station, Entrances and Adits					
TTMS Implementation					
Lung Cheung Road					
TTA Implementation					
C1106.TMS0582	TTA for the construction of SCL DIH MOE at Diamond Hill Station Entrance B (SLG/1106/017/DIH/004/001A	166	14-Jul-16 A	30-Jun-17	74%
C1106.TMS0592	TTA for Temporary Lung Cheung Road Diversion (Stage 3) (SLG/1106/005/DIH/012/001G-002G)	147	07-Aug-16 A	30-Jun-17	85%
C1106.TMS0594	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Westbound Middle & Fast Lane)(SLG/1106/019/DIH/012/001A-004A)	122	01-Sep-16 A	30-Jun-17	69%
C1106.TMS0596	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Westbound Middle & Slow Lane)(SLG/1106/019/DIH/013/001A-004A)	122	01-Sep-16 A	30-Jun-17	69%
C1106.TMS0598	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eastbound Middle & Slow Lane)(SLG/1106/019/DIH/014/001A-004A)	108	15-Sep-16 A	30-Jun-17	68%
C1106.TMS0600	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eastbound Fast & Middle Lane)(SLG/1106/019/DIH/015/001A-004A)	108	15-Sep-16 A	30-Jun-17	68%
C1106.TMS0604	TTA for Construction of Proposed Storm Drain near Choi Hung Road(SLG/1106/001/DIH/004/001B)	34	08-Dec-16 A	06-Mar-17 A	100%
Choi Hung Road					
TTA Implementation					
C1106.TMS0369	TTA for Site Access and Temporary Footpath diversion at Ex-Tai Hom Village (SLG/001/DIH/003/001A)	185	04-Jul-16 A	31-Jul-17	65%
Structural Works					
Track Slab/ Bottom Level					
Base Slab					
C1106.BBS1334	L5L: GL34.5-36 Construct Mass Fill Concrete 1st Portion DT	3	16-Mar-17 A	18-Mar-17 A	100%
C1106.BBS1330	L5L: GL34.5-36 Construct Sump Pit	12	21-Mar-17 A	07-Apr-17	65%
C1106.BBS1336	L5L: GL34.5-36 Construct Mass Fill Concrete 2nd Portion DT (Make Good 1st Portion)	3	22-Mar-17 A	29-Mar-17 A	100%
C1106.BBS1338	L5L: GL34.5-36 Construct Mass Fill Concrete 3rd & 4th Portion DT	6	31-Mar-17 A	07-Apr-17	60%
C1106.BBS1332	L5L: GL34.5-36 Sump Pit Formwork Removal, Curing and Scaffold Erection to Platform	7	08-Apr-17	19-Apr-17	0%
Platform Level (Level L5)					
Wall & Column					
C1106.BPL2194	GL 34.5-35.7 Scaffold Removal and Modification (Track Level to Mezzanine)	7	08-Mar-17 A	18-Mar-17 A	100%
Slab					
C1106.BPS2278	GL 34.5-35.7 Construct Platform Suspended Slab UT (Remaining Area)	7	13-Mar-17 A	21-Mar-17 A	100%
C1106.BPS2285	GL 31-34 Construct Platform Suspended Slab DT (Remaining Area except above Sump Pit)	4	28-Mar-17 A	31-Mar-17 A	100%
C1106.BPS2280	GL 34-35.7 Construct Platform Suspended Slab DT (Remaining Area)	4	08-Apr-17	12-Apr-17	0%
Mezzanine Level (Level L4)					
Beam & Slab					
C1106.BMZ4394	GL 34.5-35.7 Concrete Curing Mezzanine Beam/Slab	7	26-Feb-17 A	04-Mar-17 A	100%
Wall & Column					
C1106.BMZ4795	GL 31-34.5 Construct Wall Mezzanine to L2 Concourse Level	9	09-Feb-17 A	04-Mar-17 A	100%
C1106.BMZ4767	GL 34.5-35.7 Remove Temp S4, S4a & Additional Shor ing and Scaffold Erection to L3 Mezzanine E&M Zone Level	15	06-Mar-17 A	04-Apr-17	85%
C1106.BMZ4802	GL 34.5-35.7 Construct Column and Wall to L3 Mezzanine E&M Zone Level	7	03-Apr-17	11-Apr-17	0%
Mezzanine Level E&M Zone (Level L3)					
Beam & Slab					
C1106.BMZ4780	GL 34-35 Construct Mezzanine E&M Zone Level Beam/Slab	5	12-Apr-17	20-Apr-17	0%
Concourse Level (Level L2)					
Beam & Slab					
C1106.BCS4387	GL 31-34 Construct Concourse Beam & Slab	10	18-Mar-17 A	27-Mar-17 A	100%
C1106.BCS4390	GL 31-34 Concrete Curing Concourse Beam & Slab	7	28-Mar-17 A	03-Apr-17	55%
Wall & Column					
C1106.BCW4618	GL 31-34 Remove Temp S0 Shoring	8	04-Apr-17	13-Apr-17	0%
C1106.BCW4628	GL 31-34 Remove Temp S3, S2 & S1 Shoring and Scaffold Erection to L1 Public Access Level	16	04-May-17	22-May-17	0%
C1106.BCW4632	GL 31-34 Construct Wall to Public Access Level	8	19-May-17	27-May-17	0%
C1106.BCW4613	GL 34-36.7 Remove Temp S3, S2 & S1 Shoring and Scaffold Erection to L1 Public Access Level	21	19-May-17	13-Jun-17	0%
C1106.BCW4634	GL 31-34 Wall Formwork & Scaffold Removal and Backfilling Works and Lay Blinding to Public Acces	5	29-May-17	03-Jun-17	0%
C1106.BCW4620	GL 34-36.7 Construct Wall & Column to Public Access Level	6	14-Jun-17	20-Jun-17	0%
C1106.BCW4637	GL 31-34 Scaffold Removal (Concourse Level to Public Access Level)	7	26-Jun-17	04-Jul-17	0%
Public Access Level (Level L1)					
Beam & Slab					
C1106.PLS6013	GL 31-34.5 Frabricate, Hole Drilling and Ins tall Temp Steel Corbel	40	02-Dec-16 A	04-Apr-17	85%
C1106.PLS6018	GL 31-34 Install Additional Shoring at Corbel	12	18-Apr-17	02-May-17	0%
C1106.PLS6006	GL 34-36.7 Frabricate, Hole Drilling and Install Temp Steel Corbel	30	19-May-17	23-Jun-17	0%



Remaining Work
Critical Remaining Work
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MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 March 2017

3 Month Rolling Programme

Date	Revision	Checked	Approved
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Contract 1106 - Diamond Hill Station

MTR

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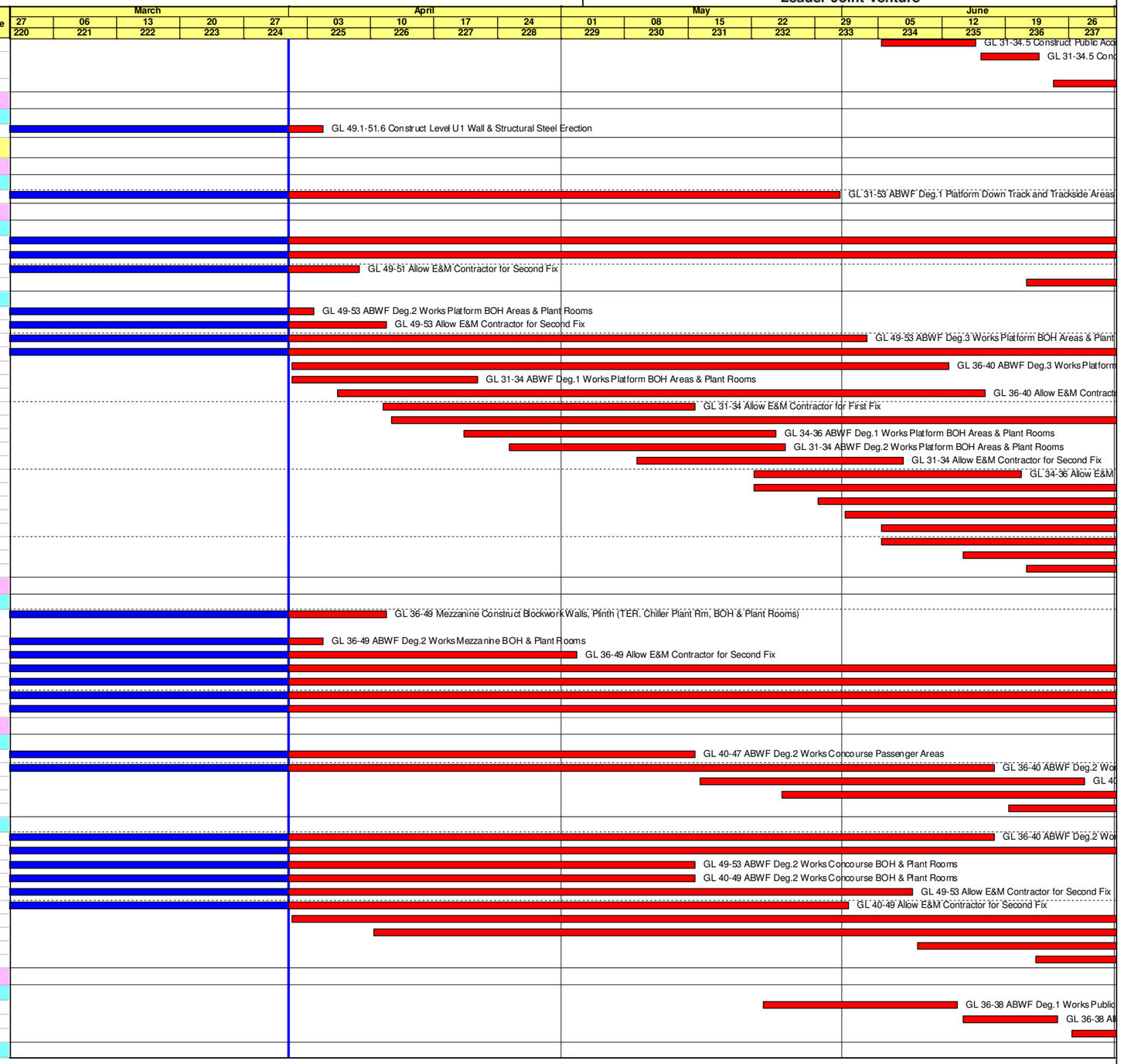
Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.PLS6015	GL 31-34.5 Construct Public Access Level Beam/Slab	10	05-Jun-17	15-Jun-17	0%
C1106.PLS6017	GL 31-34.5 Concrete Curing Public Access Level Beam/Slab and Formwork Removal	7	16-Jun-17	22-Jun-17	0%
C1106.PLS6011	GL 34-36.7 Install Additional Shoring at Corbel	8	24-Jun-17	04-Jul-17	0%
First Floor Level (Level U1)					
Wall & Column					
C1106.BFW7675	GL 49.1-51.6 Construct Level U1 Wall & Structural Steel Erection	8	30-Jun-16 A	04-Apr-17	80%
ABWF & Miscellaneous Works					
Track and Trackside Areas					
Platform Level (Track and Trackside Areas)					
C1106.PTA5420	GL 31-53 ABWF Deg.1 Platform Down Track and Trackside Areas	30	24-Nov-15 A	31-May-17	92%
Platform Level (Level L5)					
Passenger Areas					
C1106.BAF1122	GL 36-49 ABWF Deg.3 Works Platform Passenger Areas	191	25-Apr-16 A	24-Jul-17	31%
C1106.BAF1124	GL 36-49 Allow E&M Contractor for System Final Fix	138	05-Aug-16 A	23-Aug-17	15%
C1106.BAF1145	GL 49-51 Allow E&M Contractor for Second Fix	8	05-Dec-16 A	08-Apr-17	55%
C1106.BAF1154	GL 49-51 Allow E&M Contractor for System Final Fix	19	21-Jun-17	13-Jul-17	0%
Back of House & Plant Rooms					
C1106.BAF1520	GL 49-53 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	63	05-Jan-16 A	03-Apr-17	97%
C1106.BAF1525	GL 49-53 Allow E&M Contractor for Second Fix	62	18-Jan-16 A	11-Apr-17	95%
C1106.BAF1535	GL 49-53 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	116	26-Apr-16 A	03-Jun-17	50%
C1106.BAF1540	GL 49-53 Allow E&M Contractor for System Final Fix	168	01-Jun-16 A	27-Jul-17	36%
C1106.BAF1142	GL 36-40 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	55	01-Apr-17	12-Jun-17	0%
C1106.BAF2230	GL 31-34 ABWF Deg.1 Works Platform BOH Areas & Plant Rooms	14	01-Apr-17	21-Apr-17	0%
C1106.BAF1144	GL 36-40 Allow E&M Contractor for System Final Fix	56	06-Apr-17	16-Jun-17	0%
C1106.BAF2235	GL 31-34 Allow E&M Contractor for First Fix	25	11-Apr-17	15-May-17	0%
C1106.BAF1162	GL 42-49 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	70	12-Apr-17	10-Jul-17	0%
C1106.BAF2233	GL 34-36 ABWF Deg.1 Works Platform BOH Areas & Plant Rooms	28	20-Apr-17	24-May-17	0%
C1106.BAF2240	GL 31-34 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	25	25-Apr-17	25-May-17	0%
C1106.BAF2242	GL 31-34 Allow E&M Contractor for Second Fix	25	09-May-17	07-Jun-17	0%
C1106.BAF2237	GL 34-36 Allow E&M Contractor for First Fix	25	22-May-17	20-Jun-17	0%
C1106.BAF2245	GL 31-34 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	35	22-May-17	03-Jul-17	0%
C1106.BAF2250	GL 31-34 Allow E&M Contractor for System Final Fix	38	29-May-17	13-Jul-17	0%
C1106.BAF2243	GL 34-36 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	45	01-Jun-17	24-Jul-17	0%
C1106.BAF1173	GL 42-49 Allow E&M Contractor for System Final Fix	45	05-Jun-17	27-Jul-17	0%
C1106.BAF2244	GL 34-36 Allow E&M Contractor for Second Fix	45	05-Jun-17	27-Jul-17	0%
C1106.BAF2247	GL 34-36 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	65	14-Jun-17	29-Aug-17	0%
C1106.BAF2252	GL 34-36 Allow E&M Contractor for System Final Fix	60	21-Jun-17	30-Aug-17	0%
Mezzanine Level (Level L4)					
Back of House & Plant Rooms					
C1106.BMF3070	GL 36-49 Mezzanine Construct Blockwork Walls, Plinth (TER. Chiller Plant Rm, BOH & Plant Rooms)	72	11-Jan-16 A	11-Apr-17	98%
C1106.BMF3080	GL 36-49 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms	158	21-Mar-16 A	04-Apr-17	97%
C1106.BMF3082	GL 36-49 Allow E&M Contractor for Second Fix	170	05-Apr-16 A	02-May-17	92%
C1106.BMF3085	GL 36-49 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	206	01-Jun-16 A	22-Sep-17	20%
C1106.BMF3090	GL 36-49 Allow E&M Contractor for System Final Fix	220	13-Jun-16 A	14-Oct-17	17%
C1106.BMF3335	GL 49-53 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	178	22-Aug-16 A	16-Oct-17	5%
C1106.BMF3337	GL 49-53 Allow E&M Contractor for System Final Fix	181	21-Nov-16 A	03-Nov-17	3%
Concourse Level (Level L2)					
Passenger Areas					
C1106.BCF5220	GL 40-47 ABWF Deg.2 Works Concourse Passenger Areas	58	02-Jun-16 A	15-May-17	73%
C1106.BCF5263	GL 36-40 ABWF Deg.2 Works Concourse Passenger Areas	80	13-Jun-16 A	17-Jun-17	53%
C1106.BCF5224	GL 40-47 Allow E&M Contractor for Second Fix	36	16-May-17	27-Jun-17	0%
C1106.BCF5230	GL 40-47 ABWF Deg.3 Works Concourse Passenger Areas	130	25-May-17	27-Oct-17	0%
C1106.BCF5265	GL 36-40 Allow E&M Contractor for Second Fix	18	19-Jun-17	10-Jul-17	0%
Back of House & Plant Rooms					
C1106.BCF5322	GL 36-40 ABWF Deg.2 Works Concourse BOH & Plant Rooms	89	02-Jun-16 A	17-Jun-17	53%
C1106.BCF5323	GL 36-40 Allow E&M Contractor for Second Fix	81	22-Jun-16 A	11-Jul-17	50%
C1106.BCF5332	GL 49-53 ABWF Deg.2 Works Concourse BOH & Plant Rooms	76	09-Aug-16 A	15-May-17	89%
C1106.BCF5240	GL 40-49 ABWF Deg.2 Works Concourse BOH & Plant Rooms	60	09-Aug-16 A	15-May-17	73%
C1106.BCF5337	GL 49-53 Allow E&M Contractor for Second Fix	84	17-Aug-16 A	08-Jun-17	70%
C1106.BCF5242	GL 40-49 Allow E&M Contractor for Second Fix	51	26-Sep-16 A	01-Jun-17	63%
C1106.BCF5260	GL 40-49 ABWF Deg.3 Works Concourse BOH & Plant Rooms	91	01-Apr-17	25-Jul-17	0%
C1106.BCF5335	GL 49-53 ABWF Deg.3 Works Concourse BOH & Plant Rooms	68	10-Apr-17	05-Jul-17	0%
C1106.BCF5339	GL 49-53 Allow E&M Contractor for System Final Fix	48	09-Jun-17	04-Aug-17	0%
C1106.BCF5262	GL 40-49 Allow E&M Contractor for System Final Fix	58	22-Jun-17	29-Aug-17	0%
Public Access Level (Level L1)					
Passenger Areas					
C1106.BPF6010	GL 36-38 ABWF Deg.1 Works Public Access Level Passenger Areas	18	23-May-17	13-Jun-17	0%
C1106.BPF6012	GL 36-38 Allow E&M Contractor for First Fix	10	14-Jun-17	24-Jun-17	0%
C1106.BPF6015	GL 36-38 ABWF Deg.2 Works Public Access Level Passenger Areas	24	26-Jun-17	24-Jul-17	0%
Back of House & Plant Rooms					



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MTR Contract 1106 - Diamond Hill Station
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Contract 1106 - Diamond Hill Station

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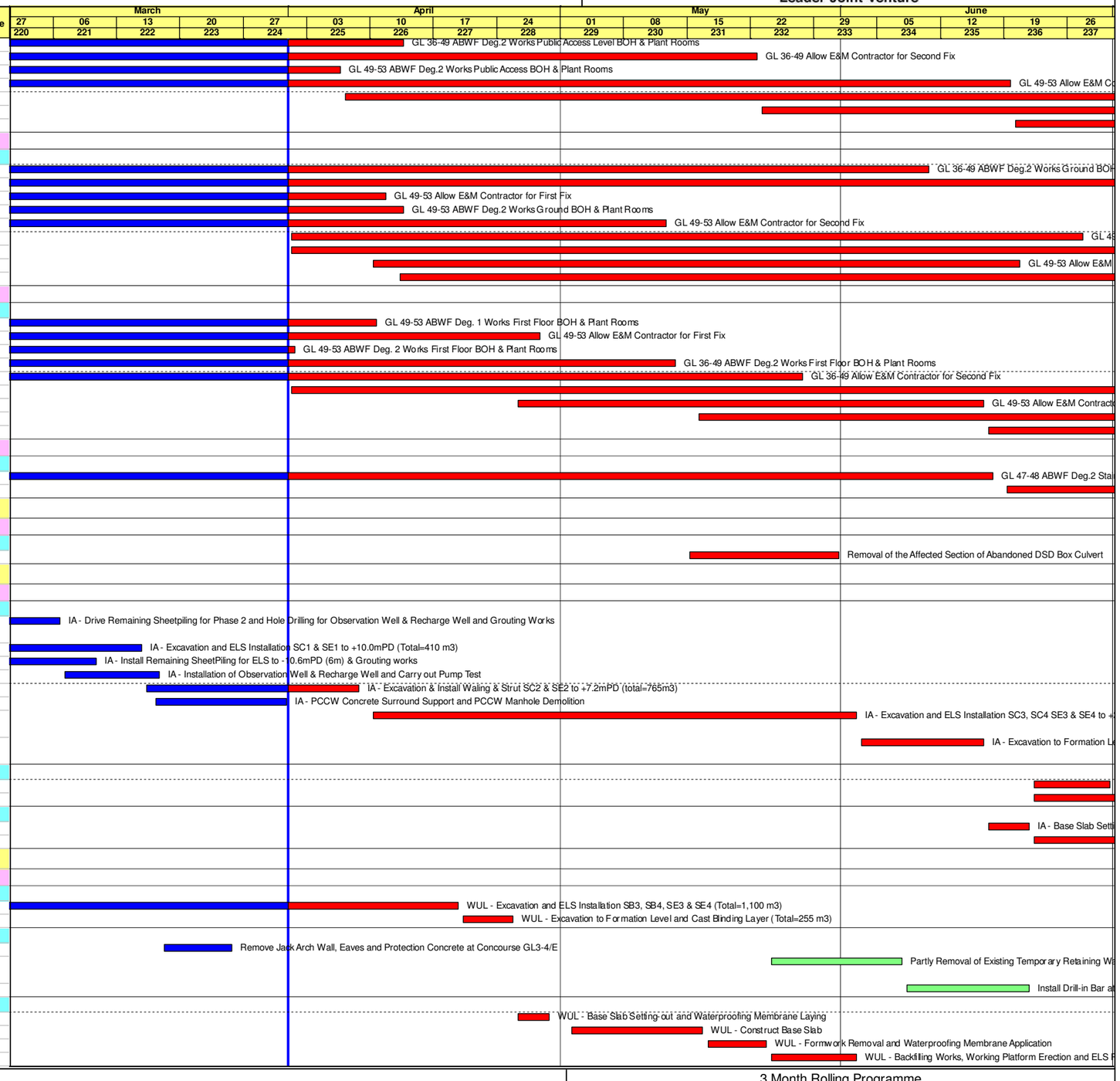
C1106.BPF7130	GL 36-49 ABWF Deg.2 Works Public Access Level BOH & Plant Rooms	72	28-Sep-16 A	13-Apr-17	85%
C1106.BPF7132	GL 36-49 Allow E&M Contractor for Second Fix	80	24-Oct-16 A	22-May-17	79%
C1106.BPF7240	GL 49-53 ABWF Deg.2 Works Public Access BOH & Plant Rooms	50	01-Nov-16 A	06-Apr-17	90%
C1106.BPF7242	GL 49-53 Allow E&M Contractor for Second Fix	102	23-Dec-16 A	19-Jun-17	50%
C1106.BPF7135	GL 36-49 ABWF Deg.3 Works Public Access Level BOH & Plant Rooms	103	07-Apr-17	12-Aug-17	0%
C1106.BPF7137	GL 36-49 Allow E&M Contractor for System Final Fix	110	23-May-17	29-Sep-17	0%
C1106.BPF7250	GL 49-53 ABWF Deg.3 Works Public Access BOH & Plant Rooms	70	20-Jun-17	09-Sep-17	0%
Ground Level (Level GL)					
Back of House & Plant Rooms					
C1106.BGF7320	GL 36-49 ABWF Deg.2 Works Ground BOH & Plant Rooms	118	03-Oct-16 A	10-Jun-17	79%
C1106.BGF7322	GL 36-49 Allow E&M Contractor for Second Fix	117	29-Oct-16 A	04-Jul-17	70%
C1106.BGF7417	GL 49-53 Allow E&M Contractor for First Fix	41	02-Nov-16 A	11-Apr-17	85%
C1106.BGF7425	GL 49-53 ABWF Deg.2 Works Ground BOH & Plant Rooms	54	07-Nov-16 A	13-Apr-17	93%
C1106.BGF7427	GL 49-53 Allow E&M Contractor for Second Fix	50	28-Nov-16 A	12-May-17	74%
C1106.BGF7430	GL 49-53 ABWF Deg.3 Works Ground BOH & Plant Rooms	68	01-Apr-17	27-Jun-17	0%
C1106.BGF7325	GL 36-49 ABWF Deg.3 Works Ground BOH & Plant Rooms	141	01-Apr-17	21-Sep-17	0%
C1106.BGF7432	GL 49-53 Allow E&M Contractor for System Final Fix	56	10-Apr-17	20-Jun-17	0%
C1106.BGF7327	GL 36-49 Allow E&M Contractor for System Final Fix	135	13-Apr-17	25-Sep-17	0%
First Floor Level (Level U1)					
Back of House & Plant Rooms					
C1106.BFF8140	GL 49-53 ABWF Deg. 1 Works First Floor BOH & Plant Rooms	72	17-Sep-16 A	10-Apr-17	85%
C1106.BFF8142	GL 49-53 Allow E&M Contractor for First Fix	55	11-Oct-16 A	28-Apr-17	81%
C1106.BFF8145	GL 49-53 ABWF Deg. 2 Works First Floor BOH & Plant Rooms	62	21-Nov-16 A	01-Apr-17	95%
C1106.BFF8125	GL 36-49 ABWF Deg.2 Works First Floor BOH & Plant Rooms	54	21-Nov-16 A	13-May-17	67%
C1106.BFF8127	GL 36-49 Allow E&M Contractor for Second Fix	60	05-Dec-16 A	27-May-17	30%
C1106.BFF8130	GL 36-49 ABWF Deg.3 Works First Floor BOH & Plant Rooms	75	01-Apr-17	06-Jul-17	0%
C1106.BFF8147	GL 49-53 Allow E&M Contractor for Second Fix	42	26-Apr-17	16-Jun-17	0%
C1106.BFF8132	GL 36-49 Allow E&M Contractor for System Final Fix	54	16-May-17	19-Jul-17	0%
C1106.BFF8150	GL 49-53 ABWF Deg. 3 Works First Floor BOH & Plant Rooms	46	17-Jun-17	10-Aug-17	0%
Multi-Level					
Staircase - Fitout					
C1106.BSF5275	GL 47-48 ABWF Deg.2 Staircases	65	23-Nov-16 A	17-Jun-17	10%
C1106.BSF5280	GL 47-48 ABWF Deg.3 Staircases	70	19-Jun-17	08-Sep-17	0%
Lung Cheung Road					
Preliminary Site Works					
Utilies and Drainages					
C1106.BIA7086	Removal of the Affected Section of Abandoned DSD Box Culvert	14	15-May-17	31-May-17	0%
Construction of Interchange Adit					
Construction of Interchange Adit					
Gridline S-U					
C1106.BIA8411	IA - Drive Remaining Sheetpiling for Phase 2 and Hole Drilling for Observation Well & Recharge Well and Grouting Works	20	18-Jan-17 A	06-Mar-17 A	100%
C1106.BIA8414	IA - Excavation and ELS Installation SC1 & SE1 to +10.0mPD (Total=410 m3)	9	14-Feb-17 A	15-Mar-17 A	100%
C1106.BIA8427	IA - Install Remaining SheetPiling for ELS to -10.6mPD (6m) & Grouting works	6	01-Mar-17 A	10-Mar-17 A	100%
C1106.BIA8423	IA - Installation of Observation Well & Recharge Well and Carry out Pump Test	8	07-Mar-17 A	17-Mar-17 A	100%
C1106.BIA8417	IA - Excavation & Install Waling & Strut SC2 & SE2 to +7.2mPD (total=765m3)	11	16-Mar-17 A	08-Apr-17	60%
C1106.BIA8417A	IA - PCCW Concrete Surround Support and PCCW Manhole Demolition	8	17-Mar-17 A	31-Mar-17 A	100%
C1106.BIA8429	IA - Excavation and ELS Installation SC3, SC4 SE3 & SE4 to +2.17mPD (Total=3,730 m3) includ'g Cut & Removal of Sheetpile	41	10-Apr-17	02-Jun-17	0%
C1106.BIA8430	IA - Excavation to Formation Level -0.655mPD (Total=1,183m3) and Cast Blinding Layer	12	03-Jun-17	16-Jun-17	0%
Interface Work with DIH (KTL)					
C1106.BIA7625	Remove Jack Arch Wall, Eaves and Protection Concrete	8	22-Jun-17	30-Jun-17	0%
C1106.BIA7640	Install Drill-in Bar at Concourse Level - Connection for Interchange Link Adit	12	22-Jun-17	06-Jul-17	0%
Civil & Structural Works					
C1106.BIA8432	IA - Base Slab Setting-out and Waterproofing Membrane Laying	4	17-Jun-17	21-Jun-17	0%
C1106.BIA8440	IA - Construct Base Slab	14	22-Jun-17	08-Jul-17	0%
Construction of West Unpaid Link Adit					
West Adit Link - Middle Section & North Section					
Adit - Excavation					
C1106.BWA8559	WUL - Excavation and ELS Installation SB3, SB4, SE3 & SE4 (Total=1,100 m3)	28	27-Feb-17 A	19-Apr-17	60%
C1106.BWA8561	WUL - Excavation to Formation Level and Cast Blinding Layer (Total=255 m3)	5	20-Apr-17	25-Apr-17	0%
Interface Work with DIH (KTL)					
C1106.BWA8646	Remove Jack Arch Wall, Eaves and Protection Concrete at Concourse GL3-4/E	12	18-Mar-17 A	25-Mar-17 A	100%
C1106.BWA8649	Partly Removal of Existing Temporary Retaining Wall (Interface with West Unpaid Link Adit)	12	24-May-17	07-Jun-17	0%
C1106.BWA8653	Install Drill-in Bar at Concourse Level - Connection for West Unpaid Link Structu	12	08-Jun-17	21-Jun-17	0%
Civil & Structural Works					
C1106.BWA8562	WUL - Base Slab Setting-out and Waterproofing Membrane Laying	4	26-Apr-17	29-Apr-17	0%
C1106.BWA8565	WUL - Construct Base Slab	12	02-May-17	16-May-17	0%
C1106.BWA8567	WUL - Formwork Removal and Waterproofing Membrane Application	6	17-May-17	23-May-17	0%
C1106.BWA8569	WUL - Backfilling Works, Working Platform Erection and ELS Removal (SB4 & S	8	24-May-17	02-Jun-17	0%



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MTR Contract 1106 - Diamond Hill Station
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Contract 1106 - Diamond Hill Station

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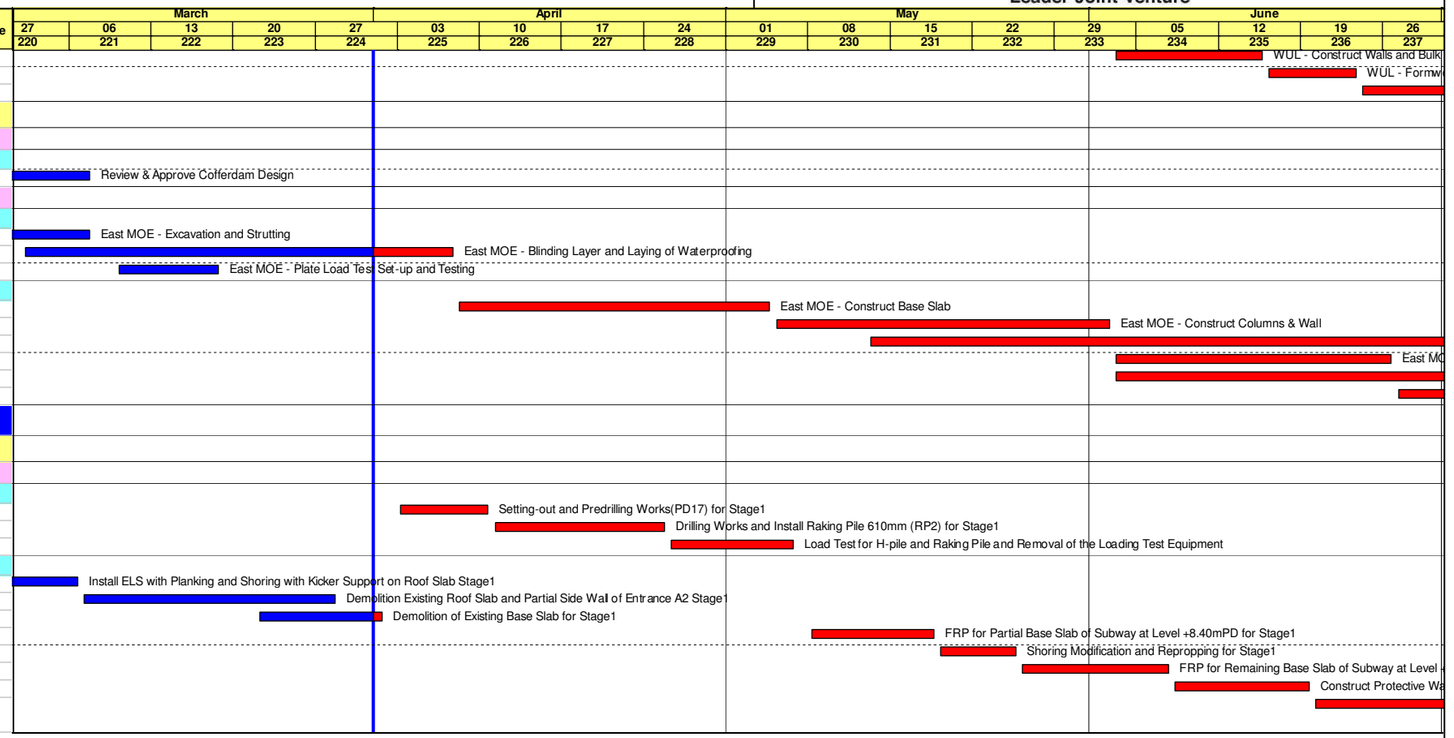
C1106.BWA8575	WUL - Construct Walls and Bulk Head	11	03-Jun-17	15-Jun-17	0%
C1106.BWA8577	WUL - Formwork Removal and Waterproofing Membrane Application	7	16-Jun-17	23-Jun-17	0%
C1106.BWA8579	WUL - Backfilling Works, Working Platform Erection and ELS Removal (SB3 &S	8	24-Jun-17	04-Jul-17	0%
Construction of East MOE (Entrance B)					
Submissions					
General					
C1106.BEB8710	Review & Approve Cofferdam Design	30	16-Jun-16 A	07-Mar-17 A	100%
East MOE					
MOE -Excavation					
C1106.BEB8775	East MOE - Excavation and Strutting	80	14-Nov-16 A	07-Mar-17 A	100%
C1106.BEB8779	East MOE - Blinding Layer and Laying of Waterproofing	5	02-Mar-17 A	07-Apr-17	65%
C1106.BEB8777	East MOE - Plate Load Test Set-up and Testing	7	10-Mar-17 A	18-Mar-17 A	100%
Civil & Structural Works					
C1106.BEB8780	East MOE - Construct Base Slab	18	08-Apr-17	04-May-17	0%
C1106.BEB8790	East MOE - Construct Columns & Wall	24	05-May-17	02-Jun-17	0%
C1106.BEB8820	East MOE - Backfil to Formation Level and Extract Sheet Pile	77	13-May-17	12-Aug-17	0%
C1106.BEB8800	East MOE - Construct Suspended Slabs & Beams	20	03-Jun-17	26-Jun-17	0%
C1106.BEB8815	East MOE - Construct Staircase	45	03-Jun-17	26-Jul-17	0%
C1106.BEB8810	East MOE - Construct Top Slab	20	27-Jun-17	20-Jul-17	0%
Cost Centre C: KTL - DIH Modification and Refurbishment Works					
Entrance A2 (Alteration Works)					
Existing Entrance A2					
General					
C1106.BEA1928	Setting-out and Predrilling Works(PD17) for Stage1	6	03-Apr-17	10-Apr-17	0%
C1106.BEA1930	Drilling Works and Install Raking Pile 610mm (RP2) for Stage1	10	11-Apr-17	25-Apr-17	0%
C1106.BEA1932	Load Test for H-pile and Raking Pile and Removal of the Loading Test Equipmer	8	26-Apr-17	06-May-17	0%
Civil & Structural Works					
C1106.BEA2040	Install ELS with Planking and Shoring with Kicker Support on Roof Slab Stage1	14	13-Feb-17 A	06-Mar-17 A	100%
C1106.BEA2020	Demolition Existing Roof Slab and Partial Side Wall of Entrance A2 Stage1	12	07-Mar-17 A	28-Mar-17 A	100%
C1106.BEA2020	Demolition of Existing Base Slab for Stage1	10	22-Mar-17 A	01-Apr-17	90%
C1106.BEA2050	FRP for Partial Base Slab of Subway at Level +8.40mPD for Stage1	10	08-May-17	18-May-17	0%
C1106.BEA2053	Shoring Modification and Repropping for Stage1	6	19-May-17	25-May-17	0%
C1106.BEA2054	FRP for Remaining Base Slab of Subway at Level +8.40mPD for Stage1	10	26-May-17	07-Jun-17	0%
C1106.BEA2063	Construct Protective Walkway (Temporary Entrance A2)	10	08-Jun-17	19-Jun-17	0%
C1106.BEA2055	Hoarding Modification, Remove Temporary Bulk Head, Make Good and Open for Access (3.0 m)	28	20-Jun-17	22-Jul-17	0%



Remaining Work
Critical Remaining Work
Actual Work
Baseline Milestone
Milestone

4 of 4

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 March 2017

3 Month Rolling Programme			
Date	Revision	Checked	Approved
31-Mar-17	C-1106-3MRP/ 51		

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, µg/m^3	Limit Level, µg/m^3
DMS-3(1)(3)/ DMS-4(2)(3)/	Hong Kong Sheng Kung Hui Nursing Home	159.1	260
DMS-4(1)/ DMS-3(2)	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(1)	Description	Time Period	Action Level	Limit Level (Leq (30-min))
NMS-CA-3(1)(3)/ NMS-CA-4(2)(3)	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(1)/ NMS-CA-3(2)	Block 1, Rhythm Garden (north-eastern façade)			75 dB(A)
NMS-CA-5 (1) (4)/ NMS-CA-2(2)(4)	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A) (5)

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

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/64/0003

Station: DMS-3 - Hong Kong Sheng Kung Hui Nursing Hon Operator: WK

Date: 6-Feb-17 Next Due Date: 5-Apr-17

Equipment No.: A-01-64 Serial No. 3223

Ambient Condition			
Temperature, Ta (K)	291.5	Pressure, Pa (mmHg)	764.3

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	16.7	4.14	70.15	10.4	3.27
2	14.2	3.82	64.75	8.9	3.02
3	10.8	3.33	56.58	6.7	2.62
4	6.7	2.62	44.75	4.5	2.15
5	4.1	2.05	35.19	2.6	1.63

By Linear Regression of Y on X

Slope , mw = **0.0460** **Intercept, bw =** **0.0426**

Correlation coefficient* = **0.9990**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.98**

Remarks:

Conducted by: WK Tang Signature: Date: 6/2/17

Checked by: Signature: Date: 6 February 2017

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0024

Station: DMS-4 - Rhythm Garden, Block 1 Operator: WK

Date: 18-Jan-17 Next Due Date: 17-Mar-17

Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	291.4	Pressure, Pa (mmHg)	769.9

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.50	59.33	7.9	2.86
2	9.8	3.19	54.14	6.4	2.57
3	7.5	2.79	47.47	5.0	2.28
4	5.4	2.37	40.41	3.4	1.88
5	3.4	1.88	32.24	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0500 **Intercept, bw =** -0.1164

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.99**

Remarks:

Conducted by: WK Tang Signature: Kwai Date: 18/1/17

Checked by: LH Signature: Date: 18 January 2017

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0025

Station: DMS-4 - Rhythm Garden, Block 1 Operator: WK

Date: 17-Mar-17 Next Due Date: 16-May-17

Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	290.5	Pressure, Pa (mmHg)	766.7

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	27-Feb-18	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.49	61.33	7.8	2.84
2	9.5	3.14	55.12	6.4	2.57
3	7.8	2.84	50.02	5.1	2.30
4	5.2	2.32	41.00	3.3	1.85
5	3.3	1.85	32.83	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0476 **Intercept, bw :** -0.0736

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.76**

Remarks:

Conducted by: WK Tang Signature: Kwon Date: 17/3/17

Checked by: Signature: Date: 17 March 2017

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

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

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 0993 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3860	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8840	7.9	5.00
4	NA	NA	1.00	0.8430	8.7	5.50
5	NA	NA	1.00	0.6970	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149		0.9957	0.7184	0.8851
0.9925	1.0015	2.0010		0.9915	1.0005	1.2517
0.9904	1.1204	2.2372		0.9894	1.1192	1.3995
0.9894	1.1737	2.3464		0.9884	1.1725	1.4678
0.9842	1.4120	2.8299		0.9832	1.4106	1.7702
Qstd slope (m) =		2.04055		Qa slope (m) =		1.27776
intercept (b) =		-0.04890		intercept (b) =		-0.03059
coefficient (r) =		0.99995		coefficient (r) =		0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/160826A
Date of Issue:	2016-08-29
Date Received:	2016-08-26
Date Tested:	2016-08-26
Date Completed:	2016-08-29
Next Due Date:	2017-08-28
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 57%

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

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160819B
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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 Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

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Testing & Research

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160819C
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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.**

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/161128
Date of Issue:	2016-11-30
Date Received:	2016-11-28
Date Tested:	2016-11-28
Date Completed:	2016-11-30
Next Due Date:	2017-11-29

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.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 66%

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160930B
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

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

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160930C
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

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

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/161104/1
Date of Issue:	2016-11-07
Date Received:	2016-11-04
Date Tested:	2016-11-04
Date Completed:	2016-11-07
Next Due Date:	2017-11-06
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Equipment No.	: N-02-01

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 62 %

Methodology:

The sound 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
PATRICK TSE
Laboratory Manager

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Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/160819D
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1106 Diamond Hill Station
Impact Air Quality and Noise Monitoring Schedule for March 2017

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

Air Quality Monitoring Station

DMS-3$^{(1)}$/4$^{(2)}$: - Hong Kong Sheng Kung Hui Nursing Home
DMS-4$^{(1)}$/3$^{(2)}$: - 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$^{(1)}$/4$^{(2)}$: - Hong Kong Sheng Kung Hui Nursing Home
NMS-CA-4$^{(1)}$/3$^{(2)}$: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5$^{(1)}$/2$^{(2)}$: - Block 1, Rhythm Garden (northern façade)

Shatin to Central Link – Contract 1106 Diamond Hill Station
Tentative Impact Air Quality and Noise Monitoring Schedule for April 2017

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

DMS-3[(1)]/4[(2)]: - Hong Kong Sheng Kung Hui Nursing Home
DMS-4[(1)]/3[(2)]: - 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[(1)]/4[(2)]: - Hong Kong Sheng Kung Hui Nursing Home
NMS-CA-4[(1)]/3[(2)]: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5[(1)]/2[(2)]: - Block 1, Rhythm Garden (northern façade)

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^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
3-Mar-17	09:00	Cloudy	289.3	767.0	3.6031	3.7409	0.1378	2522.3	2546.3	24.0	1.23	1.23	1.23	1768.8	77.9
9-Mar-17	09:00	Cloudy	289.1	766.0	3.5885	3.7179	0.1294	2546.3	2570.3	24.0	1.23	1.23	1.23	1768.2	73.2
15-Mar-17	09:00	Cloudy	289.5	768.3	3.6061	3.6992	0.0931	2570.3	2594.3	24.0	1.23	1.23	1.23	1769.7	52.6
21-Mar-17	09:00	Cloudy	294.4	765.0	3.6155	3.7382	0.1227	2594.3	2618.3	24.0	1.22	1.22	1.22	1750.7	70.1
27-Mar-17	09:00	Cloudy	292.3	771.1	3.6193	3.7653	0.1460	2618.3	2642.3	24.0	1.23	1.22	1.23	1764.2	82.8
														Min	52.6
														Max	82.8
														Average	71.3

Location DMS-4(1)/DMS-3(2) - Rhythm Garden, Block 1

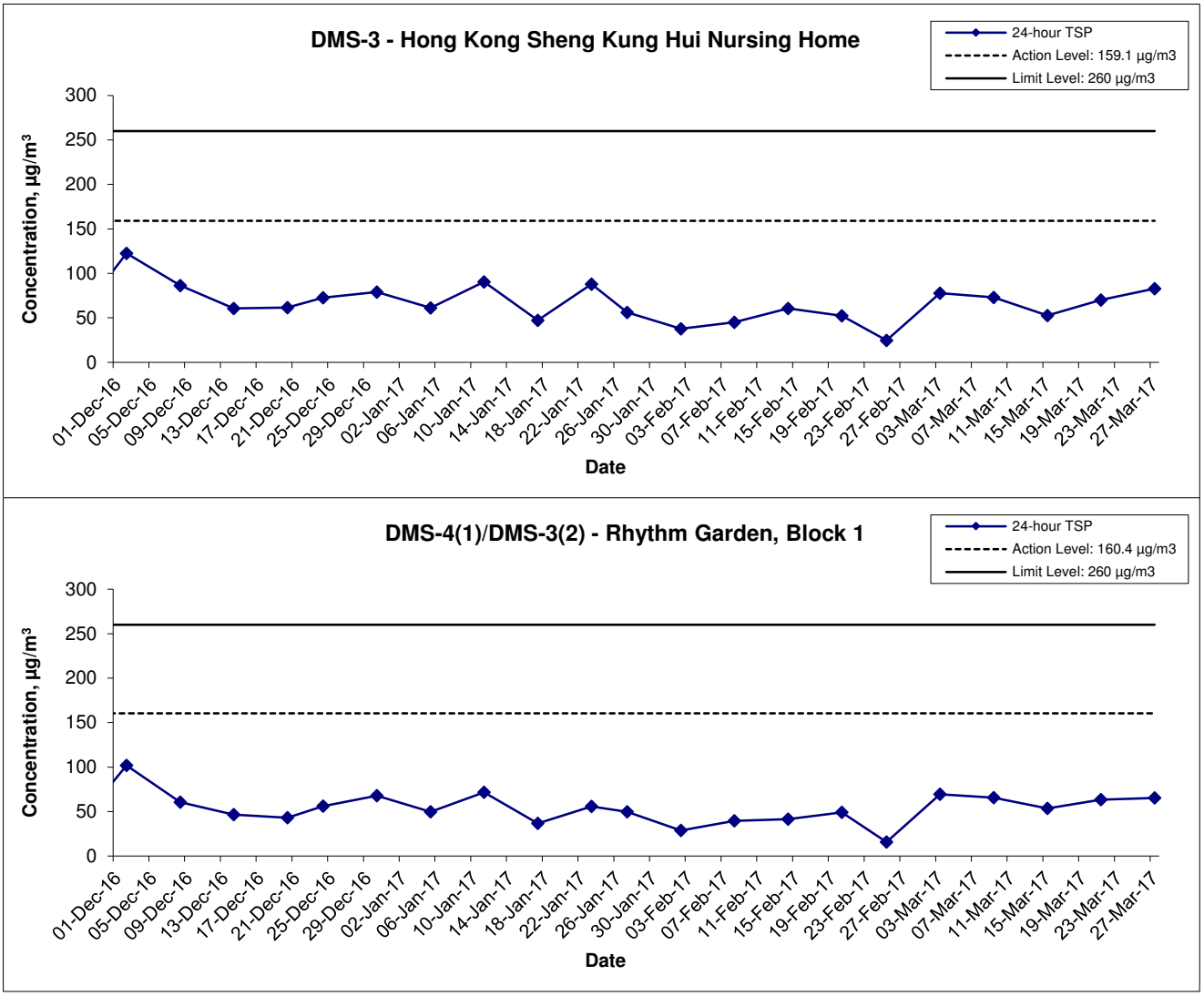
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
3-Mar-17	09:00	Cloudy	289.3	767.0	3.5957	3.7176	0.1219	7030.5	7054.5	24.0	1.22	1.22	1.22	1756.9	69.4
9-Mar-17	09:00	Cloudy	289.1	766.0	3.6124	3.7273	0.1149	7054.5	7078.5	24.0	1.22	1.22	1.22	1756.3	65.4
15-Mar-17	09:00	Cloudy	289.5	768.3	3.5737	3.6675	0.0938	7078.5	7102.5	24.0	1.22	1.22	1.22	1757.7	53.4
21-Mar-17	09:00	Cloudy	294.4	765.0	3.6180	3.7288	0.1108	7102.5	7126.5	24.0	1.21	1.21	1.21	1747.6	63.4
27-Mar-17	09:00	Cloudy	292.3	771.1	3.6022	3.7171	0.1149	7126.5	7150.5	24.0	1.22	1.22	1.22	1760.3	65.3
														Min	53.4
														Max	69.4
														Average	63.4

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).

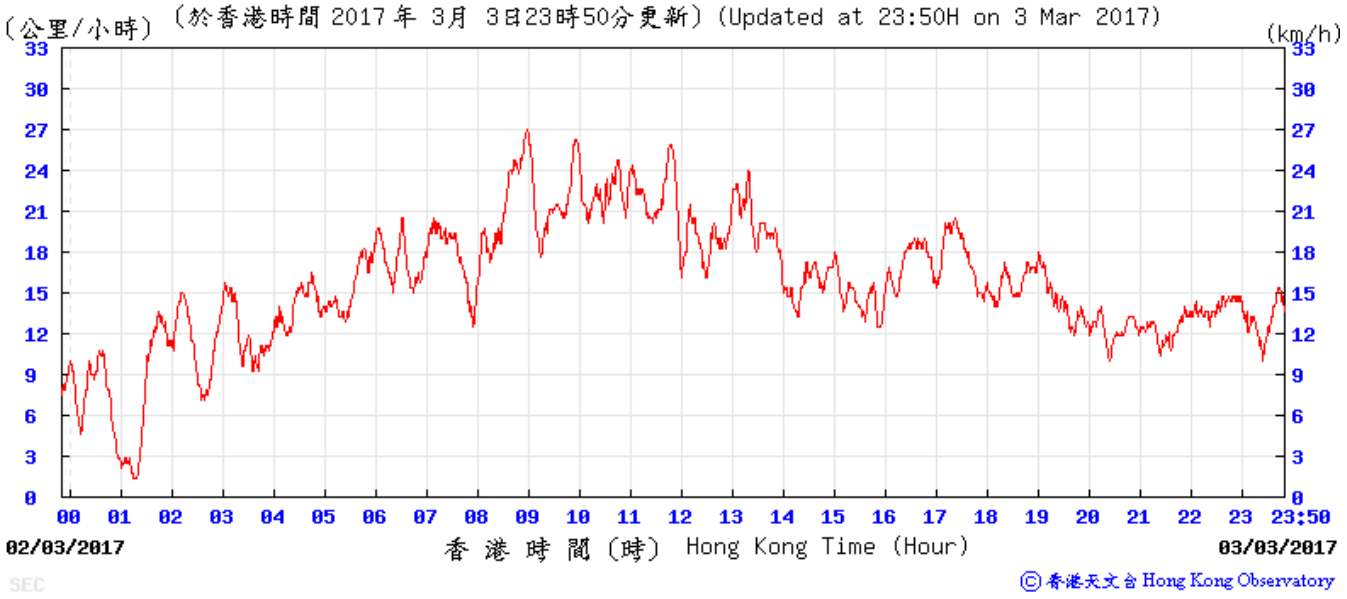
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

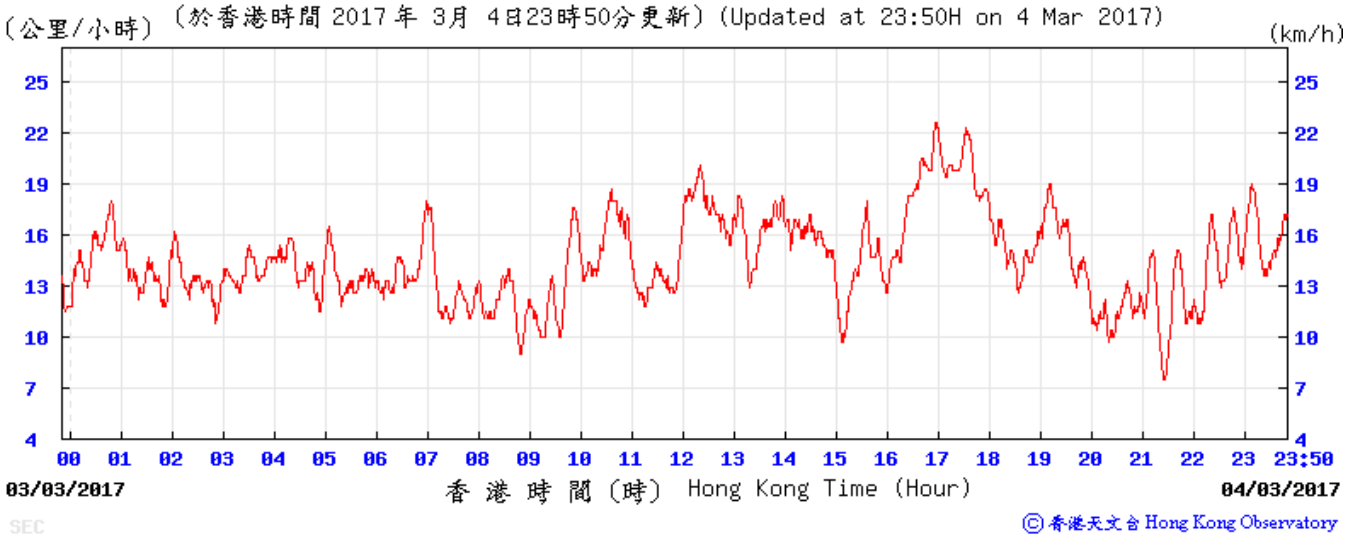
(3) 24 hours TSP concentration level of DMS-3 from July to September 2016 were extracted from the Project 1103.

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	CINOTECH
	Date: Mar-17	Appendix: E	

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

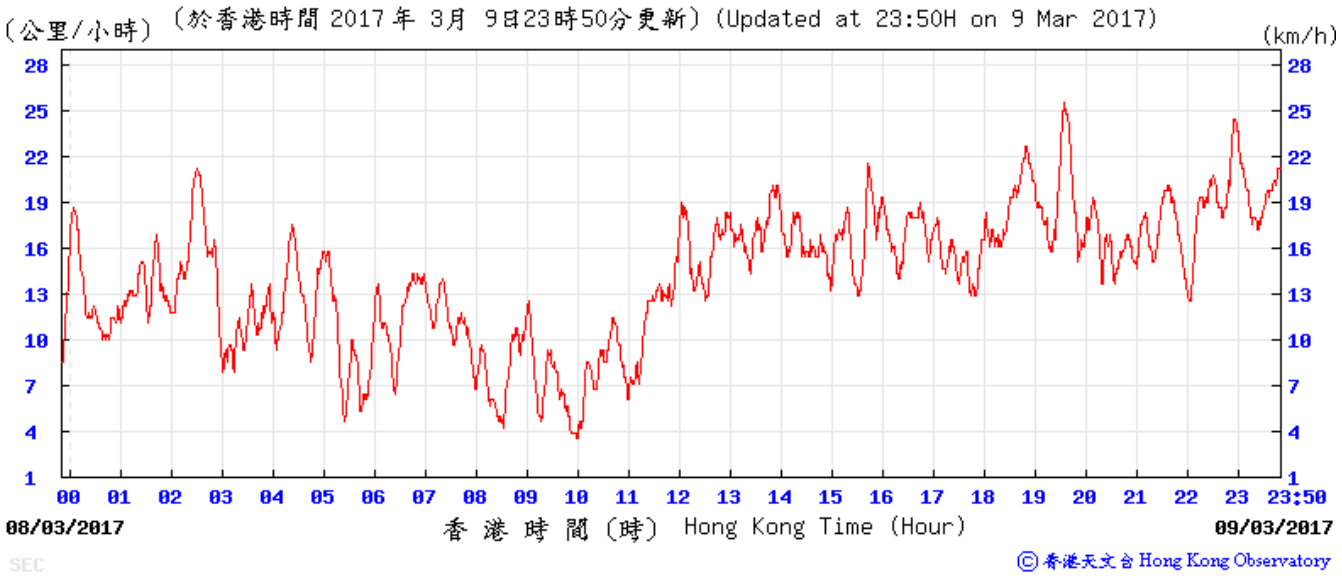
3-4 March 2017

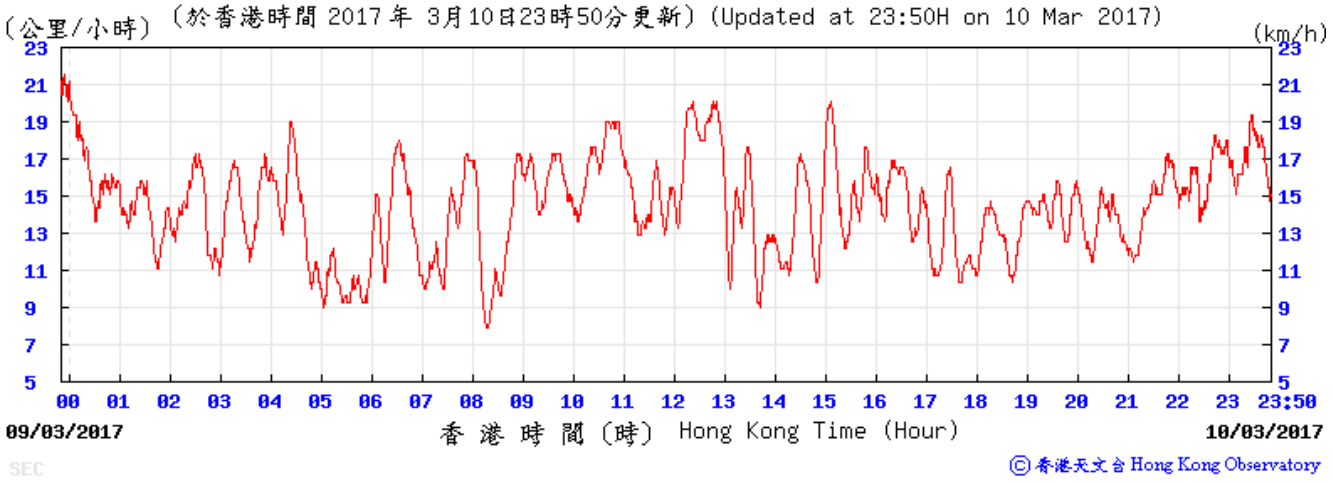




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

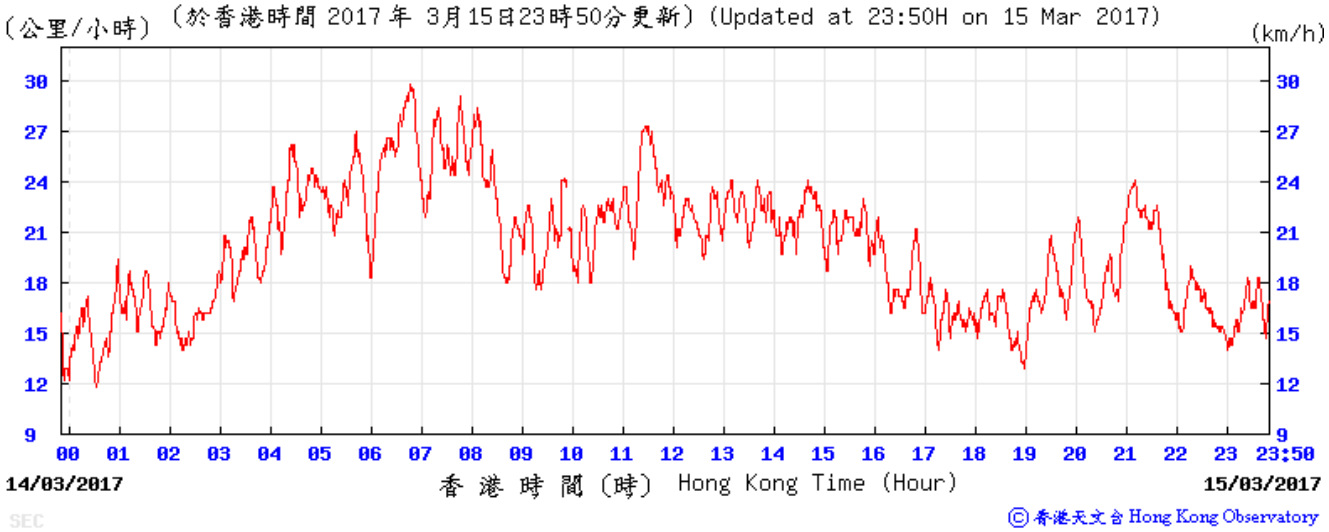
9-10 March 2017

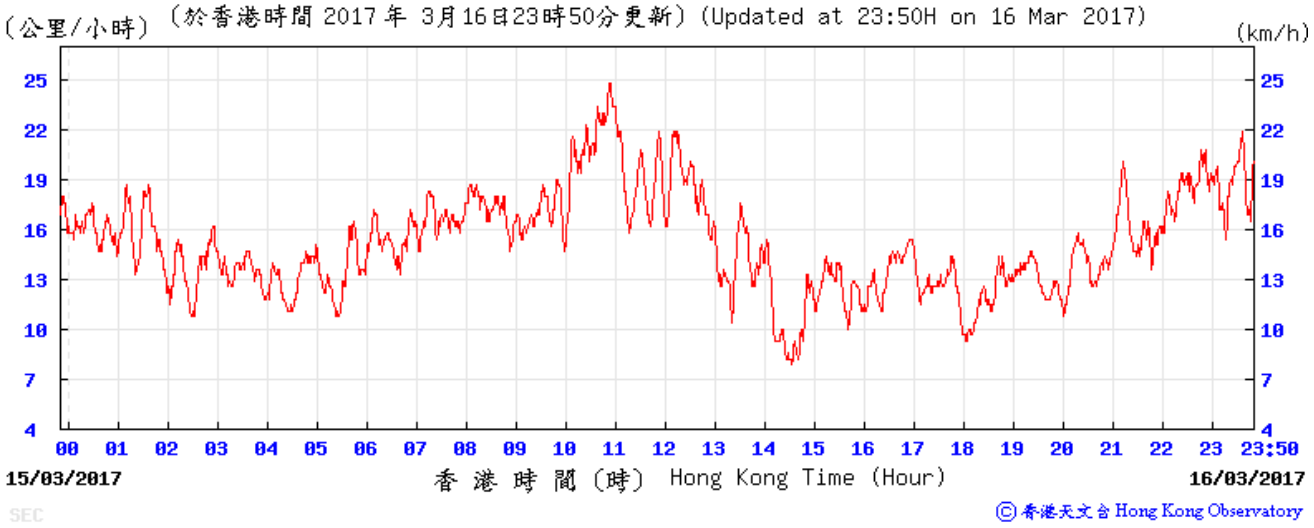




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

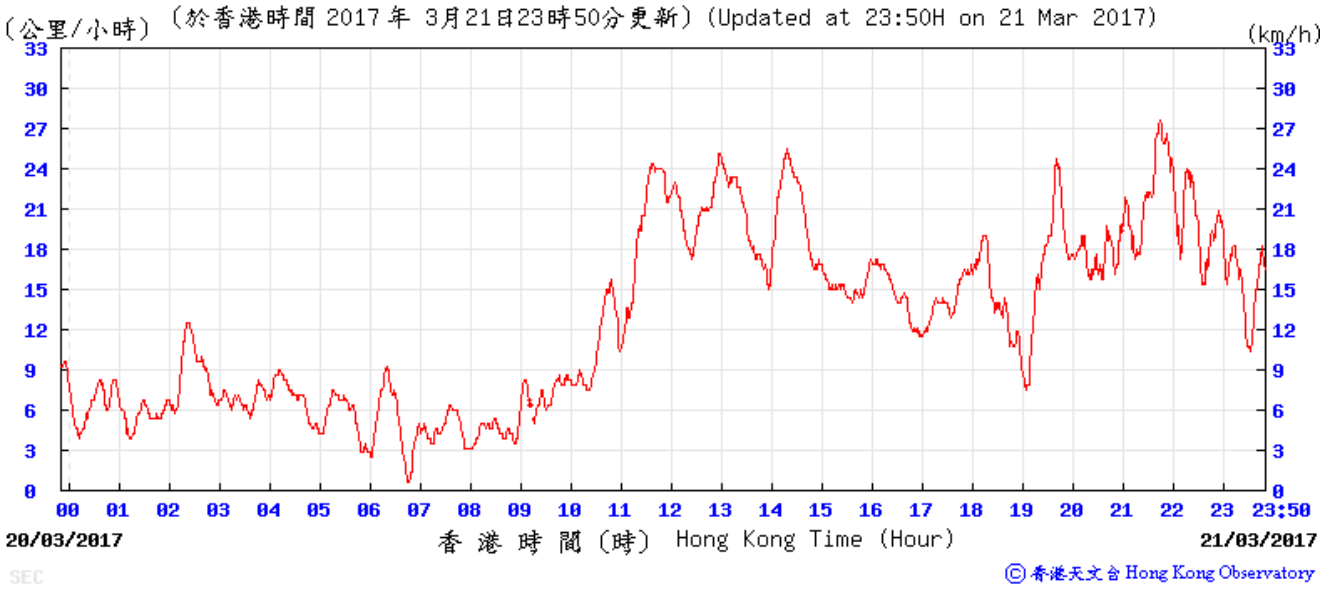
15-16 March 2017

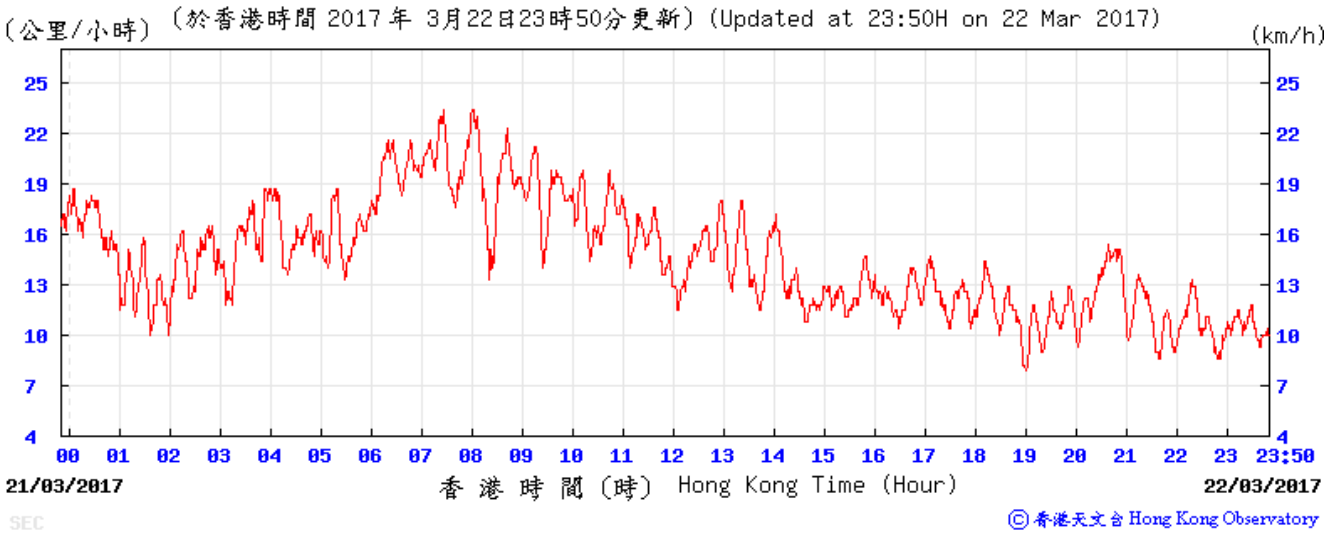




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

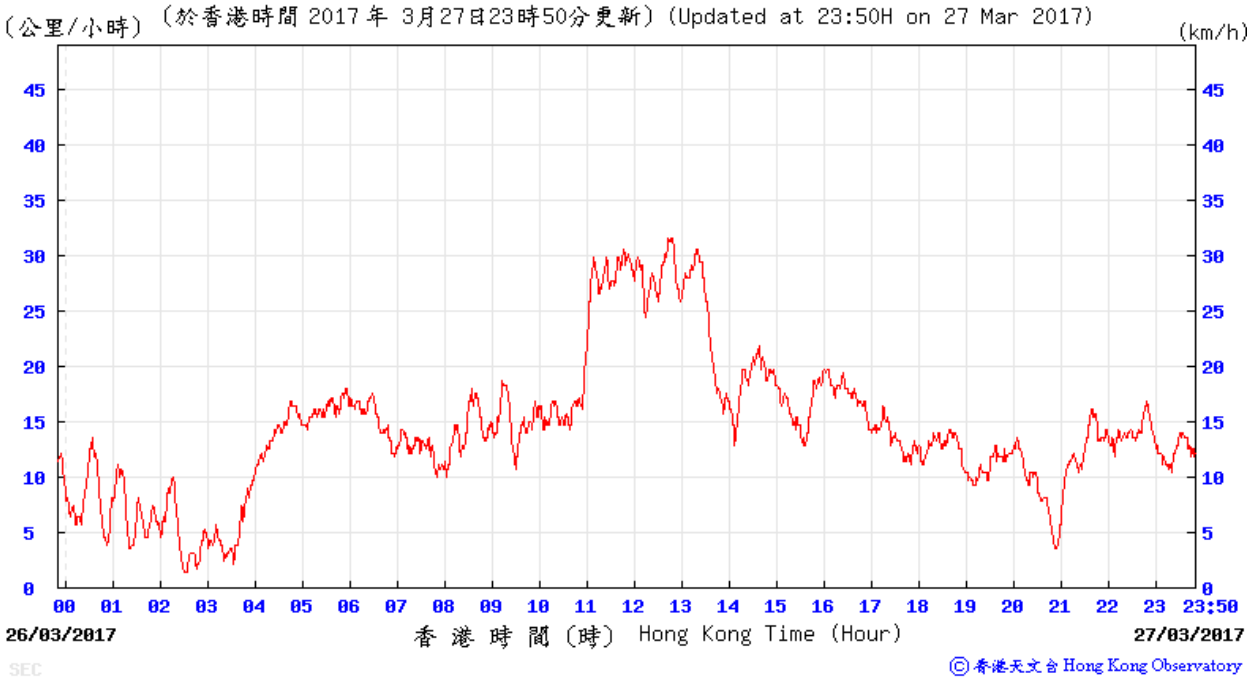
21-22 March 2017

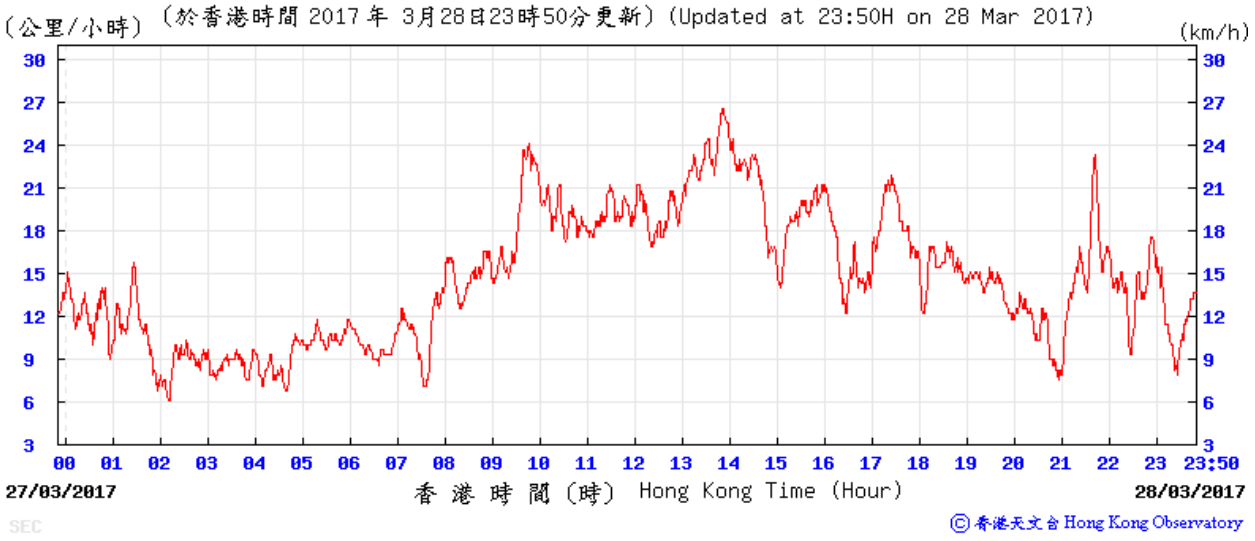




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

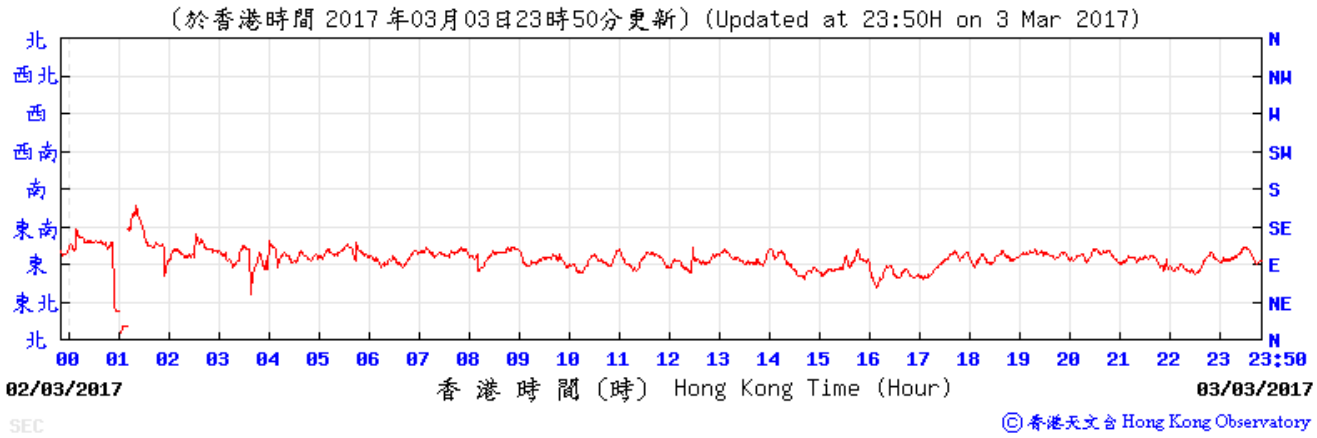
27-28 March 2017

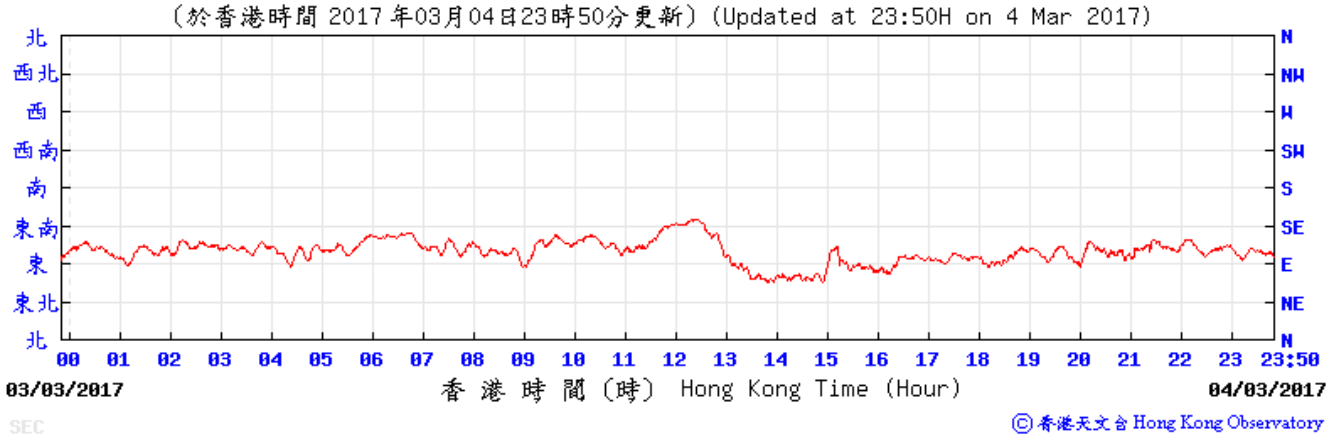




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

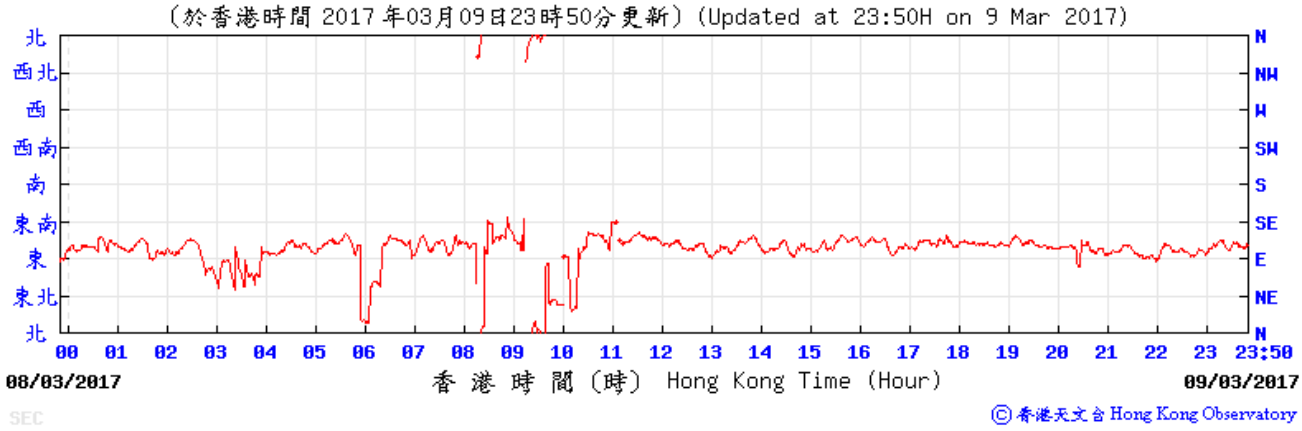
3-4 March 2017

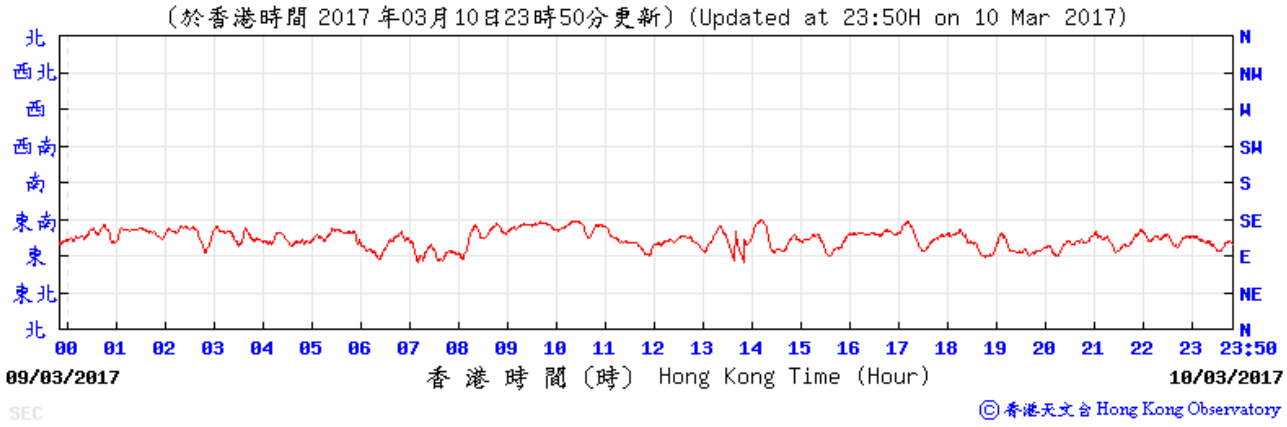




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

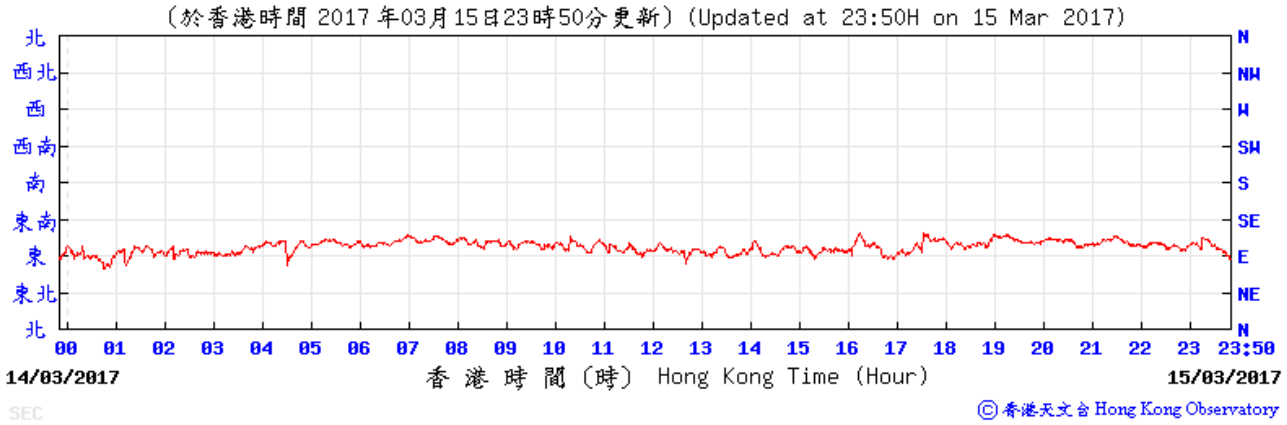
9-10 March 2017

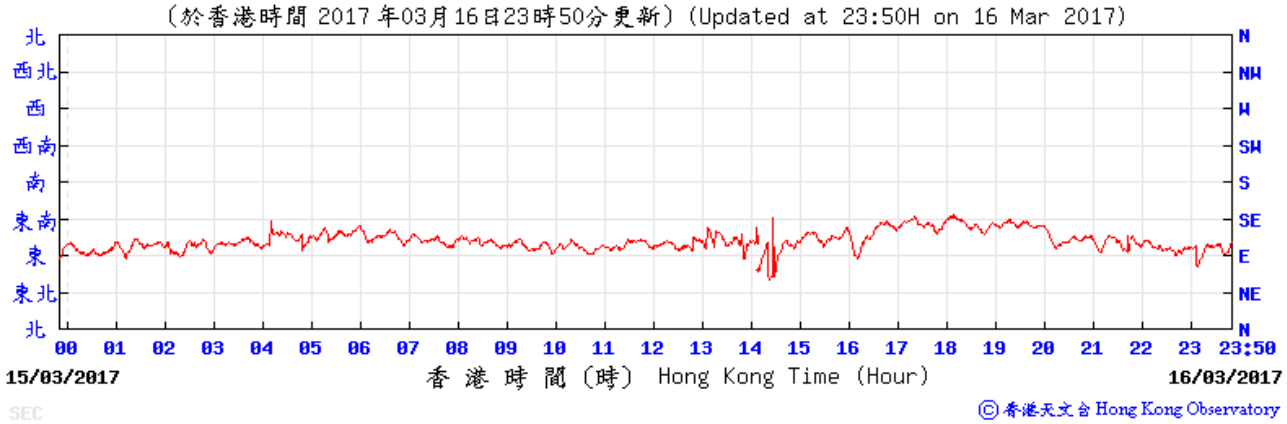




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

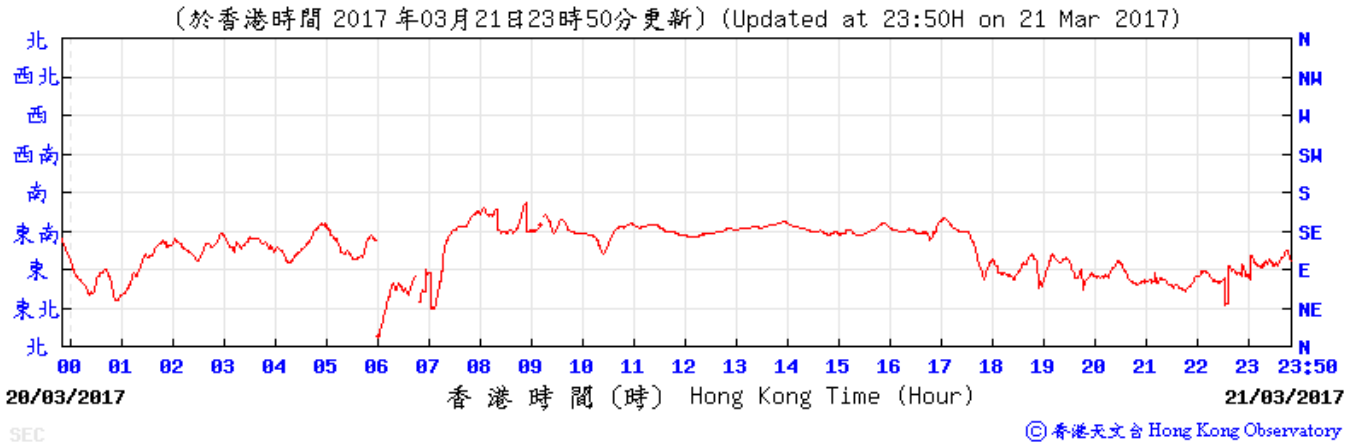
15-16 March 2017

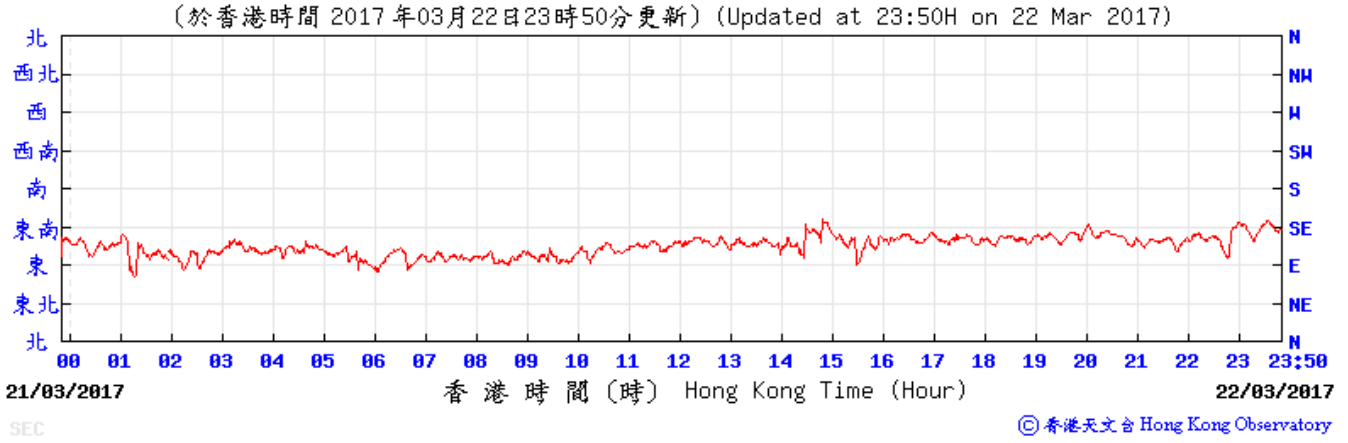




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

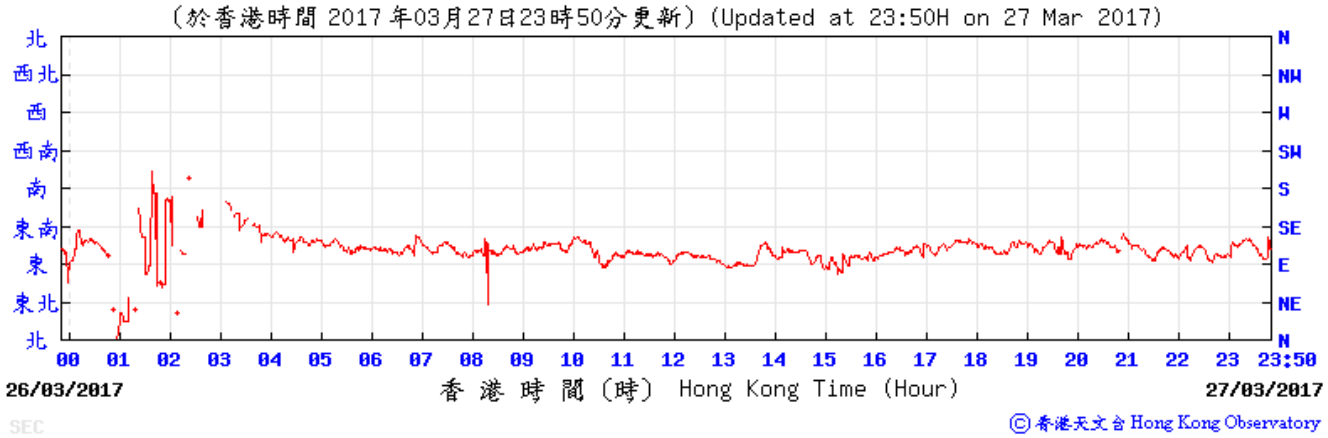
21-22 March 2017

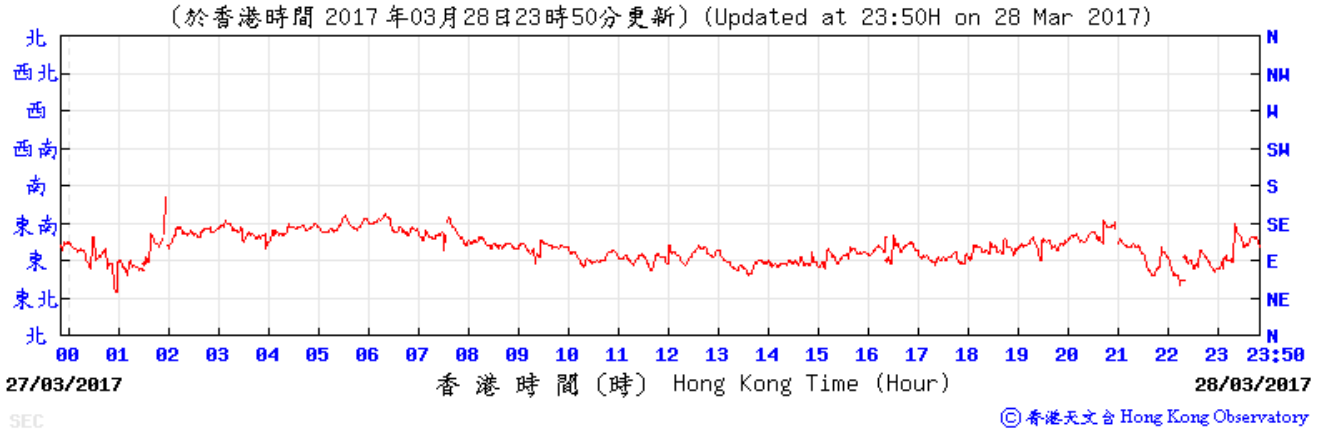




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

27-28 March 2017





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_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-Mar-17	Cloudy	9:30	72.6	74.7	69.2	72.3	73	72.3 Measured ≦ Baseline Level
		9:35	72.2	74.6	69.5			
		9:40	71.9	74.1	69.8			
		9:45	72.3	74.5	69.1			
		9:50	72.0	74.2	69.3			
		9:55	72.5	74.2	69.7			
16-Mar-17	Cloudy	11:00	70.8	73.6	68.5	71.0		72.2 Measured ≦ Baseline Level
		11:05	71.1	73.8	68.3			
		11:10	69.9	72.3	66.6			
		11:15	71.6	73.7	67.8			
		11:20	71.7	74.0	65.6			
		11:25	70.9	73.2	65.9			
22-Mar-17	Cloudy	11:30	73.0	74.5	70.1	72.5		72.5 Measured ≦ Baseline Level
		11:35	72.6	75.3	68.9			
		11:40	71.9	74.1	68.7			
		11:45	72.3	75.1	69.1			
		11:50	72.5	74.3	67.5			
		11:55	72.8	74.4	70.5			
28-Mar-17	Sunny	10:30	72.6	73.8	71.0	72.5		72.5 Measured ≦ Baseline Level
		10:35	72.5	74.2	70.8			
		10:40	72.8	74.3	70.9			
		10:45	71.9	74.1	70.7			
		10:50	72.4	74.3	70.6			
		10:55	72.5	75.1	70.7			

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_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-Mar-17	Cloudy	9:45	66.4	67.2	63.1	66.4	71	66.4 Measured ≦ Baseline Level
		9:50	66.3	67.1	63.1			
		9:55	66.4	67.1	63.2			
		10:00	66.5	67.3	63.2			
		10:05	66.5	67.3	63.2			
		10:10	66.4	67.3	63.1			
16-Mar-17	Cloudy	9:00	71.4	73.6	70.0	72.6		67.5
		9:05	72.7	73.4	71.8			
		9:10	72.7	73.4	71.6			
		9:15	73.5	74.1	72.5			
		9:20	73.0	74.1	72.5			
		9:25	72.0	73.1	71.4			
22-Mar-17	Cloudy	10:35	72.8	74.7	70.6	73.0		68.7
		10:40	73.2	75.4	70.9			
		10:45	74.0	73.6	72.0			
		10:50	72.6	73.7	71.4			
		10:55	72.6	73.7	71.4			
		11:00	72.7	73.7	71.5			
28-Mar-17	Sunny	13:00	72.8	75.1	70.3	72.6		67.5
		13:05	72.6	75.0	70.1			
		13:10	72.5	74.8	71.1			
		13:15	72.7	75.1	70.7			
		13:20	72.6	76.3	70.4			
		13:25	72.4	75.0	70.3			

.

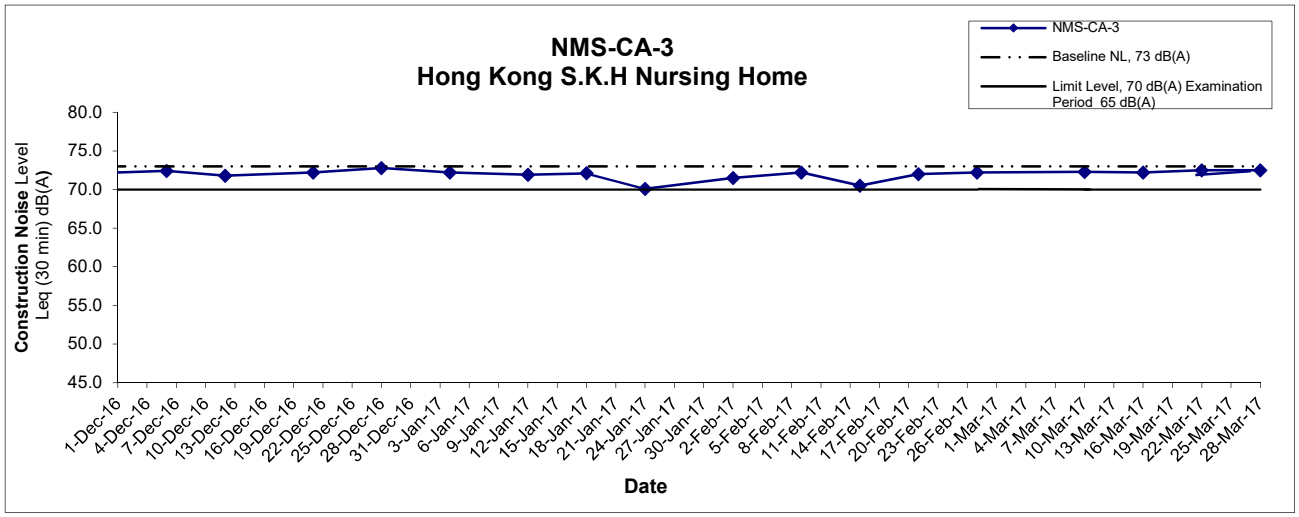
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

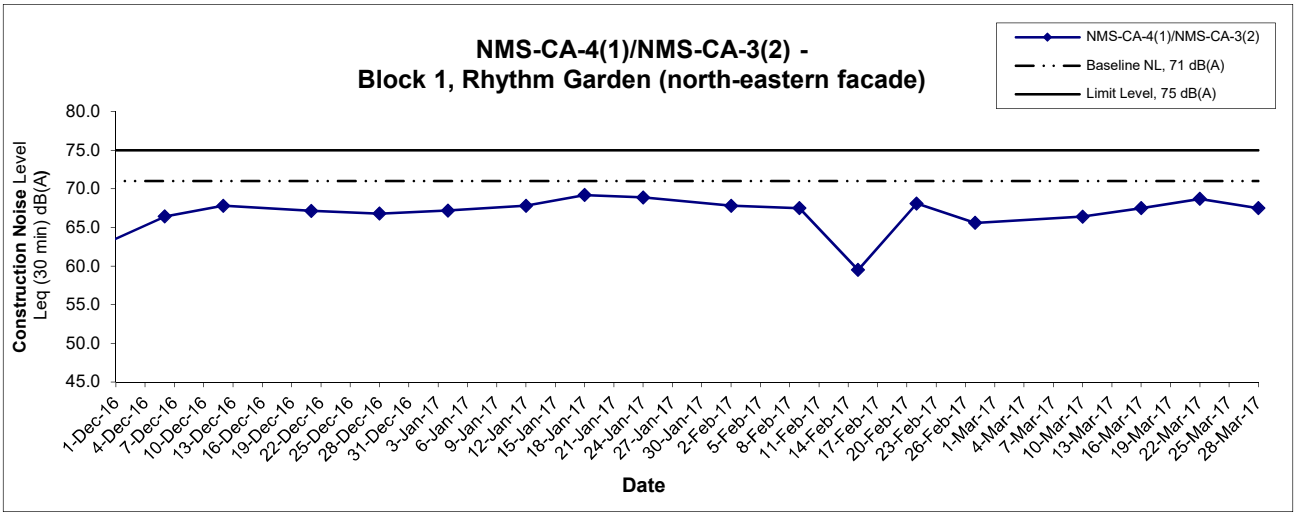
Appendix F - Noise Monitoring Results

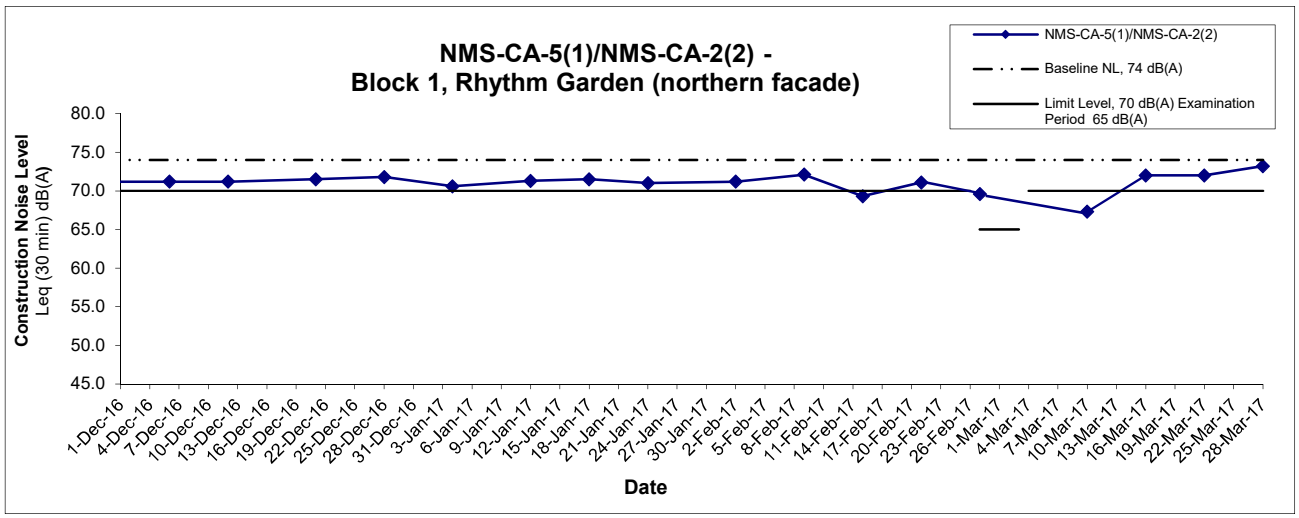
Location NMS-CA-5(1)/NMS-CA-2(2) - Block 1, Rhythm Garden (northern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-Mar-17	Cloudy	10:30	67.1	67.9	63.9	67.3	74	67.3 Measured ≦ Baseline Level
		10:35	67.2	67.9	63.9			
		10:40	67.3	67.9	63.8			
		10:45	67.3	67.8	63.8			
		10:50	67.3	67.9	63.9			
		10:55	67.3	68.0	64.0			
16-Mar-17	Cloudy	10:00	71.5	72.6	70.0	72.0		72.0 Measured ≦ Baseline Level
		10:05	71.7	72.8	70.4			
		10:10	72.3	73.4	70.9			
		10:15	71.9	73.2	70.3			
		10:20	72.3	73.4	70.7			
		10:25	72.0	74.1	70.1			
22-Mar-17	Cloudy	10:00	72.3	73.8	70.7	72.0		72.0 Measured ≦ Baseline Level
		10:05	72.5	73.8	71.0			
		10:10	71.9	72.9	70.7			
		10:15	71.9	73.0	70.6			
		10:20	71.4	72.5	70.2			
		10:25	72.1	73.4	71.1			
28-Mar-17	Sunny	13:45	73.4	76.1	70.2	73.2		73.2 Measured ≦ Baseline Level
		13:50	73.2	75.8	70.4			
		13:55	73.1	75.7	70.5			
		14:00	73.2	75.7	70.4			
		14:05	72.8	75.1	70.3			
		14:10	73.2	74.7	70.1			

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).

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 ≦ Baseline Level, only Measured Level is presented on the graphical presentation.

(4) Location NMS-CA-3

Title: Shatin to Central Link - Contract 1106 - Diamond Hill Station Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA12051 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: March 2017

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170302
Date	2 March 2017 (Thursday)
Time	13:30-15:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170302-O01	***Part B – Water Quality*** • To remove the sediment accumulated in the wheel washing bay with sufficient frequency. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Cultural Heritage*** • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part H – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 170223), all the environmental deficiency was rectified/ improved by the Contractor.	B 14ii

	Name	Signature	Date
Recorded by	Benjamin Wong		2 March 2017
Checked by	Dr. Priscilla Choy		2 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170309
Date	9 March 2017 (Thursday)
Time	13:30-15:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170309-R01	***Part B – Water Quality*** • To remove the sediment in the wheel washing bay with sufficient frequency to avoid accumulation. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection.	B 14ii
170309-R02	***Part E – Air Quality*** • To cover the stockpile of dusty material in ex-1103 site. ***Part F – Cultural Heritage*** • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part H – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 170302), the item 130302-O01 was remarked as 170309-R01.	E 6

	Name	Signature	Date
Recorded by	Benjamin Wong		9 March 2017
Checked by	Dr. Priscilla Choy		9 March 2017

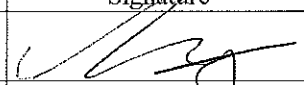
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170316
Date	16 March 2017 (Thursday)
Time	13:30-15:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170316-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Cultural Heritage*** • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact*** • The breaker head should be wrapped with acoustic material to minimize the noise generation during operation. ***Part H – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 170309), all the environmental deficiency was rectified/ improved by the Contractor.	G 5

	Name	Signature	Date
Recorded by	Benjamin Wong		16 March 2017
Checked by	Dr. Priscilla Choy		16 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170323
Date	23 March 2017 (Thursday)
Time	09:30-10:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality***	
170323-R01	• Acoustic material should be wrapped on the breaker head to minimize the noise generation, and sufficient water spray should be provided during breaking.	E 11
	Part F – Cultural Heritage • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact***	
170323-R01	• Acoustic material should be wrapped on the breaker head to minimize the noise generation, and sufficient water spray should be provided during breaking.	G 5
	Part H – Waste/Chemical Management • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 170316), the item 170316-R01 was remarked as 170323-R01.	

	Name	Signature	Date
Recorded by	Benjamin Wong		23 March 2017
Checked by	Dr. Priscilla Choy		23 March 2017

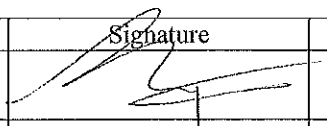
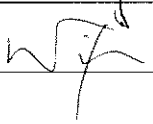
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170330
Date	30 March 2017 (Thursday)
Time	13:30-15:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170330-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • To provide sufficient water spray to the stockpiles on the site area near the Tai Hum footpath. ***Part F – Cultural Heritage*** • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part H – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 170323), all the environmental deficiency was rectified/ improved by the Contractor.	E 6

	Name	Signature	Date
Recorded by	Benjamin Wong		30 March 2017
Checked by	Dr. Priscilla Choy		30 March 2017

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**
ACTION LEVEL				
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 addtional 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	1. Inform the IEC, Contractor 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. 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(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.
2.Exceedance for two or more consecutive samples	1. Notify IEC, Contractor and EPD; 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, Contractor 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. Notify the Contractor, IEC and ET; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 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 and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1106 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 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. 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. 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. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 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, Contractor 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. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source 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 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

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

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
Cultural Heritage Impact (Construction Phase)								
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	• AMO's requirements	^ ^
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	• AMO's requirements • Principles for the Conservation of Heritage Sites in China • Burra Charter, the Australia's ICOMOS Charter for Places of Cultural Significance	^
Ecology (Construction Phase)								
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	• ProPECC PN 1/94	^

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
		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: • No on-site burning of waste; • Waste and refuse in appropriate receptacles.						^ ^
Landscape & Visual (Construction Phase)								
S6.12	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • 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. <u>No-intrusion Zone</u> • 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	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	^ ^

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
		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. <u>Protection of Retained Trees</u> • 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. • 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.						^ ^
Table 6.9	LV2	<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. <u>Management of facilities on work sites</u> • To provide proper management of the facilities on the sites, give	Minimize 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	^ ^

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
		control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. <u>Tree Transplanting</u> • Trees of medium to high survival rate that 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.						^
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All 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	^
Construction Dust Impact								
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	• APCO • To control the dust	*

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^2 to achieve the dust removal efficiency	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	^
S7.6.6	D3	• 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; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that	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 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
		the dusty materials do not leak from the vehicle; • 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; • 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; • 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; • 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;						^ ^ ^ *

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
		• 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; • 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; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • 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; • 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; • 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						^ 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• 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.						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	^
Construction Airborne Noise								
S8.5.6	AN1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • 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; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible	Control construction airborne noise	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^ ^ ^ ^ ^

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; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						^
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	^

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	^
Water Quality (Construction Phase)								
S10.7.1	W1	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: <u>Construction Runoff and Site Drainage</u> • 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. • The dikes or embankments for flood protection should be	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^

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
		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. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction. • 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. • 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						^ ^

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
		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. • 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. • 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms. • Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be						* ^ ^ *

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
		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 • 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 • 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. • Oil interceptors should be provided in the drainage system						^ * 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		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. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • 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 • 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. • Adopt best management practices.						^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • 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	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	^

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
		appropriate disposal and maintenance.						
S10.7.1	W5	Accidental Spillage In order to prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities should be provided; • 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; • 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 • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^ ^ ^
Waste Management (Construction Waste)								
S11.4.1.1	WM1	On-site sorting of C&D material • 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	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

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
		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.						
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;	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	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	^ ^ ^

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
		• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&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	disposal				• ETWB TCW No. 19/2005	N/A ^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW	^

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
		materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.					No.19/2005	^
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • 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	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	^ ^ ^

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
		provided if feasible. • 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.						^
S11.5.1	WM6	<u>Chemical Waste</u> • 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. • 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. • 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	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All Construction Sites	Construction Stage	• Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ ^ ^

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
		prevent rainfall entering; and be arranged so that incompatible materials are adequately separated. • 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.						^

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

Contract No: **MTR SCL 1106 - Diamond Hill Station**
Date of Report: **March, 2017**

Monthly Summary Waste Flow Table for 2017

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 (See Note 2)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste (See Note 3)	Others, e.g. general refuse	
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)	
Jan	0.081	0.000	0.045	0.000	0.036	0.000	0.000	0.266	0.000	0.000	0.116	
Feb	0.014	0.000	0.000	0.000	0.014	0.000	0.000	0.280*(5)	0.000	0.000	0.116	
Mar	0.912	0.000	0.000	0.000	0.912	0.000	0.000	0.000	0.000	0.000	0.163	
Apr												
May												
Jun												
Sub-total	1.007	0.000	0.045	0.000	0.962	0.000	0.000	0.546	0.000	0.000	0.395	
Jul												
Aug												
Sept												
Oct												
Nov												
Dec												
Total	1.007	0.000	0.045	0.000	0.962	0.000	0.000	0.546	0.000	0.000	0.395	

Notes:

1) Assume the densities of Rock, Soil, Mix Rock and Soil, are Regular Spoil to be 2.0 tonnes/m^3. Assumption the densities of general refuse is 1.0 tonnes/m^3
2) Inert C&D material was delivered to Contract 1108.
3) Chemical waste includes waste diesel oil. It is assumed density of diesel oil to be 0.8kg/L.
4) Figures are rounded up to 3 decimal places
5) Data was updated

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
Total	**11**	**0**	**0**

Appendix E

47th EM&A Report for Works Contract 1107 –
Diamond Hill to Kai Tak Tunnels

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 47

[Period from 1 to 31 March 2017]

Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

(April 2017)

Certified by: Priscilla Choy

Position: Environmental Team Leader

Date: 11th April 2017

Chun Wo – SELI Joint Venture

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels

Monthly Environmental Monitoring and Audit Report For March 2017

(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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 47th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1107 – Diamond Hill to Kai Tak Tunnels**. This report documents the findings of EM&A Works conducted from 1st to 31st March 2017.

Summary of Construction Works undertaken during Reporting Month

2. The major site activities undertaken in the reporting month include:

- Backfilling works at cut and cover tunnels; and
- Reinstatement and Backfilling works of Drainage.

Variation in Construction Method

3. Environmental Monitoring and Audit Progress:

As of the reporting month, an alignment section of approximately 90m long between DIH and KAT under this Works Contract 1107 will be constructed by the cut-and-cover method, instead of bored tunnelling 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.

4. 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-4(1)(3)/NMS-CA-3(2)(3) (Block 1, Rhythm Garden (north-eastern façade)) 4 times
  - NMS-CA-5(1)(4)/NMS-CA-2(2)(4) (Block 1, Rhythm Garden (northern façade)) 4 times
- Construction Dust (24-hour TSP) Monitoring
  Dust Monitoring Station ID

- DMS-4(1)(5)/ DMS-3(2)(5) (Block 1, Rhythm Garden) 5 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).
(3) Noise monitoring on NMS-CA-4(1)/ NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(4) Noise monitoring on NMS-CA-5(1)/ NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(5) Dust monitoring on DMS-4(1)/ DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Waste Management

5. 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 K**.

Landscape and Visual

6. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 2nd, 16th & 30th March 2017. Most of the 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

7. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 2nd, 9th, 16th, 23rd & 30th March 2017. The representative of the IEC joined the site inspection on 2nd March 2017. Details of the audit findings and implementation status are presented in Section 6.

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

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

9. No non-compliance event was recorded during the reporting period.

10. No Project related environmental complaint and notification of summons/successful prosecution was received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- Reinstatement and Backfilling works of drainage.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Chun Wo – SELI Joint Venture (CSJV) 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 1107 – Diamond Hill to Kai Tak Tunnels (hereafter referred to as the Project).

Purpose of the Report

1.2 This is the 47th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1st to 31st March 2017. The major construction works for Contract 1107 commenced on 27th May 2013.

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) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1107 covers the construction of running tunnel from Kai Tak (KAT) North to SCL Diamond Hill (DIH) Station which is under the approved SCL (HHS) EIA Report. This construction contract was awarded to Chun Wo - SELI Joint Venture (CSJV) in March 2013.

General Site Description

2.3 The construction of tunnel from KAT to DIH will employ either cut-and-cover method or bored tunneling. The alignment and works area for the Works Contract 1107 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**.

- Backfilling works at cut and cover tunnels; and
- Reinstatement and Backfilling works of Drainage.

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 is presented in **Table 2.1**. No Construction Noise Permit was granted under the Project in the reporting month.

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/J	29/02/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Ref no.: 357051	18/03/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No. 7017163	26/03/2013	N/A	Valid
Registration of Chemical Waste Producer			
5213-286-C3798-01	29/04/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00015861-2013	13/05/2013	31/05/2018	Valid
WT00016009-2013	23/05/2013	31/05/2018	Valid
Construction Noise Permit (CNP)			
GW-RE1243-16	6/01/2017	28/03/2017	Valid until 28/03/2017

Summary of EM&A Requirements

2.7 The EM&A programme under Works Contract 1107 require 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, works 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[4][5]	Description	Type of Measurement
NMS-CA-4[1]/ NMS-CA-3[2]	Block 1, Rhythm Garden (north-eastern façade)	Façade
NMS-CA-5[1][3]/ NMS-CA-2[2][3]	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 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.
(4) Noise monitoring on NMS-CA-4[1]/ NMS-CA-3[2] (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(5) Noise monitoring on NMS-CA-5[1]/ NMS-CA-2[2] (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.

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 $L_{eq,\ 5\text{-}min}$ 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	SVAN 957 (Serial no.: 21455, 21459, 21460 and 23853)
Calibrator	SV30A (Serial no.: 24791 and 24780) B&K 4231 (Serial no.: 2326353 and 2412367)

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 Construction Noise Mitigation Measures Plan (CNMMP) prepared submitted under EP Condition 2.9 and Condition 2.10 respectively, 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 1107.

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-4(1)(3)/ DMS-3(2)(3)	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) Dust monitoring on DMS-4(1)/DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

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(1)	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
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 2896 & 0993	2

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 μm 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 ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±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 m^3/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 ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

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.**

Landscape and Visual

3.20 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 / Action Plan (EAP) for landscape and visual is presented in **Appendix I**. The implementation status is given in **Appendix J**.

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 (February 2017)	14th March 2017

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 8 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-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) on 10th March 2017 did not exceed the daytime construction noise criterion; and the noise monitoring results recorded at NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) on 16th, 22nd & 28th March 2017 exceeded the daytime construction noise criterion. The noise monitoring results recorded at NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) in March 2017 did not exceed the daytime construction noise criterion.

5.3 The noise monitoring results together with their graphical presentations are presented in **Appendix F**.

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

Regular Dust Monitoring

5.5 A total of 5 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/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
24-hr TSP (DMS-4(1)(3)/ DMS-3(2)(3))	53.4	69.4	63.4	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).
(3) Dust monitoring on DMS-4(1)/DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

5.6 Based on observation during the on-site monitoring, road traffic emission nearby is considered as a potential dust source other than construction works of the Project that affects the monitoring results of the reporting month.

5.7 Meteorological data were obtained from the Kai Tak Meteorological Station of Hong Kong Observatory and was shown on **Appendix E**.

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

Waste Management

5.9 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**. 25 tonnes of general refuse were generated and disposed in the reporting month; no C&D materials, paper/cardboard packaging, chemical waste, plastics and metals were generated during this reporting month. Details 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) [(a)]	C&D Materials (non-inert) [(b)]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2017	*0 m^3*	*25 tonnes*	*0 litres*	*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

5.10 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 2nd, 16th & 30th March 2017. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

6 ENVIRONMENTAL SITE INSPECTION

Site Audit

6.1 Site audit was 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 audit are attached in **Appendix H**.

6.2 Site audits were conducted on 2nd, 9th, 16th, 23rd & 30th March 2017 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 2nd March 2017. The details of observations during site audit 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
Water Quality	---	---	---
Noise	16th March 2017	Reminder: To wrap the breaker with acoustic material to minimize the noise generation during operation.	As observed on 23rd February 2017, no more breaking works was conducted in the site during the site inspection.
Landscape and Visual	---	---	---
Air Quality	2nd March 2017	Reminder: Haul roads should be sprayed with water regularly for dust suppression.	As observed on 9th March 2017, haul roads were observed wet during the site inspection.
	30th March 2017	Reminder: The exposed area should be watered sufficiently for dust suppression.	This item would be followed up in the next reporting month.
Waste / Chemical Management	2nd March 2017	Observation: Drip tray should be provide to the oil drum.	As observed on 9th March 2017, the drip tray was provided to the oil drum.
Permits/Licenses	---	---	**---**

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the reporting period. 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:

- Reinstatement and Backfilling works of drainage.

Key Issues in the Next Month

8.2 Key issues to be considered in the coming month include:

- To ensure the performance of sorting of C&D materials at source (during generation); and
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.

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 1st to 31st March 2017 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 3 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during 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:

Water Quality

- N/A

Landscape and Visual

- N/A

Noise

- The breaker should be wrapped with acoustic material to minimize the noise generation during operation.

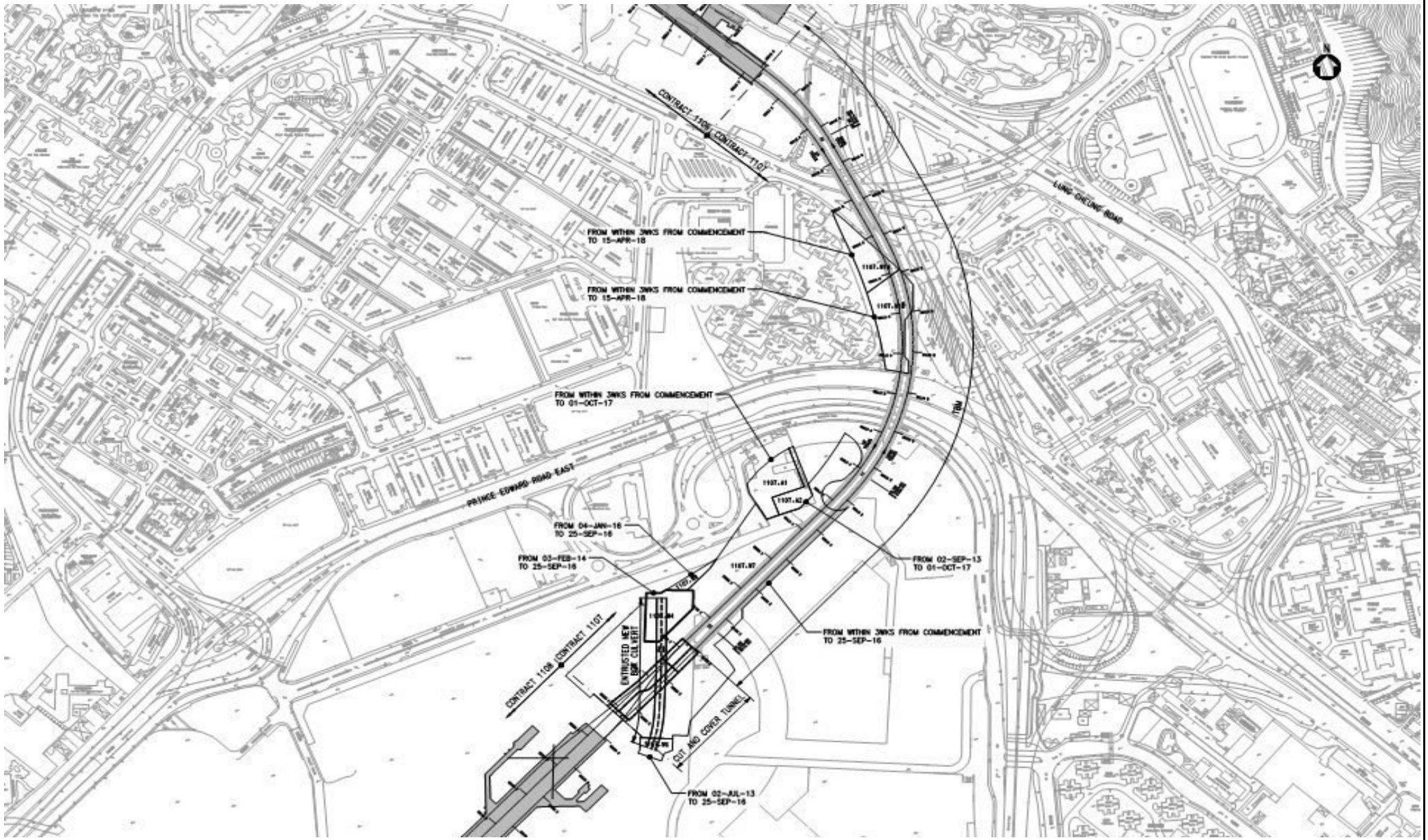
Air Quality

- The haul roads and exposed area should be sprayed with water and watered sufficiently for the dust suppression.

Waste/Chemical Management

- The drip tray should be provided for the oil drum in the site.

FIGURES



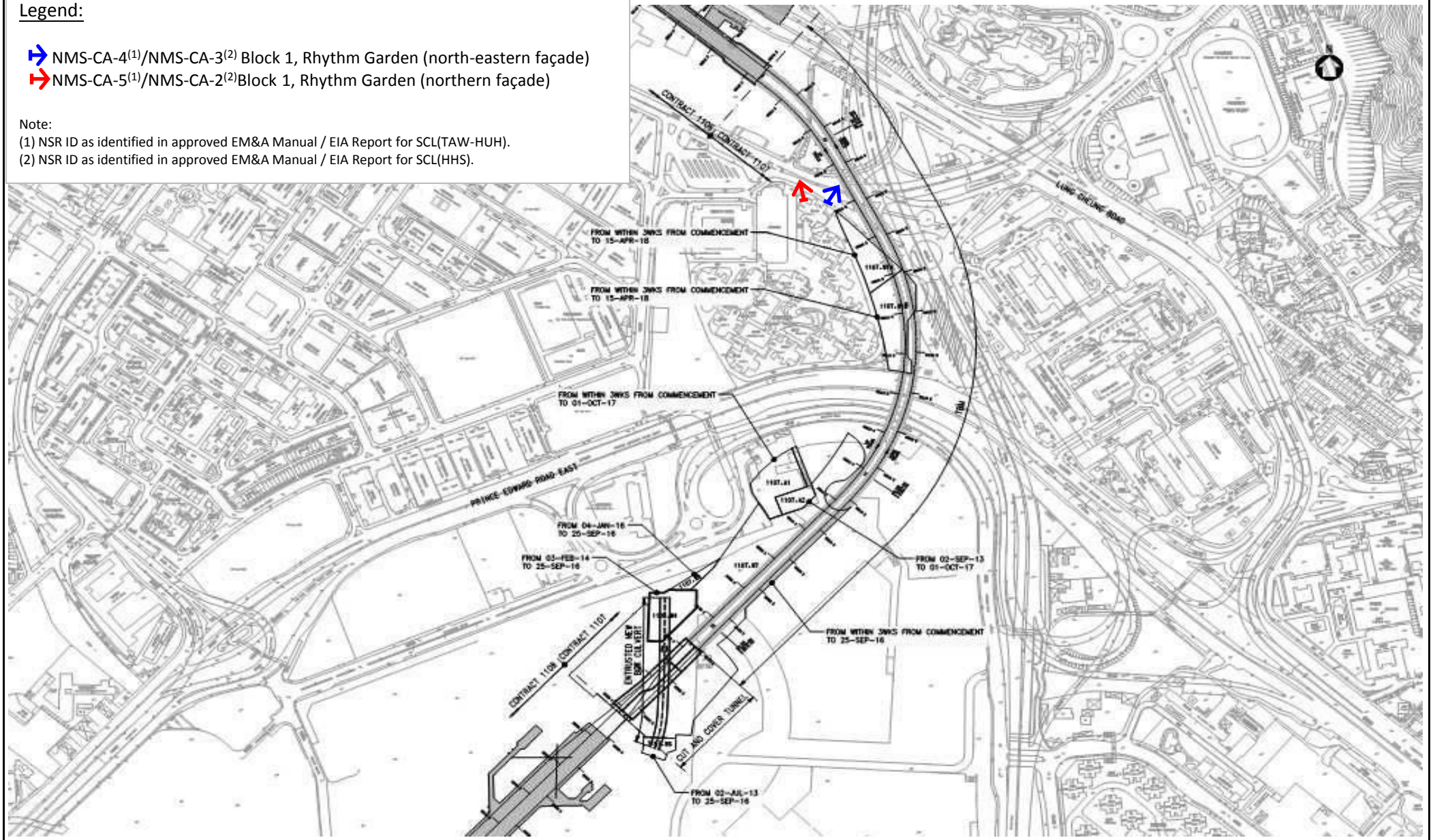
Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Site Layout Plan	Scale N.T.S Date May-13	Project No. MA13018 Figure 1

CINOTECH

Legend:

NMS-CA-4[1]/NMS-CA-3[2] Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5[1]/NMS-CA-2[2]Block 1, Rhythm Garden (northern 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).

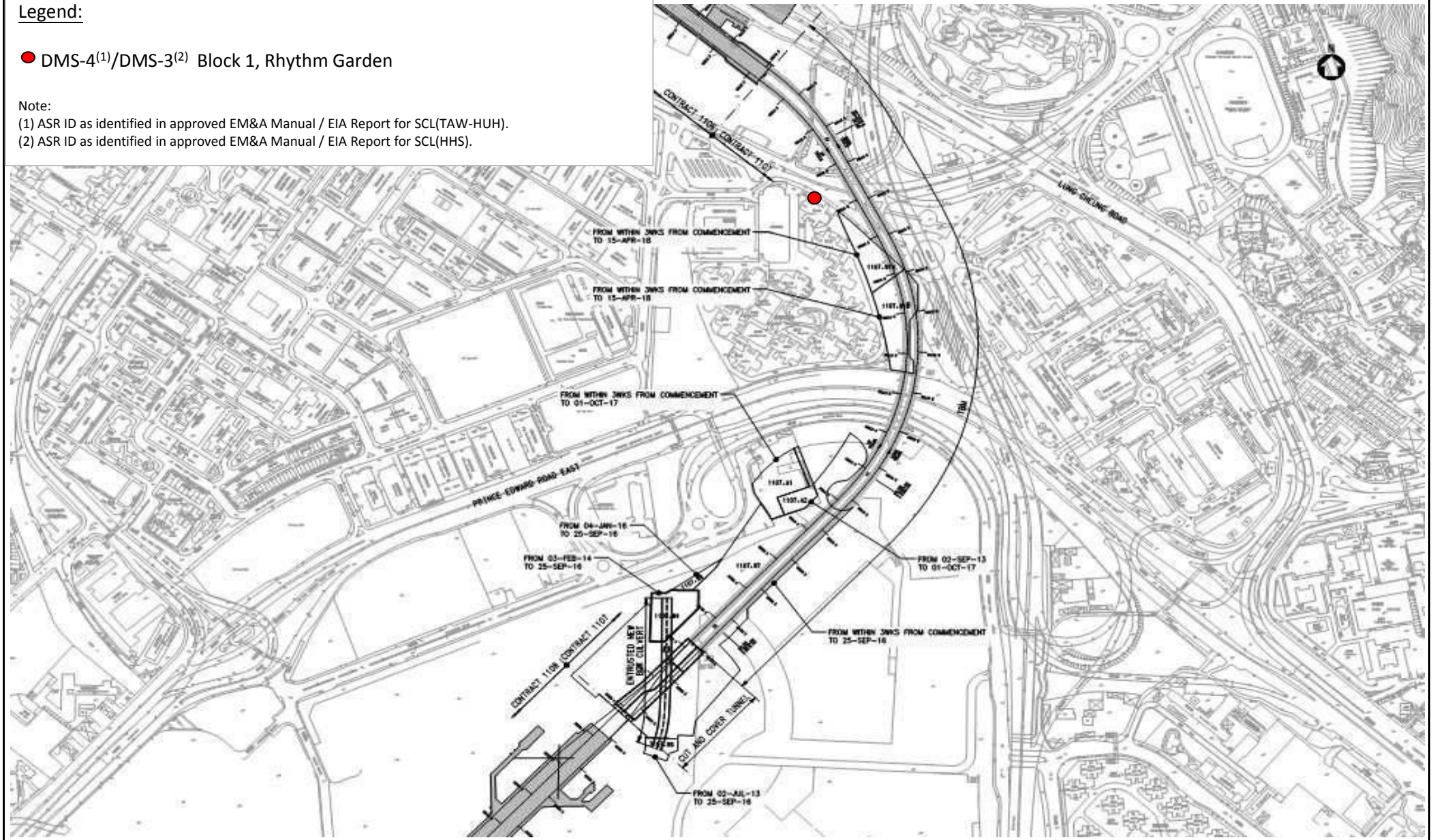


Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Locations of Construction Noise Monitoring	Scale N.T.S	Project No. MA13018	CINOTECH
		Date May-13	Figure 2	

Legend:

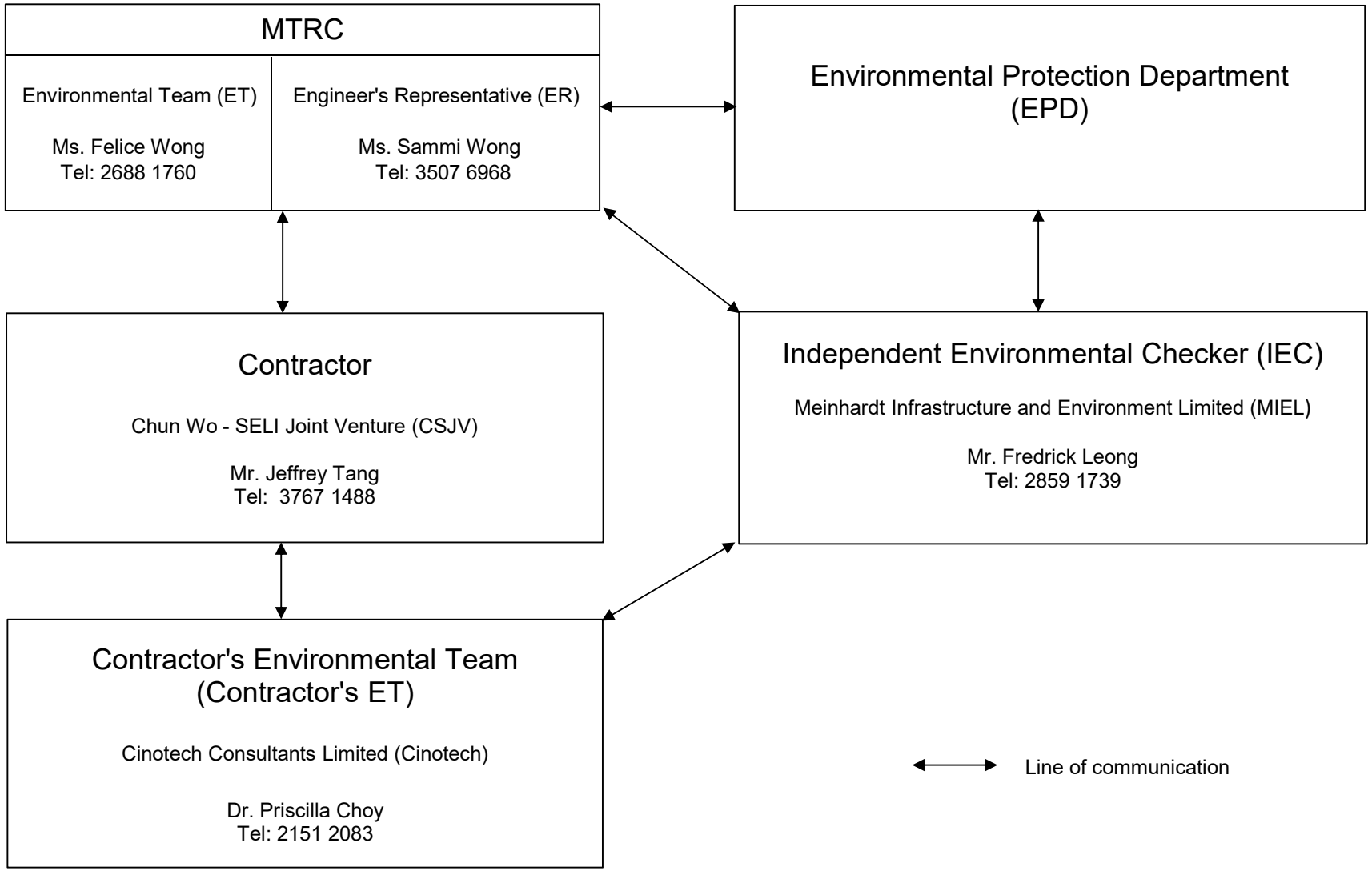
● DMS-4(1)/DMS-3(2) Block 1, Rhythm Garden

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).



Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Location of Dust Monitoring	Scale N.T.S Date May-13	Project No. MA13018 Figure 3

CINOTECH



Title	Scale	Proposal
MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Organisation Chart and Key Contact of the Project	N.T.S	No. MA13018
	Date Jan 2017	Figure 4

CINOTECH

APPENDIX A
TENTATIVE CONSTRUCTION PROGRAMME

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
MTRC SCL 1107 DIH to KAT Tunnels 3 M		119	01-Feb-17	20-Jun-17	01-Dec-16	20-Jun-17	01-Dec-16 A	20-Jun-17
Shedule of Completion Obligation & Ot		5	26-Mar-17	31-Mar-17	26-Mar-17	31-Mar-17	26-Mar-17	31-Mar-17
Schedule of Milestone Dates - Cost Centre A		0	26-Mar-17	26-Mar-17	26-Mar-17	26-Mar-17	26-Mar-17	26-Mar-17
1107.MS10300	A15 Engineer's confirmation of satisfactory implementation of Programming Management System	0		26-Mar-17		26-Mar-17		26-Mar-17*
Schedule of Vacate Dates for Works Areas		0	31-Mar-17	31-Mar-17	31-Mar-17	31-Mar-17	31-Mar-17	31-Mar-17
1107.HD11120	Vacate Date for 1107.W7	0		31-Mar-17		31-Mar-17		31-Mar-17*
Cost Centre A - Preliminaries		119	01-Feb-17	20-Jun-17	23-Jan-17	20-Jun-17	23-Jan-17 A	20-Jun-17
As Built Drawings & O&M Manuals		114	01-Feb-17	20-Jun-17	31-Jan-17	20-Jun-17	31-Jan-17 A	20-Jun-17
1107.12582	Review of O&M & As Built Drawings	36	01-Feb-17	13-Mar-17	31-Jan-17	13-Mar-17	31-Jan-17 A	13-Mar-17
1107.12590	Revision & Resubmission for Approval of O&M & As Built drawings	78	14-Mar-17	20-Jun-17	14-Mar-17	20-Jun-17	14-Mar-17	20-Jun-17
Project Audit		118	01-Feb-17	19-Jun-17	23-Jan-17	19-Jun-17	23-Jan-17 A	19-Jun-17
1107.12560	4th Audit of programming management system	48	01-Feb-17	21-Mar-17	23-Jan-17	21-Mar-17	23-Jan-17 A	21-Mar-17
1107.12570	5th Audit of safety & environmental plans	24	22-May-17	19-Jun-17	22-May-17	19-Jun-17	22-May-17*	19-Jun-17
Site Enabling Works		101	09-Feb-17	14-Jun-17	09-Feb-17	14-Jun-17	09-Feb-17 A	14-Jun-17
Site Setup		101	09-Feb-17	14-Jun-17	09-Feb-17	14-Jun-17	09-Feb-17 A	14-Jun-17
Misc Items		101	09-Feb-17	14-Jun-17	09-Feb-17	14-Jun-17	09-Feb-17 A	14-Jun-17
1107.19100b	Provision of Site General Staff (Drivers, Amahs, etc) - 09Feb17 to 25Feb17	15	09-Feb-17	25-Feb-17	09-Feb-17	25-Feb-17	09-Feb-17 A	25-Feb-17 A
1107.19100c	Provision of Site General Staff (Drivers, Amahs, etc) - 27Feb17 to 15Mar17	15	27-Feb-17	15-Mar-17	27-Feb-17	15-Mar-17	27-Feb-17 A	15-Mar-17
1107.19100d	Provision of Site General Staff (Drivers, Amahs, etc) - 16Mar17 to 31Mar17	14	16-Mar-17	31-Mar-17	16-Mar-17	31-Mar-17	16-Mar-17	31-Mar-17
1107.19110	Provision of Site General Staff (Drivers, Amahs, etc) - 01Apr to 22Apr17	15	01-Apr-17	22-Apr-17	01-Apr-17	22-Apr-17	01-Apr-17	22-Apr-17
1107.191101	Provision of Site General Staff (Drivers, Amahs, etc) - 24Apr17 to 11May17	14	24-Apr-17	11-May-17	24-Apr-17	11-May-17	24-Apr-17	11-May-17
1107.191102	Provision of Site General Staff (Drivers, Amahs, etc) - 12May17 to 27May17	14	12-May-17	27-May-17	12-May-17	27-May-17	12-May-17	27-May-17
1107.191103	Provision of Site General Staff (Drivers, Amahs, etc) - 29May17 to 14Jun17	14	29-May-17	14-Jun-17	29-May-17	14-Jun-17	29-May-17	14-Jun-17
1107.19290b	Provision of Site General Staff (Drivers, Amahs, etc) - 09Feb17 to 25Feb17	15	09-Feb-17	25-Feb-17	09-Feb-17	25-Feb-17	09-Feb-17 A	25-Feb-17 A
1107.19290c	Provision of Site General Staff (Drivers, Amahs, etc) - 27Feb17 to 15Mar17	15	27-Feb-17	15-Mar-17	27-Feb-17	15-Mar-17	27-Feb-17 A	15-Mar-17
1107.19290d	Provision of Site General Staff (Drivers, Amahs, etc) - 16Mar17 to 31Mar17	14	16-Mar-17	31-Mar-17	16-Mar-17	31-Mar-17	16-Mar-17	31-Mar-17
1107.19300	Provision of Site General Labour for Temporary Works - 01Apr17 to 22Apr17	15	01-Apr-17	22-Apr-17	01-Apr-17	22-Apr-17	01-Apr-17	22-Apr-17
1107.193001	Provision of Site General Labour for Temporary Works - 24Apr17 to 11May17	14	24-Apr-17	11-May-17	24-Apr-17	11-May-17	24-Apr-17	11-May-17
1107.193002	Provision of Site General Labour for Temporary Works - 12May17 to 27May17	14	12-May-17	27-May-17	12-May-17	27-May-17	12-May-17	27-May-17
1107.193003	Provision of Site General Labour for Temporary Works - 29May17 to 14Jun17	14	29-May-17	14-Jun-17	29-May-17	14-Jun-17	29-May-17	14-Jun-17
Cost Centre D - KAT Cut & Cover Tunne		18	01-Feb-17	25-Feb-17	01-Dec-16	25-Feb-17	01-Dec-16 A	14-Mar-17
Excavation & C&C Tunnel Structure		18	01-Feb-17	25-Feb-17	01-Dec-16	25-Feb-17	01-Dec-16 A	14-Mar-17
Launch Shaft (DN Track) - Post TBM Works		18	01-Feb-17	25-Feb-17	01-Dec-16	25-Feb-17	01-Dec-16 A	14-Mar-17
1107.16370	Demolish Top 2m of Temp D-Walls	18	01-Feb-17	18-Feb-17	01-Dec-16	21-Dec-16	01-Dec-16 A	07-Mar-17
1107.16380	Backfill to Original Ground Level	6	20-Feb-17	25-Feb-17	20-Feb-17	25-Feb-17	08-Mar-17	14-Mar-17
Cost Centre F4 - Landscaping		6	27-Feb-17	04-Mar-17	27-Feb-17	04-Mar-17	15-Mar-17	21-Mar-17
1107.17760	Hydroseeding	6	27-Feb-17	04-Mar-17	27-Feb-17	04-Mar-17	15-Mar-17	21-Mar-17

Data Date 01-Mar-17

Page 1 of 1

SCL1107 M-3MR-048

Printed 28-Feb-1716:13

MTRC SCL 1107 DIH to KAT Tunnels 3 Month Rolling Programme 048 with Phase1 DRM

Data Date 01-Mar-17

Date	Revision	Checked	Approved
See 2nd Col	0	KCL	KCL

Master Prog Baseline Bar ◆ ◆ Milestone

Last Month Forecast Bar ▼ ▼ Summary

Actual Work

Remaining Work

Critical Remaining Work

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, µg/m^3	Limit Level, µg/m^3
DMS-4[(1)(3)]/ DMS-3[(2)(3)]	Block 1, Rhythm Garden	160.4	260

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) Dust monitoring on DMS-3[(1)]/DMS-4[(2)] is carried out by Environmental Team of SCL Works Contract 1106.

Construction Noise

Regular Construction Noise Monitoring Location[(1)]	Description	Time Period	Action Level	Limit Level
NMS-CA-4[(1)(5)]/ NMS-CA-3[(2)(5)]	Block 1, Rhythm Garden (north-eastern façade)	0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)
NMS-CA-5 [(1) (3)(5)]/ NMS-CA-2[(2)(3)(5)]	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A) [(4)]

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 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.
(4) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.
(5) Noise monitoring on Block 1, Rhythm Garden are carried out by Environmental Team of SCL Works Contract 1106.

APPENDIX C
CALIBRATION CERTIFICATES FOR MONITORING EQUIPEMENT

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0024

Station: DMS-4 - Rhythm Garden, Block 1 Operator: WK

Date: 18-Jan-17 Next Due Date: 17-Mar-17

Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	291.4	Pressure, Pa (mmHg)	769.9

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.50	59.33	7.9	2.86
2	9.8	3.19	54.14	6.4	2.57
3	7.5	2.79	47.47	5.0	2.28
4	5.4	2.37	40.41	3.4	1.88
5	3.4	1.88	32.24	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0500 **Intercept, bw =** -0.1164

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.99**

Remarks:

Conducted by: WK Tang Signature: Kwai Date: 18/1/17

Checked by: LH Signature: Date: 18 January 2017

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0025

Station: DMS-4 - Rhythm Garden, Block 1 Operator: WK

Date: 17-Mar-17 Next Due Date: 16-May-17

Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	290.5	Pressure, Pa (mmHg)	766.7

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	27-Feb-18	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.49	61.33	7.8	2.84
2	9.5	3.14	55.12	6.4	2.57
3	7.8	2.84	50.02	5.1	2.30
4	5.2	2.32	41.00	3.3	1.85
5	3.3	1.85	32.83	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0476 **Intercept, bw :** -0.0736

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.76**

Remarks:

Conducted by: WK Tang Signature: Kwon Date: 17/3/17

Checked by: Signature: Date: 17 March 2017

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
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513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

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

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

TISCH Environmental

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513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 0993 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3860	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8840	7.9	5.00
4	NA	NA	1.00	0.8430	8.7	5.50
5	NA	NA	1.00	0.6970	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149		0.9957	0.7184	0.8851
0.9925	1.0015	2.0010		0.9915	1.0005	1.2517
0.9904	1.1204	2.2372		0.9894	1.1192	1.3995
0.9894	1.1737	2.3464		0.9884	1.1725	1.4678
0.9842	1.4120	2.8299		0.9832	1.4106	1.7702
Qstd slope (m) =		2.04055		Qa slope (m) =		1.27776
intercept (b) =		-0.04890		intercept (b) =		-0.03059
coefficient (r) =		0.99995		coefficient (r) =		0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

WELLAB 匯力 Testing & Research

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Rms 816, 1516 & 1701, Technology Park,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/160826A
Date of Issue:	2016-08-29
Date Received:	2016-08-26
Date Tested:	2016-08-26
Date Completed:	2016-08-29
Next Due Date:	2017-08-28
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 57%

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

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160819B
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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 Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160819C
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21

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.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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.**

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/161128
Date of Issue:	2016-11-30
Date Received:	2016-11-28
Date Tested:	2016-11-28
Date Completed:	2016-11-30
Next Due Date:	2017-11-29

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.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 66%

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.**

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160930B
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/160930C
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

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
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/161104/1
Date of Issue:	2016-11-07
Date Received:	2016-11-04
Date Tested:	2016-11-04
Date Completed:	2016-11-07
Next Due Date:	2017-11-06
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Equipment No.	: N-02-01

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 62 %

Methodology:

The sound 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
PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/160819D
Date of Issue:	2016-08-22
Date Received:	2016-08-19
Date Tested:	2016-08-19
Date Completed:	2016-08-22
Next Due Date:	2017-08-21
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

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

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Impact Air Quality and Noise Monitoring Schedule for March 2017

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Tentative Impact Air Quality and Noise Monitoring Schedule for April 2017

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

APPENDIX E
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONIS

Appendix E - 24-hour TSP Monitoring Results

Location DMS-4(1)/DMS-3(2) - Rhythm Garden, Block 1

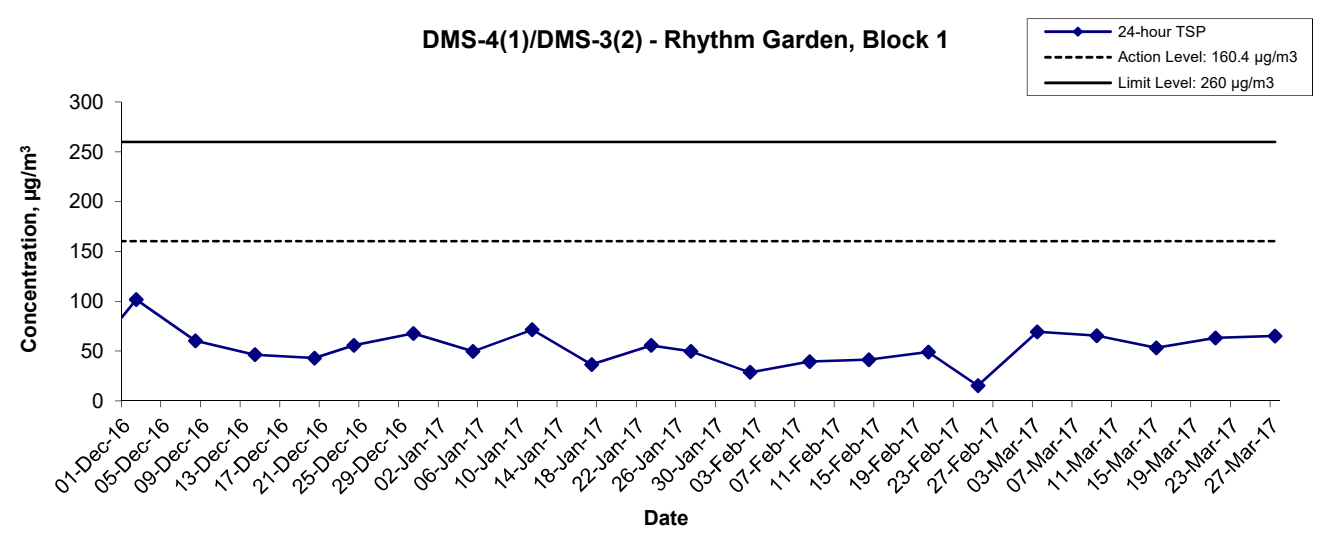
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
					Initial	Final		Initial	Final		Initial	Final			
03-Mar-17	09:00	Cloudy	289.3	767.0	3.5957	3.7176	0.1219	7030.5	7054.5	24.0	1.22	1.22	1.22	1756.9	69.4
09-Mar-17	09:00	Cloudy	289.1	766.0	3.6124	3.7273	0.1149	7054.5	7078.5	24.0	1.22	1.22	1.22	1756.3	65.4
15-Mar-17	09:00	Cloudy	289.5	768.3	3.5737	3.6675	0.0938	7078.5	7102.5	24.0	1.22	1.22	1.22	1757.7	53.4
21-Mar-17	09:00	Cloudy	294.4	765.0	3.6180	3.7288	0.1108	7102.5	7126.5	24.0	1.21	1.21	1.21	1747.6	63.4
27-Mar-17	09:00	Cloudy	292.3	771.1	3.6022	3.7171	0.1149	7126.5	7150.5	24.0	1.22	1.22	1.22	1760.3	65.3
														Min	53.4
														Max	69.4
														Average	63.4

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).

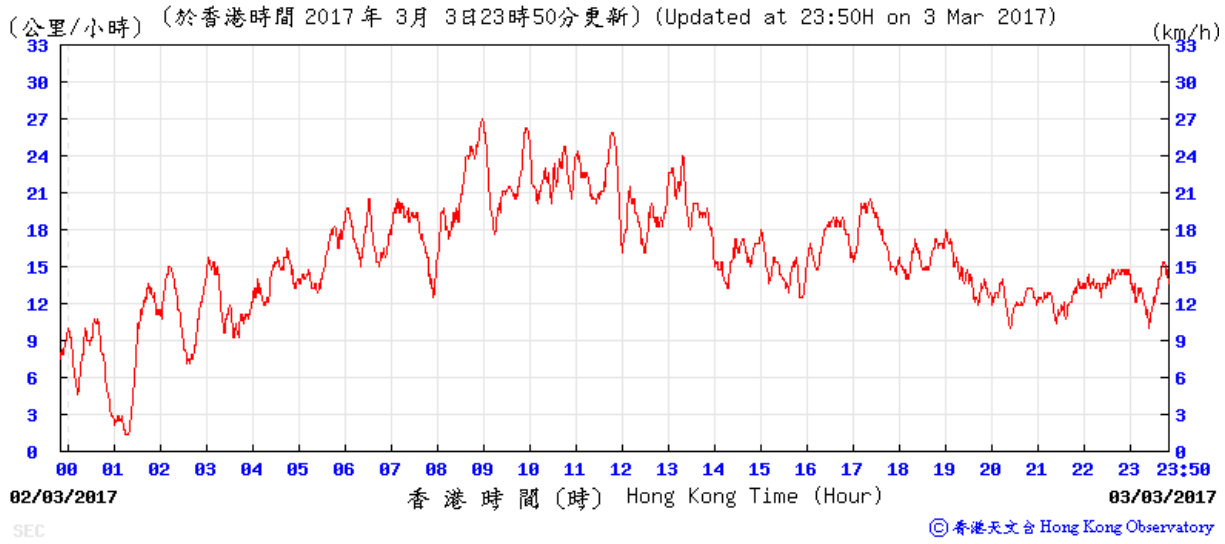
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

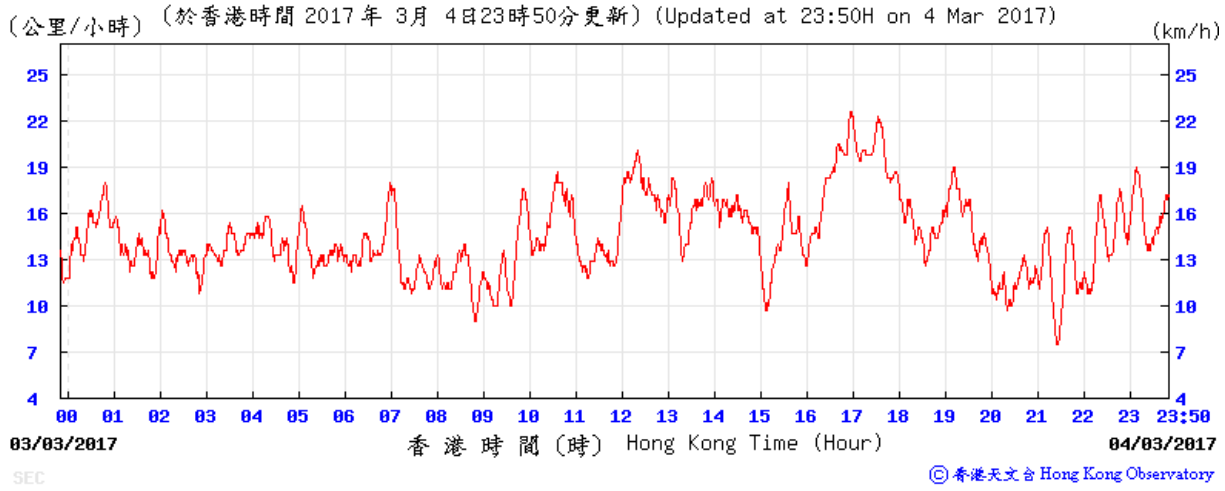
(3) 24 hours TSP concentration level of DMS-3 from July to September 2016 were extracted from the Project 1103.

Title: Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA13018	CINOTECH
	Date: Mar-17	Appendix: E	

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

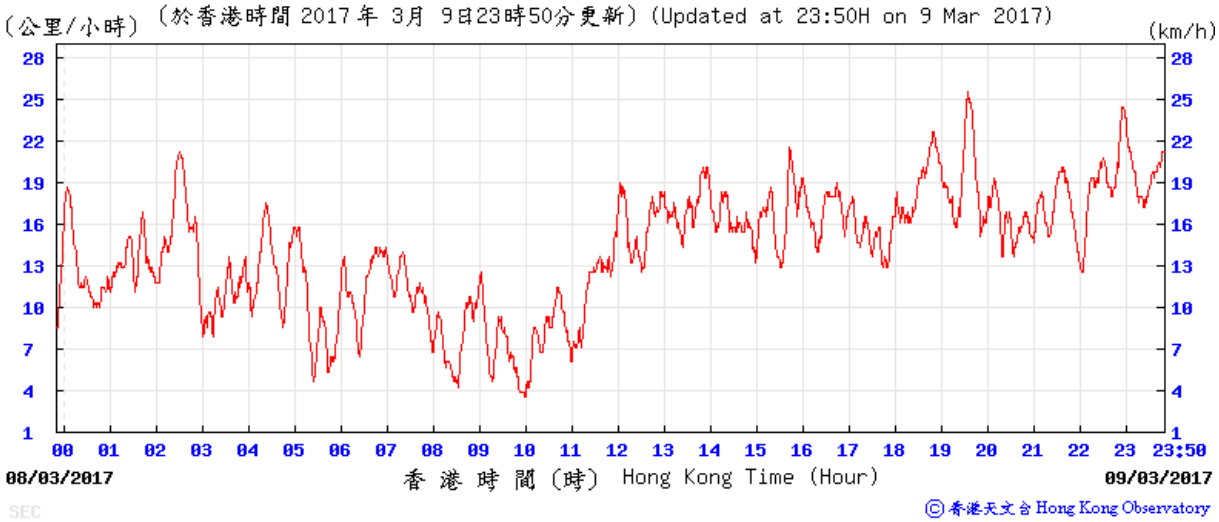
3-4 March 2017

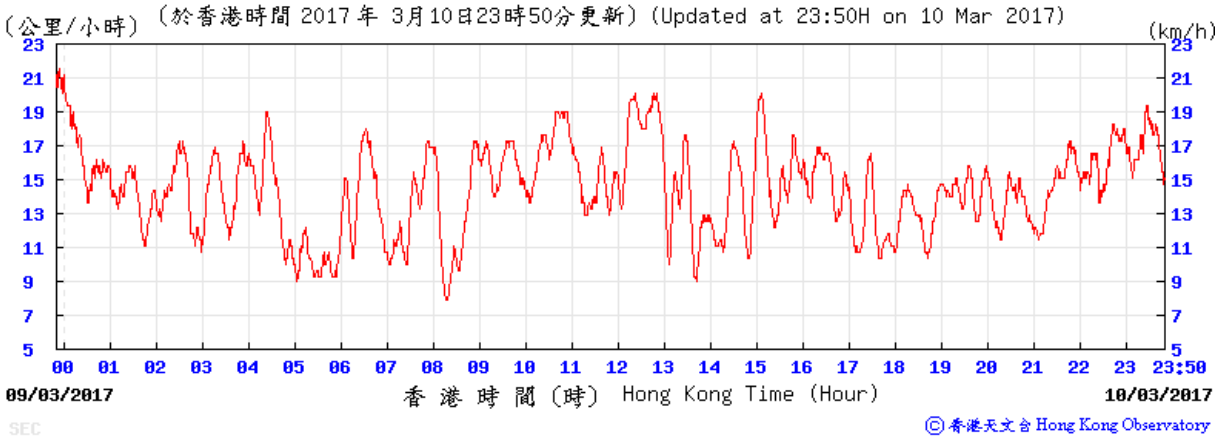




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

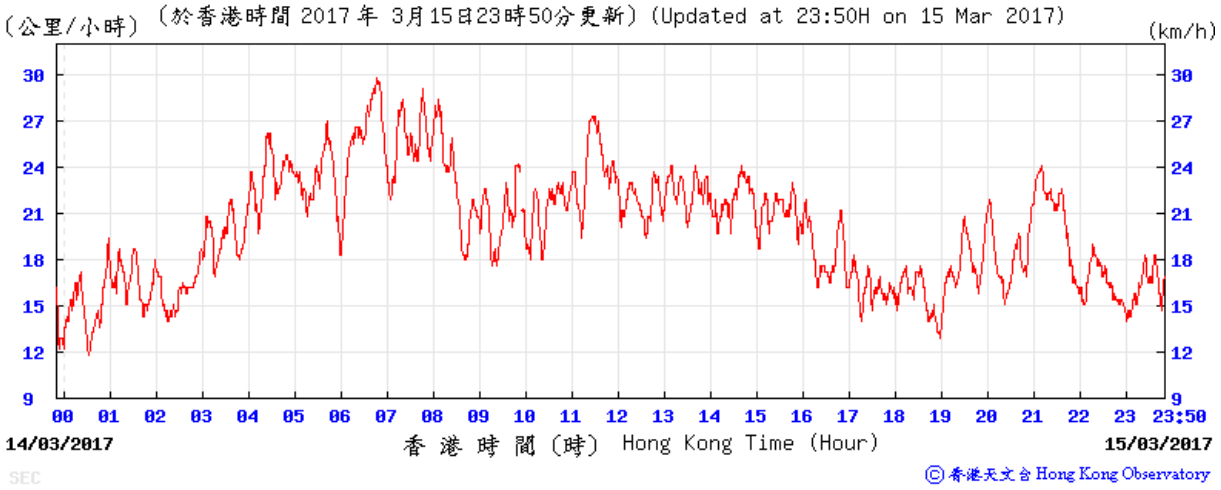
9-10 March 2017

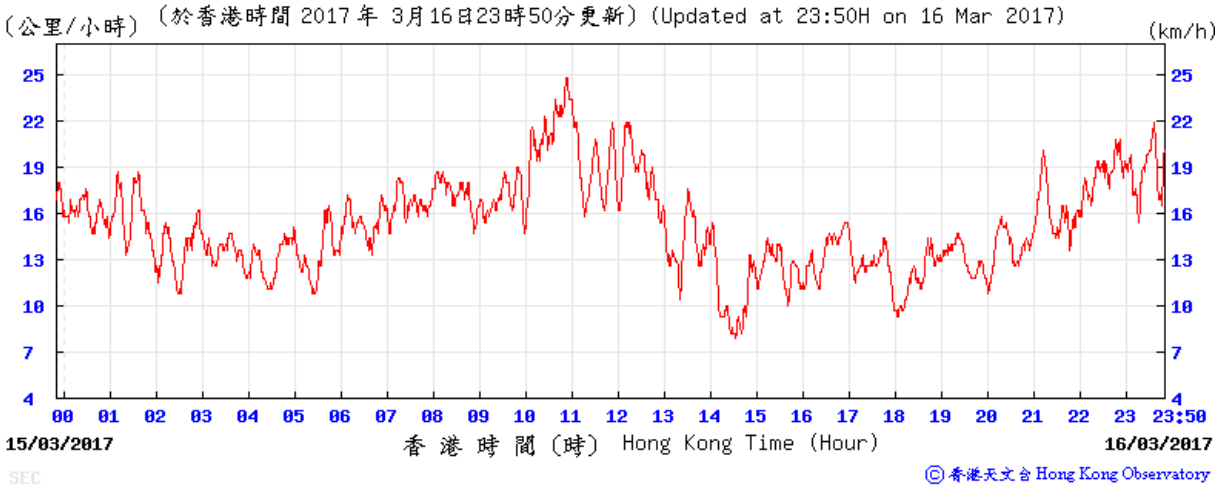




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

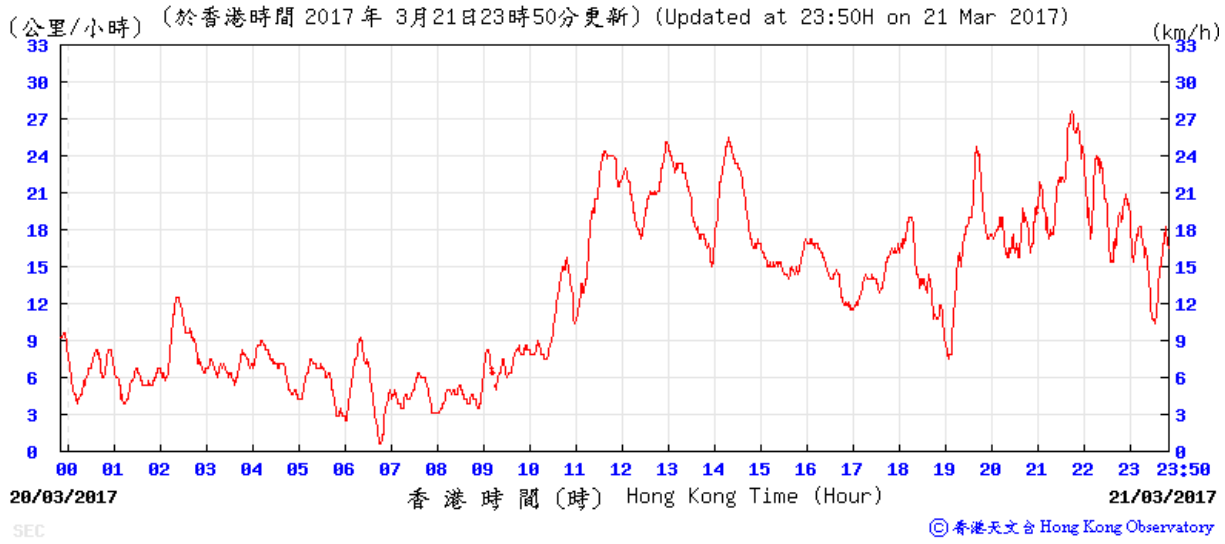
15-16 March 2017

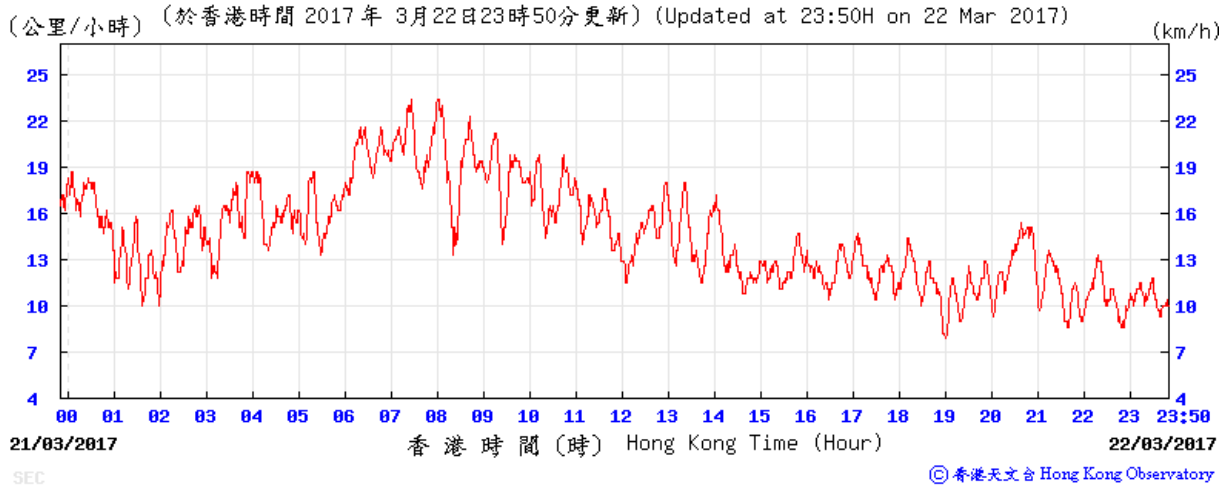




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

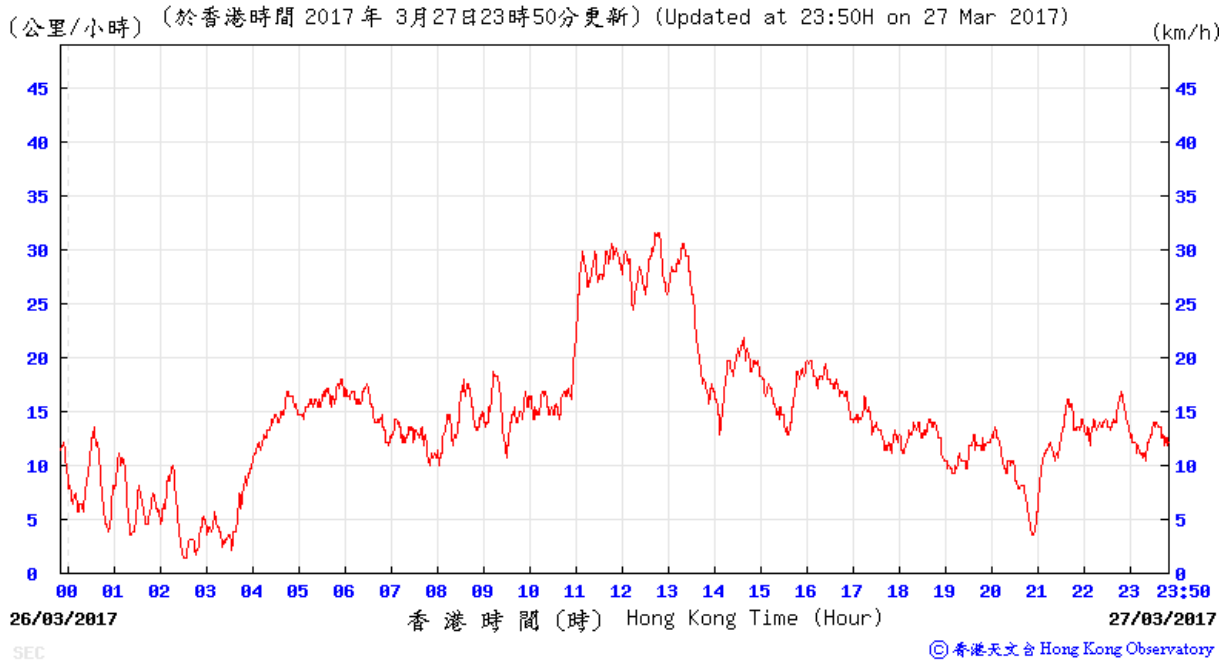
21-22 March 2017

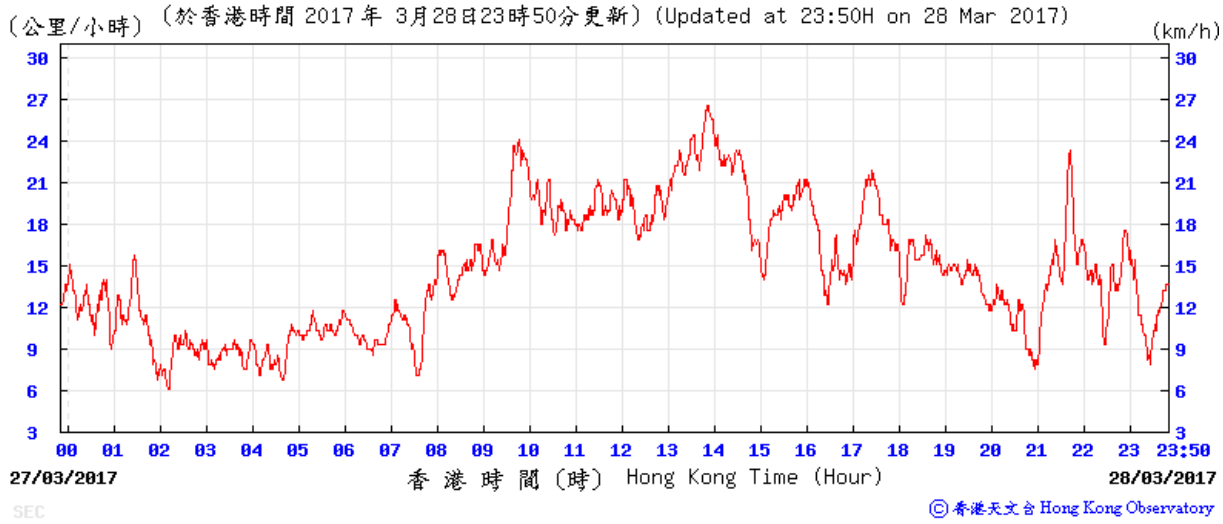




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

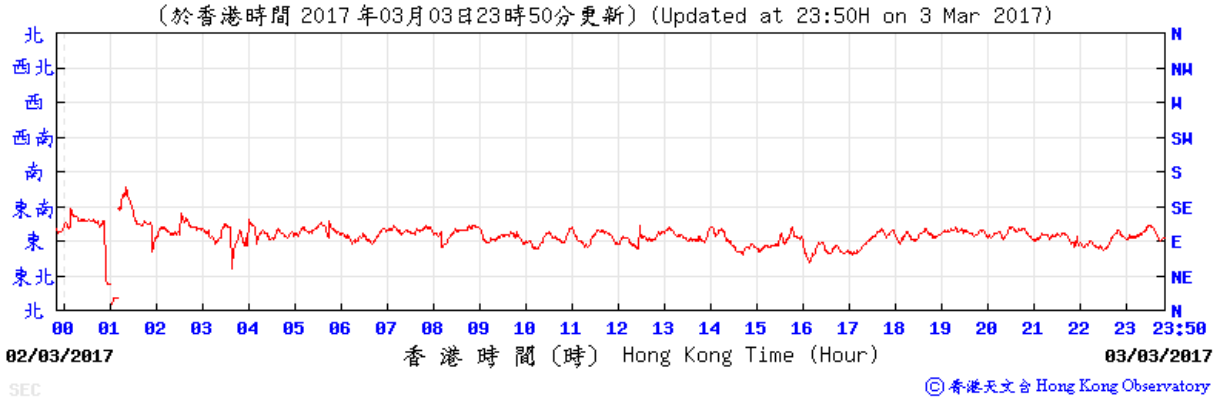
27-28 March2017

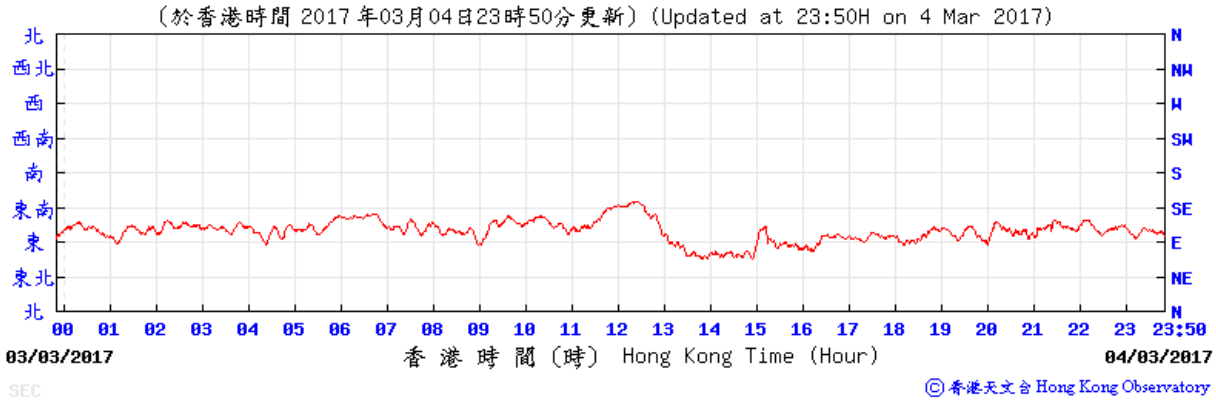




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

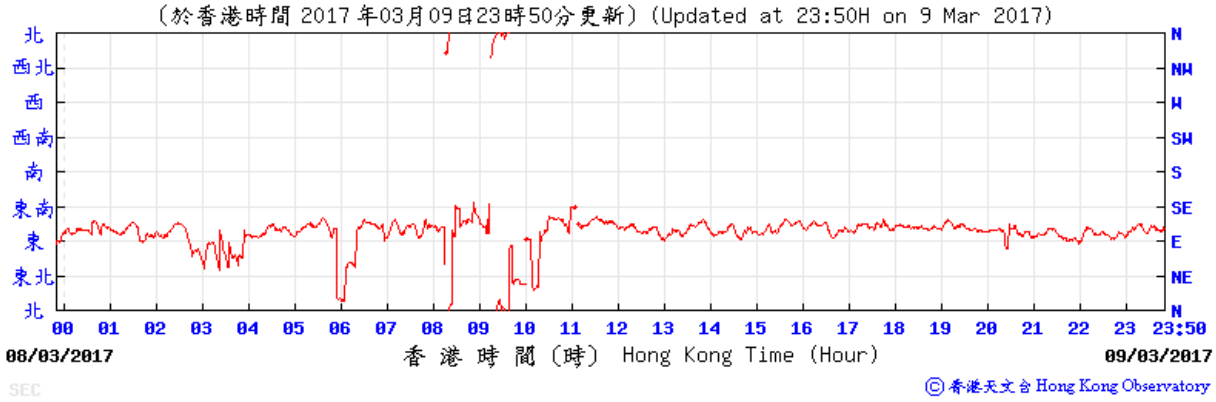
3-4 March 2017

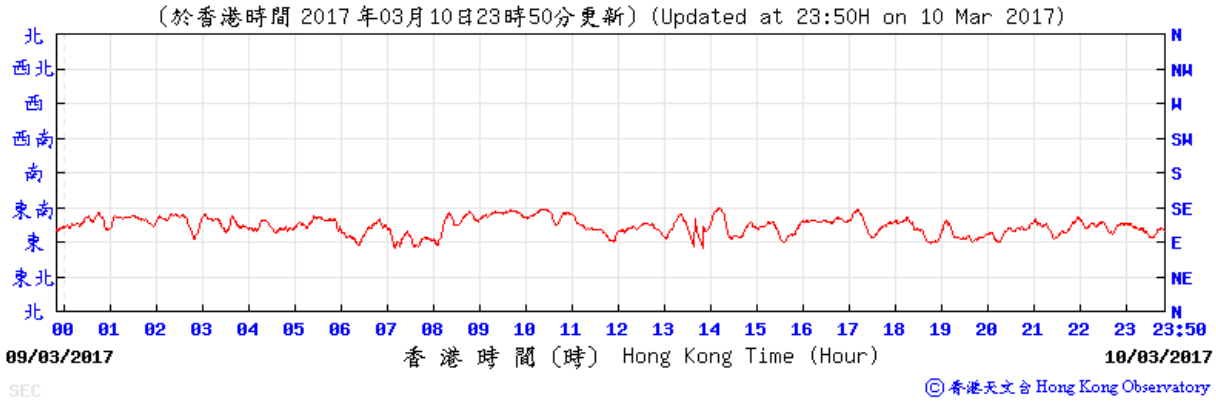




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

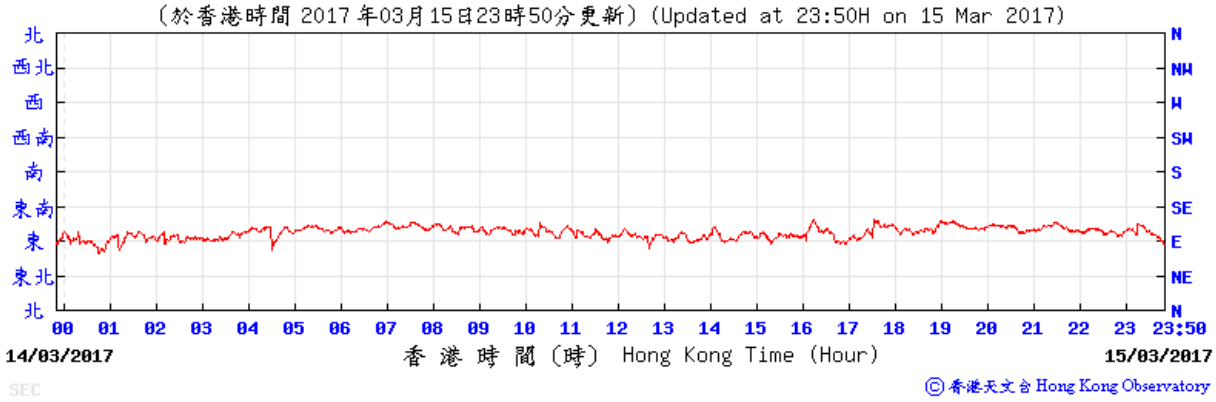
9-10 March 2017

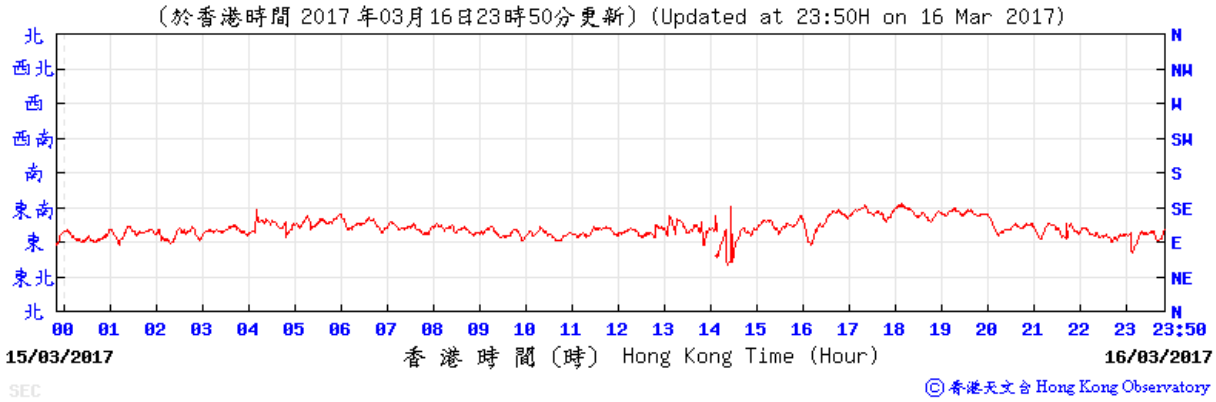




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

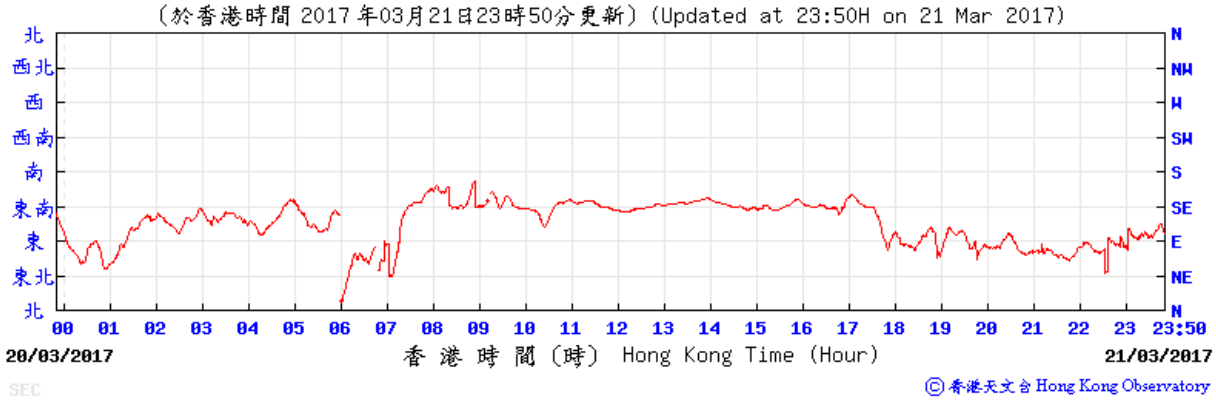
15-16 March 2017

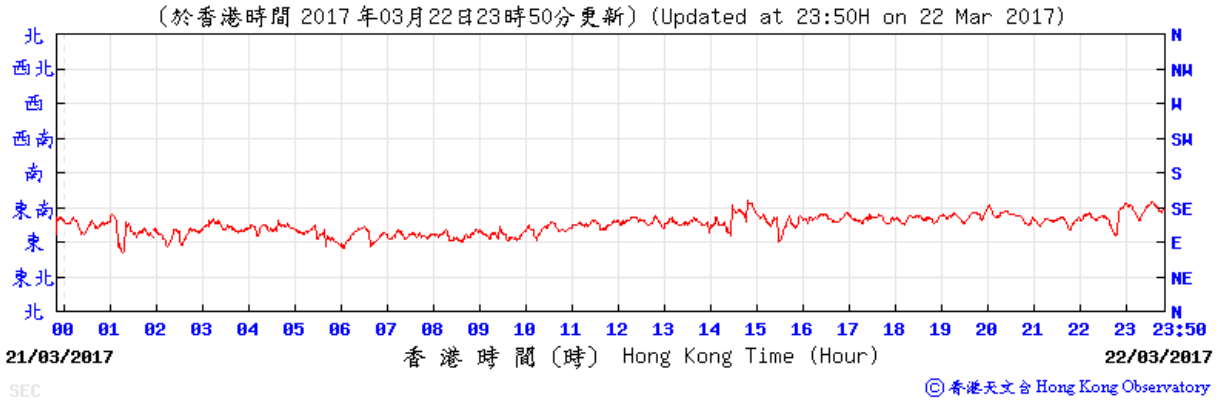




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

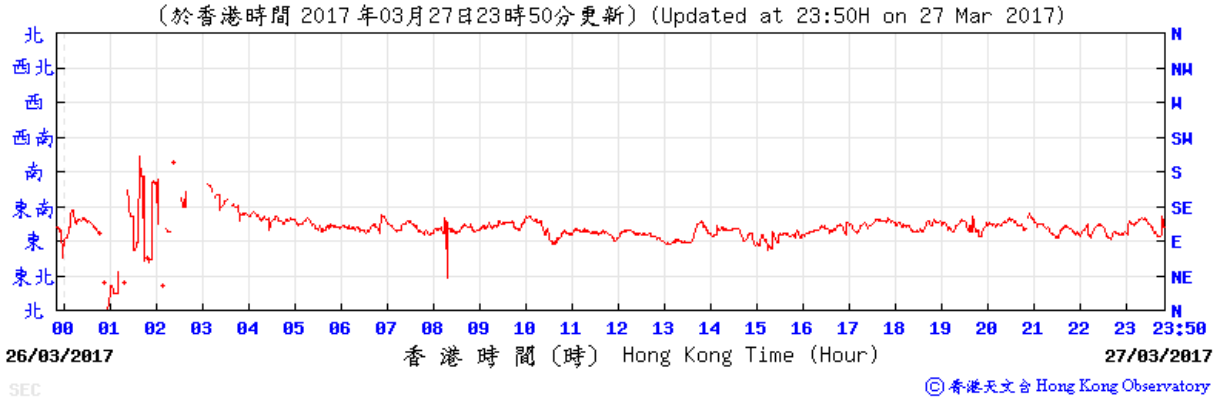
21-22 March 2017

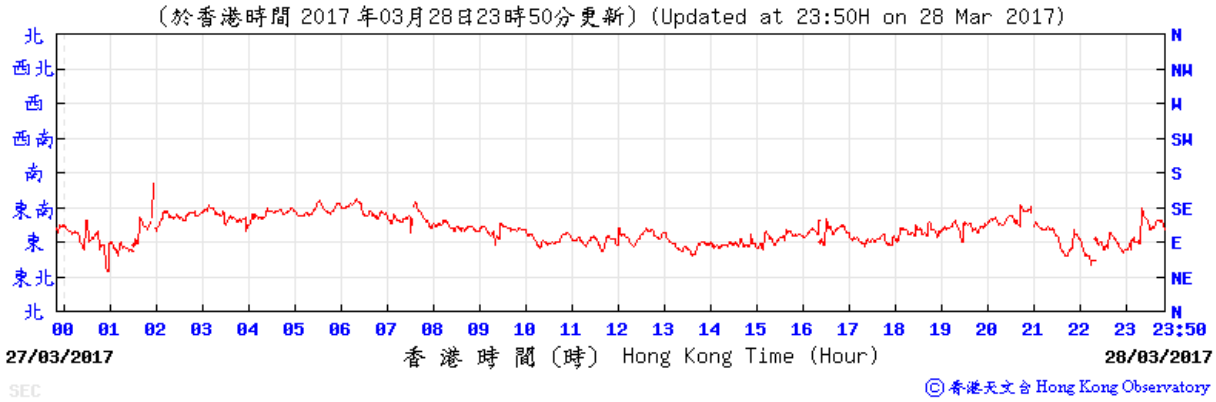




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

27-28 March 2017





APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

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_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-Mar-17	Cloudy	09:45	66.4	67.2	63.1	66.4	71	66.4 Measured ≦ Baseline Level
		09:50	66.3	67.1	63.1			
		09:55	66.4	67.1	63.2			
		10:00	66.5	67.3	63.2			
		10:05	66.5	67.3	63.2			
		10:10	66.4	67.3	63.1			
16-Mar-17	Cloudy	09:00	71.4	73.6	70.0	72.6		67.5
		09:05	72.7	73.4	71.8			
		09:10	72.7	73.4	71.6			
		09:15	73.5	74.1	72.5			
		09:20	73.0	74.1	72.5			
		09:25	72.0	73.1	71.4			
22-Mar-17	Cloudy	10:35	72.8	74.7	70.6	73.0		68.7
		10:40	73.2	75.4	70.9			
		10:45	74.0	73.6	72.0			
		10:50	72.6	73.7	71.4			
		10:55	72.6	73.7	71.4			
		11:00	72.7	73.7	71.5			
28-Mar-17	Sunny	13:00	72.8	75.1	70.3	72.6		67.5
		13:05	72.6	75.0	70.1			
		13:10	72.5	74.8	71.1			
		13:15	72.7	75.1	70.7			
		13:20	72.6	76.3	70.4			
		13:25	72.4	75.0	70.3			

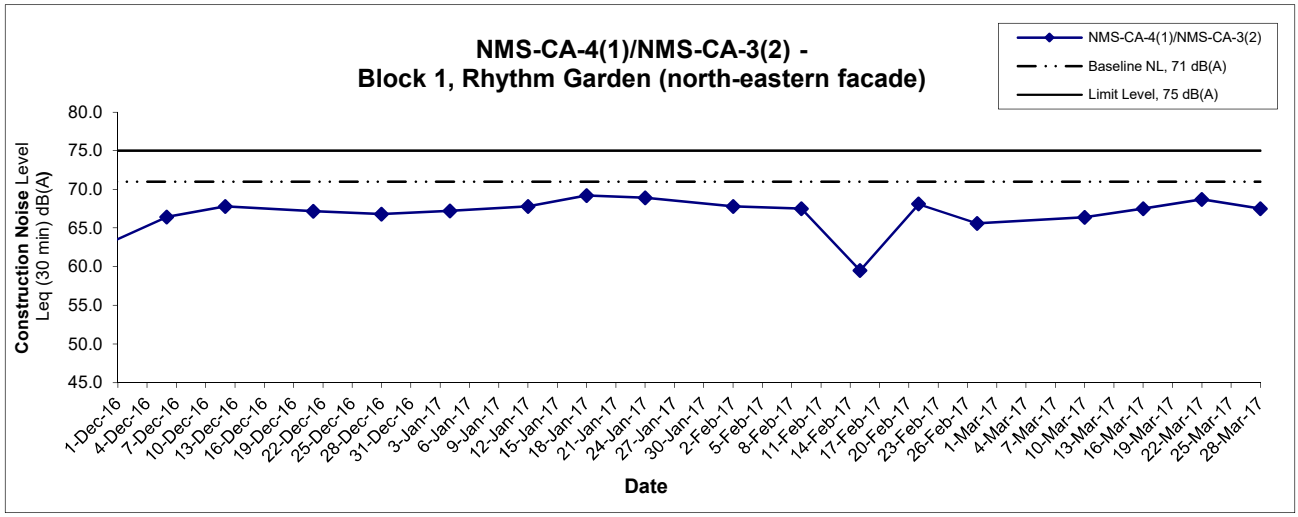
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

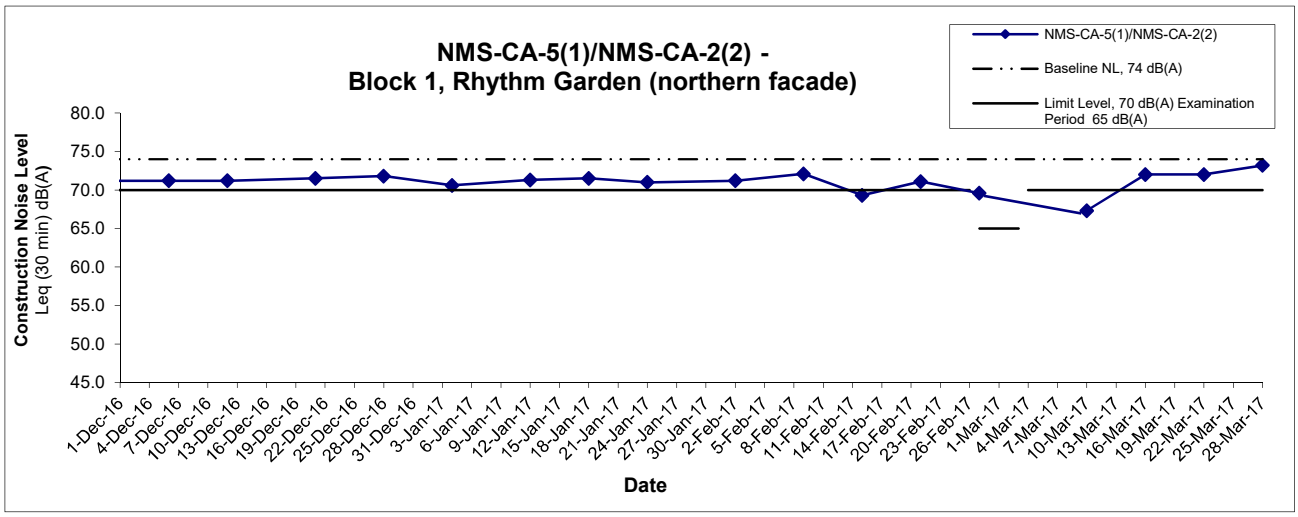
Appendix F - Noise Monitoring Results

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_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-Mar-17	Cloudy	10:30	67.1	67.9	63.9	67.3	74	67.3 Measured ≦ Baseline Level
		10:35	67.2	67.9	63.9			
		10:40	67.3	67.9	63.8			
		10:45	67.3	67.8	63.8			
		10:50	67.3	67.9	63.9			
		10:55	67.3	68.0	64.0			
16-Mar-17	Cloudy	10:00	71.5	72.6	70.0	72.0		72.0 Measured ≦ Baseline Level
		10:05	71.7	72.8	70.4			
		10:10	72.3	73.4	70.9			
		10:15	71.9	73.2	70.3			
		10:20	72.3	73.4	70.7			
		10:25	72.0	74.1	70.1			
22-Mar-17	Cloudy	10:00	72.3	73.8	70.7	72.0		72.0 Measured ≦ Baseline Level
		10:05	72.5	73.8	71.0			
		10:10	71.9	72.9	70.7			
		10:15	71.9	73.0	70.6			
		10:20	71.4	72.5	70.2			
		10:25	72.1	73.4	71.1			
28-Mar-17	Sunny	13:45	73.4	76.1	70.2	73.2		73.2 Measured ≦ Baseline Level
		13:50	73.2	75.8	70.4			
		13:55	73.1	75.7	70.5			
		14:00	73.2	75.7	70.4			
		14:05	72.8	75.1	70.3			
		14:10	73.2	74.7	70.1			

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).

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 ≦ Baseline Level, only Measured Level is presented on the graphical presentation.

Title: Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13018 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: March 2017

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

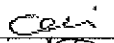
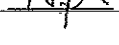
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170302
Date	2 March 2017
Time	09:00-09:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality***	
170302-R01	• Haul roads should be sprayed with water regularly for dust suppression.	D 5
	Part E – Construction Noise Impact • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management***	
170302-O01	• Drip tray should be provide to the oil drum.	F 9&10
	Part G - Permit / Licenses • No environmental deficiency was identified during the site inspection. ***Part H – Others*** • Follow-up action on previous audit section (Ref. No.: 170223), all environmental deficiencies were observed to be rectified/improved by the Contractor.	

	Name	Signature	Date
Recorded by	Cecilia Yang		2 March 2017
Checked by	Dr. Priscilla Choy		2 March 2017

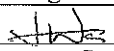
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170309
Date	9 March 2017
Time	09:00-10:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H – Others*** • Follow-up action on previous audit section (Ref. No.: 170302), all environmental deficiencies were observed to be rectified/improved by the Contractor.	

	Name	Signature	Date
Recorded by	Janet Wai		9 March 2017
Checked by	Dr. Priscilla Choy		9 March 2017

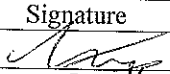
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170316
Date	16 March 2017
Time	11:00-11:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170316-R01	***Part B - Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • To wrap the breaker with acoustic material to minimize the noise generation during operation. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H – Others*** • Follow-up action on previous audit section (Ref. No.: 170309), all environmental deficiencies were observed to be rectified/improved by the Contractor.	E 5

	Name	Signature	Date
Recorded by	Benjamin Wong		16 March 2017
Checked by	Dr. Priscilla Choy		16 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170323
Date	23 March 2017
Time	09:00-09:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H – Others*** • Follow-up action on previous audit section (Ref. No.: 170316), all environmental deficiencies were observed to be rectified/improved by the Contractor.	

	Name	Signature	Date
Recorded by	Janet Wai		23 March 2017
Checked by	Dr. Priscilla Choy		23 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170330
Date	30 March 2017
Time	09:00-09:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170330-R01	***Part B - Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • The exposed area should be watered sufficiently for dust suppression. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H – Others*** • Follow-up action on previous audit section (Ref. No.: 170323), all environmental deficiencies were observed to be rectified/improved by the Contractor.	D 5

	Name	Signature	Date
Recorded by	Benjamin Wong		30 March 2017
Checked by	Dr. Priscilla Choy		30 March 2017

APPENDIX I
EVENT AND ACTION PLANS

Appendix I - Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 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. 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. 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. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 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, Contractor 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. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source 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 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Appendix I - Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
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 addtional 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 I - Event and Action Plan for Air Quality Monitoring during Construction Phase

LIMIT LEVEL				
1.Exceedance for one sample	1. Inform the IEC, Contractor 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. 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(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.
2.Exceedance for two or more consecutive samples	1. Notify IEC, Contractor and EPD; 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, Contractor 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. Notify the Contractor, IEC and ET; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 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.

Appendix I - Event and Action Plan for Landscape and Visual during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity 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 non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1107 - 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
Landscape & Visual (Construction Phase)								
S6.12	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • 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. <u>No-intrusion Zone</u> • 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. <u>Protection of Retained Trees</u> • 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	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. • 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.						^
Table 6.9	LV2	<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. <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. <u>Tree Transplanting</u> • Trees of medium to high survival rate that 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	Minimize 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	N/A N/A 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		TCW No 3/2006.						
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All 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	^
Construction Dust Impact								
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	• APCO • To control the dust 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	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	*

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
		an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency						
S7.6.6	D3	• 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; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • 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; • 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; • 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	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	^ ^ ^ N/A ^ 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		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; • 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; • 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; • 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; • 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; • Any skip hoist for material transport should be totally enclosed by impervious sheeting;						^ ^ ^ N/A 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• 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; • 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; • 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 • 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.					N/A N/A N/A 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	^
Construction Airborne Noise								
S8.5.6	AN1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant	Control construction airborne	Contractor	All Construction Sites where	Construction stage	• Annex 5, TM-EIA	^

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
		should be serviced regularly during the construction programme; • 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; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	noise		practicable			^ ^ * ^ N/A
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	Screen the noisy plant items to be used at all	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^

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
		plants including air compressor, generators and saw.	construction sites					
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	N/A
S8.5.6	AN5	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	^
S8.5.6	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	^
Water Quality (Construction Phase)								
S10.7.1	W1	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: <u>Construction Runoff and Site Drainage</u> • At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^

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
		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. • 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. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of 30m^3 would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.						^

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
		• 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. • 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. • 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. • 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						^ N/A ^ 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. • Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. 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 • 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 • 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						^ ^ ^ ^

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
		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. • 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. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • 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 • 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.						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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Adopt best management practices.						^
S10.7.1	W2	<u>Tunneling Works</u> • Cut-&-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. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • 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. • 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.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-water • TM-EIAO	^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are	To minimize water quality from sewage effluent	Contractor	All construction sites where	Construction stage	• Water Pollution Control Ordinance	^

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
		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.			practicable		• TM-water	
S10.7.1	W5	Accidental Spillage In order to prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities should be provided; • All the tanks, containers, storage area should be bunded and thelocations should be locked as far as possible from the sensitive watercourse and stormwater drains; • 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 • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	 ^ ^ ^ N/A
Waste Management (Construction Waste)								
S11.4.1.1	WM1	On-site sorting of C&D material • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are	Separation of unsuitable rock from ending up at concrete batching plants	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	^

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
		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.	and be turned into concrete for structural use					
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting;	Good site practice to minimize the waste generation and recycle the C&D materials as far as	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance	^ ^

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
		• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&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	practicable so as to reduce the amount for final disposal				• Waste Disposal Ordinance • ETWB TCW No. 19/2005	^ N/A ^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal	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	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	^

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
		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. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	disposal				• ETWB TCW No.19/2005	^
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	^ ^ ^

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
		accessible. Separate labelled bins for their deposit should be provided if feasible. • 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.						^
S11.5.1	WM6	<u>Chemical Waste</u> • 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. • 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. • 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	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All Construction Sites	Construction Stage	• Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ * ^

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
		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. • 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.						N/A

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

CW - SELI Joint Venture

Name of Department: MTRC

Contract No.:1107

AppendixC1

Monthly Summary Waste Flow Table for 2017

Year	Estimated Quantities of Inert C&D Materials (in '000m^3) (see Note 4)										Estimated Quantities of C&D Wastes									
	Total Quantity Generated		Suitable for Recycled Aggregates		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Metals		Paper/cardboard packaging		Plastics (see Note 3)		Chemical Waste		Others, e.g. general refuse	
	(a)		(b)		(c)		(d)		(e=a-b-c-d)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000litre)		(in '000 tonne)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
January	0.050	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.035	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.005
February	0.050	0.015	0.000	0.000	0.010	0.000	0.000	0.000	0.040	0.015	0.000	0.000	0.100	0.242	0.000	0.000	0.000	0.000	0.100	0.025
March	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.025
April	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.100		0.100	
May	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.000		0.100	
June	0.050		0.000		0.020		0.000		0.030		0.000		0.100		0.000		0.000		0.100	
July	0.050		0.000		0.020		0.000		0.030		0.000		0.100		0.100		0.000		0.100	
August	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.000		0.100	
September	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.000		0.100	
October	0.050		0.000		0.000		0.000		0.050		1.000		0.100		0.000		0.000		0.100	
November	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.100		0.100	
December	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.100		0.000		0.100	
Total	**0.600**	**0.050**	**0.000**	**0.000**	**0.050**	**0.000**	**0.000**	**0.000**	**0.550**	**0.050**	**1.000**	**0.000**	**1.200**	**0.242**	**0.200**	**0.000**	**0.200**	**0.000**	**1.200**	**0.055**

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(3) The quantitles of C&D Materials, in m^3, was calculated by multiply the no. of truck with the volume of truck, which is 5m^3.

APPENDIX L
CUMULATIVE LOG FOR COMPLAINT LOGS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
SCL Contract 1107's Construction Site near Shaft A/ Construction Noise	14-29958	A resident living in Kai Ching Estate/ 8 December 2014	A resident of Kai Ching Estate complained about an incident of construction noise disturbance generated from operation of equipment, at the area adjacent to Shaft A in the night.	The Contractor had taken the following mitigation measures: • Hoardings and noise absorption blankets were erected along the site boundary to shield residents of Kai Ching Estate from noisy works during the time of the complaint; • The equipment involved in this complaint: the water pump, was removed immediately after the complaint was received to reduce noise nuisance to nearby noise sensitive receivers; • The low area near shaft A enclosure was backfilled to eliminate the flooding issue, thus the need of the water pump;	Closed

SCL Contract 1107's Construction Site near Site Entrance/ Construction Noise and Dust	14-31154	A resident living in Kai Ching Estate/ 15 December 2014	A resident of Kai Ching Estate complained about the noise disturbance generated from some sort of alarm noise at night from the construction site entrance; and dust nuisance from the construction site in general.	The alarm bell was installed to alert pedestrians of moving vehicles. During the time of complaint, vehicles might had moved in or out of the site, thus triggering the alarm. To avoid the same incident from happening again, the Contractor has agreed to permanently terminate the alarm bell. The Contractor has provided sufficient measures to minimize the smoke and dust emission. These measures include: • Covering stockpile of bagged cements and other dusty material with impervious material. • Regularly conducting water spray on work sites and major haul road. • Washing every vehicle leaving the construction site. The 24-hr TSP level monitoring conducted in December showed that the dust levels at Block 1, Rhythm Garden were under the Action and Limit Levels.	Closed

SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-04622	N/A / 12 March 2015	A public complaint about noise and dust nuisance from the Kai Tak Development Area was received. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	The Contractor had implemented appropriate and sufficient measures to minimise the noise and dust nuisance to adjacent sensitive receivers. The noise mitigation measures include: • Installing noise absorption blankets on the hoarding at the site boundary near Kai Ching Estate; • Erecting acoustic enclosures to seal up the noisy PME and construction works (see Photo 2) in the shaft. The dust mitigation measures include: • Covering of stockpile of bagged cement and other dusty materials to reduce dust generation. • Water spraying stockpile of dusty materials as well as major haul roads and work sites to keep the surface wet. • Washing every vehicle leaving the construction site. • Regular cleaning of the access roads connecting public roads to vehicle washing areas. There was also no non-compliance on construction noise and air quality recorded during the site inspections in March. The construction noise and 24-hr TSP level monitoring conducted in March also showed that the noise and dust levels at the monitoring stations were under the Action and Limit Levels.	Closed

SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-13442	N/A / 9 June 2015	A public complaint about noise and dust nuisance from the Kai Tak Development Area was received. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	Investigation conducted by the Contract ET and the results showed that sufficient mitigation measures were provided by the Contractor to minimize the noise and dust nuisance to adjacent sensitive receivers. The noise mitigation measures include: • Noise absorption blankets were installed on the hoarding at the site boundary near Kai Ching Estate; • Acoustic enclosures were erected to seal up the noisy PME and construction works in the shaft; • The formwork erection was conducted inside the shaft which shield off the noisy operation. The dust mitigation measures include: • The stockpiles of dusty materials were covered by dust protective screens to reduce dust generation. Uncovered parts of the stockpile were provided with water spray to keep the dusty surface wet to reduce dust emission during stockpiling/backfilling work. • Watering on work sites and major haul roads was implemented regularly as stipulated in the Air Pollution Control Regulation and the Environmental Permit. Watering record is kept at the site entrance for easy inspection; • Vehicle movements were confined to designated haul roads. Automatic sprinkler system was installed at major haul roads to provide regular water spraying to reduce dust emission from vehicle movements;	Closed

				• Hoarding was provided along the entire length of the site boundary and beside roads or areas with public access; • Wheel washing facilities was provided at all vehicle exits and vehicle washing was provided for vehicles leaving the site. Access road leading to and exiting from vehicle washing areas were kept clean to ensure the public roads around site entrances were free from dust; The construction noise and 24-hr TSP level monitoring conducted in May 2015 also showed that the noise and dust levels at the monitoring stations were under the Action and Limit Levels.	
SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-12472	N/A / 30 June 2015	A public complaint about dust nuisance and muddy water discharge in the Kai Tak Development Area. Complainant alleged that uncovered dusty materials were found in Kai Tak development area and muddy water was found discharged into Kai Tak nullah. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	Investigation was conducted by the Contract ET. According to investigation results, the coverage for the stockpile was removed during the backfilling works, while the other parts of the stockpile were covered by dust protective screen. Mitigation measures including providing water spray and installation of waster sprinkler were implemented to keep the uncovered part wet during backfilling. The stockpile was completely covered after work. Wastewater was treated by sedimentation tanks with sufficient retention time before discharge into Kai Tak Nullah. All drainage facilities and erosion and sediment control structures were regularly inspected and maintained to ensure normal operation at	Closed

				all times and during rainstorms. Water sampling was conducted monthly in accordance with the requirement of Effluent Discharge License (License No. WT00015861-2013). The lab test results complied with the conditions set in the Effluent Discharge License during the complaint period.	
SCL Contract 1107's Construction Site/ Construction Dust	16-29816	N/A / 16 November 2016	A public complaint about the construction dust from the construction work which would be affecting the complainant health. The complaint was referred to the Contractor of SCL Contract 1107.	Investigation conducted by the Contract ET and the results showed that sufficient mitigation measures were provided by the Contractor to minimize the dust nuisance to adjacent sensitive receivers. The dust mitigation measures include: • Inactive parts of stockpiles were covered by dust protective screens to minimize potential dust generation. Uncovered parts of the stockpile was compacted and kept wet to reduce dust emission during stockpiling/backfilling work; • Watering on work sites and major haul roads was implemented at least once per hour. Watering record is kept on site for ease of inspection; • Automatic sprinkler system was installed at major haul roads to provide regular water spraying to reduce dust emission from vehicle movements; • Wheel washing facilities was provided at all vehicle exits and site vehicle was fully washed before leaving site. Access road leading to	Closed

				and exiting from vehicle washing areas were kept clean to ensure the public roads around site entrances were free from dust; The 24-hr TSP level monitoring conducted in November 2016 also showed that the dust levels at the monitoring station were under the Action and Limit Levels.	

Cumulative Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
--	--	--	--	--	--

Appendix F

46th 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 March 2017]

(April 2017)

Certified by: Vivian Chan

Position: Environmental Team Leader

Date: 10 April 2017

Member of the Surbana Jurong Group

46th Monthly EM&A Report for March 2017

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

April 2017

AUSTRALIA | ASIA | MIDDLE EAST | AFRICA | PACIFIC

Project/Deliverable No.	7076187 | D106/01 – Revision No. 1
Project Name	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Report Name	46th Monthly EM&A Report for March 2017
Report Date	April 2017
Report for	Leighton Contractors (Asia) Limited

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	April 2017	Joanne PONG	Vivian CHAN	Alexi BHANJA
2.0 (Final)	April 2017	Joanne PONG	Vivian CHAN	Alexi BHANJA

ISSUE REGISTER

Distribution List	Date Issued	Number of Copies
Leighton Contractors (Asia) Limited	April 2017	1 soft copy
MTR Corporation Limited	April 2017	1 soft copy
SMEC Project File:		1 electronic

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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 46th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2017 in accordance with the EM&A manual.

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

- Building services works at SAT
- EVA Roadworks at SAT
- Trough Structure along Track at SAT
- Temporary works of bulkhead door adjacent to existing West Rail Stub Tunnel at SAT
- Construction of tunnel structure at HUH, NAT
- Construction of structure above ground at HUH
- Platform ABWF and E&M works at HUH
- Utility works at NAT
- Noise Barrier Steel Structure Erection
- 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 8 and 22 March 2017. 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 27 March 2017. 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, 688,720 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 890m^3 inert construction and demolition (C&D) materials were generated from the Project, 890 m^3 was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. 490 m^3 of paper/cardboard packaging was recycled and no metals were recycled. No asphalt was recycled and 310 m^3 of plastic was recycled from the Project.

Environmental Auditing

A total of 5 weekly environmental site audits were conducted on 2, 9, 16, 23 and 30 March 2017. The IEC site audit was undertaken on 15 March 2017.

Complaint, Notification of Summons and Successful Prosecution

One environmental complaint regarding general construction 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 services works at SAT
- EVA Roadworks at SAT
- Demolition works of bulkhead door adjacent to existing West Rail Stub Tunnel at SAT
- Construction of tunnel structure at HUH, NAT
- Construction of structure above ground at HUH
- Platform ABWF and E&M works at HUH
- Utility works at NAT
- 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.

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 46th EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 March 2017.

1.3 Report Structure

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

2 PROJECT INFORMATION

2.1 General Site Description

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

- New HUH integrated with the existing HUH station, with associated entrances, ventilation facilities, plant rooms, other ancillary facilities, and ABWF works.
- Modification of the existing HUH station to allow interchange between Existing East Rail Line and SCL(TAW-HUH), and between SCL(MKK-HUH) and SCL(TAW-HUH) comprising alteration and addition works at podium level, mid-level, and platform level.
- Running tunnels of the SCL(TAW-HUH) at the south and north ends of the new HUH to the existing stub tunnel of Existing West Rail and interface with Works Contract 1111.
- Running tunnels of the SCL(MKK-HUH) at the south and north ends of the new HUH to the proposed North Ventilation Building and interface with Works Contract 1111.
- Extensive underpinning and modification of the existing podium structure of HUH and the Hong Kong Coliseum, and associated protection works.
- Diversion, modification and dismantling of existing building services associated with underpinning and modification of existing structures.
- Demolition and clearance of the majority of the existing Hung Hom Freight Terminal infrastructure.
- Protection, diversion, and modification of utilities and services.
- Launching and retrieval track connecting the SCL(TAW-HUH) to HHS from the turnout close to WRL at the south and interface with Works Contract 1111 at the north.
- CLP Transformer Building.
- Demolition of the existing International Mail Centre adjacent to Salisbury Road, the MTR Freight Operations Building within the southern end of the Hung Hom Freight Terminal, and other ancillary buildings.
- Reconstruction of Cheong Wan Road Viaduct.
- Civil, BS and ABWF provisions for designated and interfacing contracts.
- Landscape works.
- Modification to various parts of existing disused Freight Yard structure for provision of HHS, comprising alteration and addition works at underground level, ground level, mezzanine level and podium level including new

accommodation and plant areas and stablings and associated track provisions connecting to the interface with Works Contract 1111.

- Extensive underpinning of the podium structures above the existing disused Freight Yard for provision of HHS and its associated works.
- Construct part of the shunting track.
- Construct the emergency track and its associated works which connect the stabling siding to the mainline which run parallel with the northern approach of HUH.
- Construct the semi-enclosed noise enclosure and its associated works over the entire HHS north fan area.
- Preparation works, operation, and reinstatement of an additional storage area near Muk Chui Street, Kai Tak.

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

2.2 Construction Programme and Activities

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

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

- Building services works at SAT
- EVA Roadworks at SAT
- Trough Structure along Track at SAT
- Temporary works of bulkhead door adjacent to existing West Rail Stub Tunnel at SAT
- Construction of tunnel structure at HUH, NAT
- Construction of structure above ground at HUH
- Platform ABWF and E&M works at HUH
- Utility works at NAT
- Noise Barrier Steel Structure Erection
- 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	Ms Felice WONG	2688 1283	2993 7577

Company	Position	Name	Telephone	Fax
	Leader			
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	22 Mar 2012	-	Valid	EP for SCL (MKK-HUH)
EP-438/2012/K	4 Oct 2016	-	Valid	EP for SCL (TAW-HUH)
Construction Noise Permit				
GW-RE1209-16	30 Dec 2016	26 Jun 2017	Valid	Works in concourse
GW-RE1265-16	12 Jan 2017	11 Apr 2017	Valid	External work for Concourse involving TTM + Mid-level Walkway+ Installation of Instrument near NAT Track + Painting outside Concourse for North East Corner
GW-RE0124-17	28 Feb 2017	27 Aug 2017	Valid	Under Podium
GW-RE0151-17	13 Mar 2017	13 June 2017	Valid	Wall breaking at West Rail Line

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
GW-RE0222-17	21 Mar 2017	20 Jun 2017	Valid	External work for Concourse involving TTM + Mid-level Walkway + Installation of Instrument near NAT Track + Painting outside Concourse for North East Corner + Hoarding Work for Concourse Stage 3
Wastewater Discharge License				
WT00015983-2013	28 Jun 2013	30 Jun 2018	Valid	-
Chemical Waste Producer Registration				
5213-213-L2603-03	28 Jun 2013	-	Valid	-
Billing Account for Construction Waste Disposal				
7017179	27 Mar 2013	-	Active Account	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
357078	18 Mar 2013	-	Notified	-
Notification of Asbestos Abatement Works				
AX141187	11 Oct 2014 (earliest commencement date)	-	Notified	Demolition of International Mail Centre, 80 Salisbury Road, Hung Hom
AX141235	27 Oct 2014 (earliest commencement date)	-	Notified	Demolition of Freight Operation Building, MTR Hung Hom Depot

3 ENVIRONMENTAL MONITORTING PARAMETERS

3.1 Landscape and Visual Impact Monitoring

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

3.2 Air Quality Monitoring

Parameter, Frequency and Duration

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

Table 3-1 Air Quality Monitoring Parameters and Frequency

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

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

Monitoring Location

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

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

Table 3-2 Air Quality Monitoring Location

ID	Location
AM2 [1]	Harbourfront Horizon [2]

Note:
1. Different IDs were used in various EM&A Manuals for dust monitoring location at Harbourfront Horizon, DMS-12 was used in EM&A Manual for SCL(TAW-HUH), AM2 were used in EM&A Manual and EIA report for SCL(MKK-HUH), and DMS-1 Works Contract 1112 were used in EM&A Manual and EIA report for HHS. For ease of future reference, AM2 will be adopted for EM&A reporting for Works Contract 1112 when referring to this monitoring location.
2. Air quality monitoring location at Harbourfront Horizon is the same as monitoring station CD6a as proposed in the EM&A Manual for "Kwun Tong Line Extension (KTE)". Access to Harbourfront Horizon was rejected by the owner during preparation for baseline

monitoring for the KTE in early 2011. A representative monitoring location at the adjacent Finger Pier, at about 25m from Harbourfront Horizon, was adopted as an alternative monitoring location for KTE. This monitoring location is considered the most appropriate alternative monitoring location for AM2 and have been adopted for dust monitoring for Contract 1112.

Monitoring Equipment

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

Table 3-3 Air Quality Monitoring Equipment

Equipment	Brand and Model	Serial Number
High Volume Sampler	GS-2310 Accu-vol	694-0665
Calibration Kit	Tisch (TE-5025A)	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^3 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^2
v. Flow control accuracy: +/- 2.5% deviation over 24-hour sampling period
vi. Equipped with a shelter to protect the filter and sampler
vii. Incorporated with an electronic mass flow rate controller or other equivalent devices
viii. Equipped with a flow recorder for continuous monitoring
ix. Provided with a peaked roof inlet
x. Incorporated with a manometer
xi. Able to hold and seal the filter paper to the sampler housing at horizontal position
xii. Easily changeable filter and
xiii. Capable of operating continuously for a 24-hour period.

3.2.7 Preparation of Filter Papers

i. Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.

ii. All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25°C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.

iii. All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

3.2.8 Field Monitoring

i. The power supply was checked to ensure the HVS works properly.
ii. The filter holder and the area surrounding the filter were cleaned.
iii. The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
iv. The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
v. The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
vi. Then the shelter lid was closed and was secured with the aluminium strip.
vii. The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
viii. A new flow rate record sheet was set into the flow recorder.
ix. On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/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 March 2017 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	14 March 2017	Submitted
	EP-438/2012/K	14 March 2017	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 8 and 22 March 2017. All necessary mitigation measures have been implemented by the Contractor.

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

5.2 Air Quality Monitoring

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

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

ID	Average (µg/m^3)	Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
AM2	44.6	32.9 – 54.3	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 5-2.***

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, 688,720 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 890 m^3 inert construction and demolition (C&D) materials

were generated from the Project, 890 m^3 was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. 490 m^3 of paper/cardboard packaging was recycled and no metals were recycled. No asphalt was recycled and 310 m^3 of plastic was 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, 9 16, 23 and 30 March 2017 during the reporting month. IEC conducted the site inspection on 15 March 2017. A summary of the implementation schedule of environmental mitigation measures is provided in ***Appendix H***.

6.1.2 EPD inspection was carried out on 16 March 2017, where no major findings 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	NRMM labels were found missing. The Contractor should ensure provision of NRMM labels to all non-road mobile machineries.	HUH (2 observations made)	15 February 2017	Both items were rectified by the Contractor on 9 March 2017.
		Gate 3	23 February 2017	The item was rectified by the Contractor on 9 March 2017.
	White smoke was observed emitting from a generator. The Contractor should inspect the exhaust system and provide regular maintenance to ensure equipment is in good condition.	NAT	2 March 2017	The item was rectified by the Contractor on 9 March 2017.
	More than 20 bags of cement were observed without entirely covered with impervious sheeting. The Contractor should cover the cement bags entirely with impervious sheeting.	EWL SAT	2 March 2017	The item was rectified by the Contractor on 9 March 2017.
	Stockpile was observed uncovered. The Contractor should cover the stockpile with impervious sheeting to prevent dust and silty runoff generation.	NAT	23 March 2017	The item was rectified by the Contractor on 30 March 2017.
Waste/ Chemicals Management	Chemical containers without secondary containment were observed. The Contractor	JP01	15 February 2017	The item was rectified by the Contractor on 2 March 2017.

Parameters	Description	Works Area	Observation Date	Status
	should provide secondary containment such as drip tray to all chemical containers to prevent land contamination.	JP01	15, 16 March 2017	The item will be followed-up in the next reporting month.
	General refuse was observed on the ground. The Contractor should remove the general refuse, provide garbage bins for waste collection and avoid waste accumulation.	JP01	23 February 2017	The item was rectified by the Contractor on 2 March 2017.
		EWL	23 March 2017	The item was rectified by the Contractor on 30 March 2017.
		HHS BoH (N34)	23 March 2017	The item was rectified by the Contractor on 30 March 2017.
		HHS (P/Q-27)	30 March 2017	The item will be followed-up in the next reporting month.
		HHS (N26)	30 March 2017	The item will be followed-up in the next reporting month.
		NAT	30 March 2017	The item will be followed-up in the next reporting month.

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

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 complaint on 13 March 2017 regarding general construction noise nuisance at Hong Kong Coliseum at No. 9 Cheong Wan Road on 12 March 2017 (Sunday) at about 8:30am. The investigation report was prepared and submitted to EPD on 21 March 2017.

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 upcoming month is provided in ***Appendix B*** and the key issues to be considered in the upcoming months include:

- Building services works at SAT
- EVA Roadworks at SAT
- Demolition works of bulkhead door adjacent to existing West Rail Stub Tunnel at SAT
- Construction of tunnel structure at HUH, NAT
- Construction of structure above ground at HUH
- Platform ABWF and E&M works at HUH
- Utility works at NAT
- 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 April 2017 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 46th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2017.

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

9.2.1 According to the environmental audit performed in the reporting month, the following recommendations were made:

Air Quality Impact

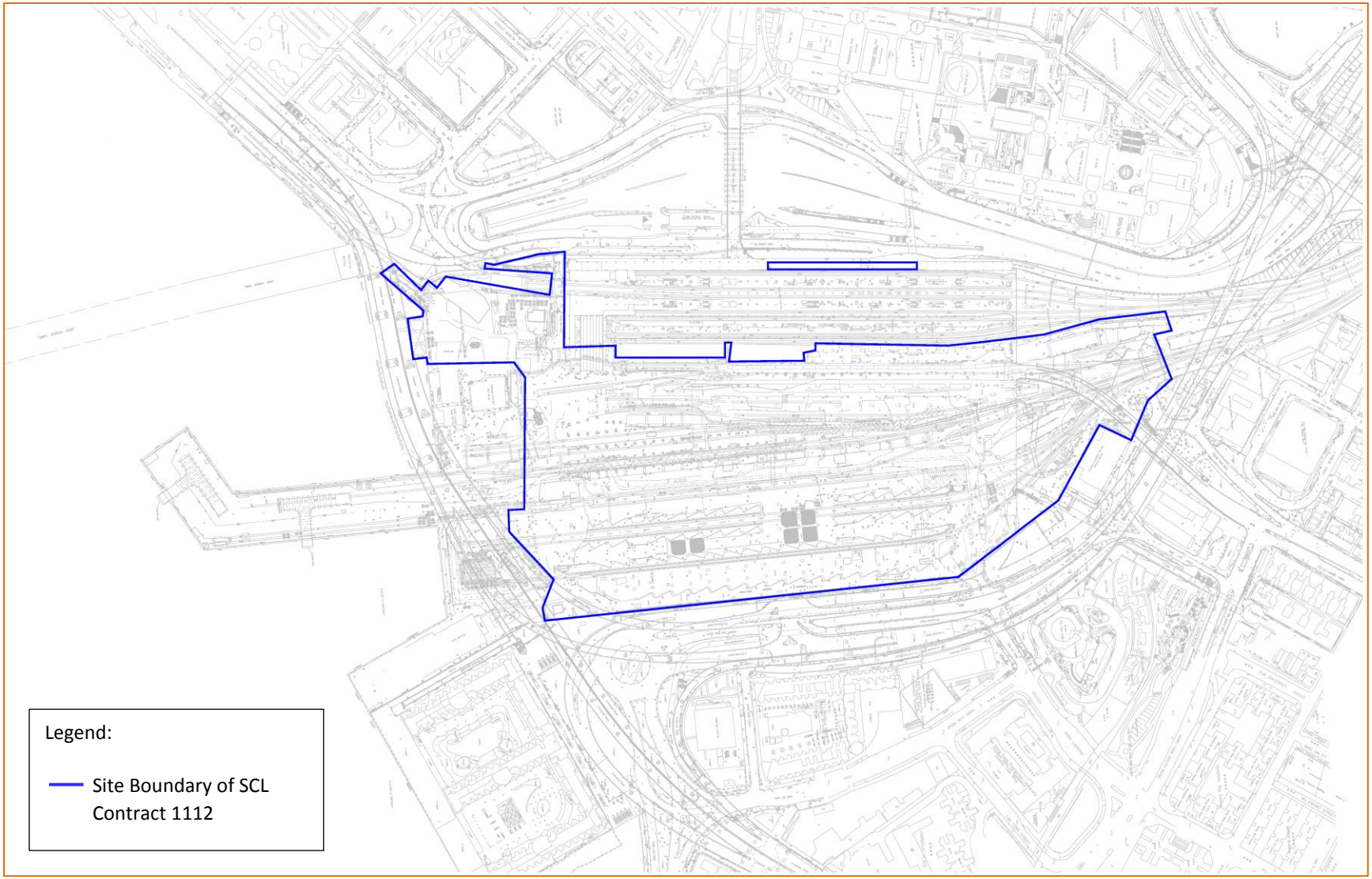
- Ensure provision of NRMM labels to all non-road mobile machineries.
- Inspect the exhaust system and provide regular maintenance to ensure equipment is in good condition.
- Cover the cement bags entirely with impervious sheeting.
- Cover the stockpile with impervious sheeting to prevent dust and silty runoff generation.

Chemical and Waste Management

- Provide secondary containment such as drip tray to all chemical containers to prevent land contamination.
- Remove the general refuse, provide garbage buns for waste collection and avoid waste accumulation.

APPENDIX A

Project Works Boundary


Legend:
Site Boundary of SCL Contract 1112

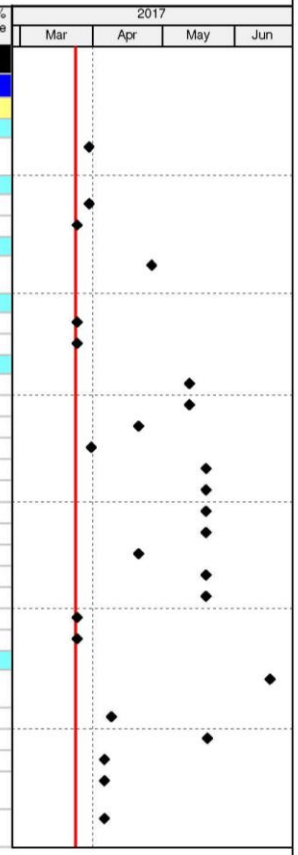
APPENDIX B

Construction Programme

Data Date : 25-Mar-17
Print Date : 28-Mar-17

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
MTR SCL 1112 - March 17 Report (TCP)		21-May-13	23-Sep-17	25-Feb-17	29-Jun-18		25-Mar-17	31-May-18	-250	240	
PRELIMINARIES		21-May-13	06-Mar-17	25-Feb-17	19-May-17		25-Mar-17	16-Jun-17	-102	590	
Salient Key Dates and Milestones		27-Apr-16	06-Mar-17	25-Feb-17	19-May-17		25-Mar-17	16-Jun-17	-102	304	
Schedule of CLP Access Dates		02-Oct-16	02-Oct-16	02-Mar-17	02-Mar-17		30-Mar-17	30-Mar-17	-179	382	
01112.CLP1	CLP Access to CLP TX Rooms at EWL Platform Level G.L. 1-5/Q-R and ass. cable route incl. external cable trenches (39/16)	02-Oct-16		02-Mar-17		410	30-Mar-17		-179	382	0%
Schedule of Power On Dates		05-Feb-17	05-Feb-17	25-Feb-17	02-Mar-17		25-Mar-17	30-Mar-17	-53	382	
01112.POWER1	CLP Transformer Rooms at EWL Platform Level G.L. 1-5/Q-R Power On (05/17)	05-Feb-17		02-Mar-17		410	30-Mar-17		-53	382	0%
01112.POWER2	CLP Transformer Rooms at HUH North Transformer Building Power On (05/17)	05-Feb-17		25-Feb-17		415	25-Mar-17		-48	387	0%
Schedule of Option		27-Nov-16	27-Nov-16	24-Mar-17	24-Mar-17		26-Apr-17	26-Apr-17	-150	-150	
01112.OP1CP	Option 1 - Completion Date (47/16) Noise Barrier along EWL as Specified in P56 of the PS		27-Nov-16		24-Mar-17	-117		26-Apr-17	-150	-150	0%
Schedule of Access Dates for Works Areas (Possession)		06-Mar-17	06-Mar-17	06-Mar-17	06-Mar-17		25-Mar-17	25-Mar-17	-19	-19	
01112.M22_P	1112.M22 Possession (09/17)	06-Mar-17		06-Mar-17		0	25-Mar-17		-19	-19	0%
01112.M24_P	1112.M24 Possession (09/17)	06-Mar-17		06-Mar-17		0	25-Mar-17		-19	-19	0%
Schedule of Access Dates for Works Areas (Return)		27-Apr-16	18-Oct-16	01-Mar-17	19-Apr-17		25-Mar-17	19-May-17	-213	331	
01112.M02_R	1112.M2 Return (15/18)		17-Sep-16		08-Apr-17	372		12-May-17	-237	338	0%
01112.M03_R	1112.M3 Return (15/18)		17-Sep-16		08-Apr-17	372		12-May-17	-237	338	0%
01112.M04A_R	1112.M4A Return (15/18)		18-Oct-16		18-Mar-17	393		20-Apr-17	-184	360	0%
01112.M05_R	1112.M5 Return (15/18)		12-Sep-16		06-Apr-17	374		31-Mar-17	-200	380	0%
01112.M05A_R	1112.M5A Return (15/18)		27-Apr-16		19-Apr-17	361		19-May-17	-387	331	0%
01112.M05B_R	1112.M5B Return (15/18)		11-Aug-16		19-Apr-17	361		19-May-17	-281	331	0%
01112.M05C_R	1112.M5C Return (15/18)		27-Apr-16		19-Apr-17	361		19-May-17	-387	331	0%
01112.M05D_R	1112.M5D Return (15/18)		27-Apr-16		19-Apr-17	361		19-May-17	-387	331	0%
01112.M06_R	1112.M6 Return (15/18)		18-Oct-16		18-Mar-17	393		20-Apr-17	-184	360	0%
01112.W01C_R	1112.W1C Return (15/18)		27-Apr-16		19-Apr-17	361		19-May-17	-387	331	0%
01112.W01E_R	1112.W1E Return (15/18)		27-Apr-16		19-Apr-17	361		19-May-17	-387	331	0%
01112.W01F_R	1112.W1F Return (15/18)		30-May-16		01-Mar-17	410		25-Mar-17	-298	387	0%
01112.W02_R	1112.W2 Return (15/18)		30-May-16		01-Mar-17	410		25-Mar-17	-298	387	0%
Schedule of Access Dates for Designated Contractors-1		01-Aug-16	06-Feb-17	09-Mar-17	19-May-17		06-Apr-17	16-Jun-17	-130	-130	
01112.DC1120B.1	NSL tunnels (UP&DN tracks) and HUH NSL Platform Level - Track and trackide areas	06-Feb-17		19-May-17		-102	16-Jun-17		-130	-130	0%
01112.DC1130A.1	HUH - NSL Platform Level	01-Aug-16		11-Mar-17		-222	09-Apr-17		-251	-251	0%
01112.DC1130A.2	HUH - EWL Platform Level	05-Sep-16		20-Apr-17		-227	20-May-17		-257	-257	0%
01112.DC1159.3	HUH - Lift shafts at all remaining areas	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%
01112.DC1162.6	HUH - All remaining areas on Mid-Level except for those under Podium Concourse Modification Stages 1 to 3	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%
01112.DC1162B.6	HUH - All remaining areas on Mid-Level except for those under Podium Concourse Modification Stages 1 to 3	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Three Month Rolling Programme (25-March-17)

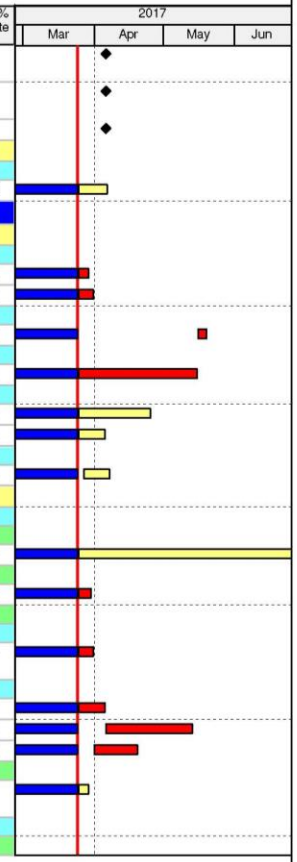
Project ID : 01112-3M49
Layout : March 2017 MPR
Page 1 of 7

Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

Data Date : 25-Mar-17
Print Date : 28-Mar-17

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
01112.DC1163.6	HUH - All remaining areas on Mid-Level except for those under Podium Concourse Modification Stages 1 to 3	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%
01112.DC1169.6	HUH - All remaining areas on Mid-Level except for those under Podium Concourse Modification Stages 1 to 3	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%
01112.DC1172.4	HUH - Escalators at all remaining areas	30-Jan-17		09-Mar-17		-38	06-Apr-17		-66	-66	0%
Establishment; Mobilisation & Advanced Works		21-May-13	16-Oct-13	25-Feb-17	08-Mar-17		25-Mar-17	06-Apr-17	-1017	534	
Building Services Diversion / Protection		21-May-13	16-Oct-13	25-Feb-17	08-Mar-17		25-Mar-17	06-Apr-17	-1017	534	
01112.12020	BS - Demolition BS System in Freight Yard	21-May-13	16-Oct-13	25-Feb-17	08-Mar-17	558	25-Mar-17	06-Apr-17	-1017	534	93.5%
HUNG HOM STATION (HOM)		03-May-14	27-Jan-17	25-Feb-17	25-Jul-17		25-Mar-17	22-Aug-17	-207	468	
HUH South Approach Tunnel (SAT)		13-May-15	16-Nov-16	25-Feb-17	19-Apr-17		25-Mar-17	19-May-17	-184	348	
Utilities		25-Feb-16	20-Apr-16	25-Feb-17	03-Mar-17		25-Mar-17	31-Mar-17	-280	-171	
01112.33010	SAT - Storm Drain DSDD-1112-117 Hong Wan Path	25-Feb-16	13-Apr-16	25-Feb-17	01-Mar-17	-145	25-Mar-17	29-Mar-17	-284	-169	60%
01112.33030	SAT - Sewer DSDS-1112-113	23-Mar-16	20-Apr-16	25-Feb-17	03-Mar-17	-147	25-Mar-17	31-Mar-17	-280	-171	70%
Modification of Hong Wan Path Ramp		21-Apr-16	27-Apr-16	12-Apr-17	19-Apr-17		16-May-17	19-May-17	-310	-203	
01112.32780	HWP - Construct New Roadworks	21-Apr-16	27-Apr-16	12-Apr-17	19-Apr-17	-179	16-May-17	19-May-17	-310	-203	40%
Building Services Works		23-Jan-16	31-Mar-16	25-Feb-17	11-Apr-17		25-Mar-17	15-May-17	-328	-203	
A3170	P/O - Installation of new RWO (DR)	23-Jan-16	31-Mar-16	25-Feb-17	11-Apr-17	-179	25-Mar-17	15-May-17	-328	-203	70%
EVA and Fireman Access		13-May-15	27-Jul-15	25-Feb-17	23-Mar-17		25-Mar-17	25-Apr-17	-511	298	
01112.32900	SAT - EVA Roadworks	13-May-15	13-Jul-15	25-Feb-17	23-Mar-17	-77	25-Mar-17	25-Apr-17	-523	298	50%
01112.32910	SAT - EVA Street Furniture & Signage	14-Jul-15	27-Jul-15	25-Feb-17	07-Mar-17	-77	25-Mar-17	05-Apr-17	-497	298	50%
Temporary Bulkhead Door adjacent to Existing West Rail Stub Tunnel		02-Nov-16	16-Nov-16	10-Mar-17	24-Mar-17		27-Mar-17	07-Apr-17	-56	146	
01112.32760	Temp Bulkhead - Erect Temporary Hoarding & Dismanteling Existing Wall	02-Nov-16	16-Nov-16	10-Mar-17	24-Mar-17	-46	27-Mar-17	07-Apr-17	-56	146	40%
HUH (New NSL and EWL)		11-Jul-14	27-Jan-17	25-Feb-17	25-Jul-17		25-Mar-17	22-Aug-17	-207	468	
HUH Area A (Grid 1 to 7)		11-Jul-14	24-Aug-16	25-Feb-17	10-Jul-17		25-Mar-17	07-Aug-17	-278	391	
Building Services at G.L. J & K		11-Jul-14	25-Sep-14	25-Feb-17	10-Jul-17		25-Mar-17	07-Aug-17	-838	391	
A3140	Installation of new cable containments (Col J1/18)	11-Jul-14	25-Sep-14	25-Feb-17	10-Jul-17	415	25-Mar-17	07-Aug-17	-838	391	87%
Area 42		26-Feb-16	17-Mar-16	25-Feb-17	02-Mar-17		25-Mar-17	30-Mar-17	-304	-141	
01112.23860	A - Construct Staircase and Walkway	26-Feb-16	17-Mar-16	25-Feb-17	02-Mar-17	-152	25-Mar-17	30-Mar-17	-304	-141	60%
ELS and Tunnel Structure		02-Jun-16	24-Aug-16	25-Feb-17	10-Apr-17		25-Mar-17	13-May-17	-207	-78	
Grid 0 to 7		16-Jun-16	10-Aug-16	25-Feb-17	03-Mar-17		25-Mar-17	31-Mar-17	-188	-159	
01112.23422	A - Closeout EWL Trackslab Openings & Construct EWL Wall and Roof Slab Grid 0 to 7	16-Jun-16	10-Aug-16	25-Feb-17	03-Mar-17	-155	25-Mar-17	31-Mar-17	-188	-159	90%
Remaining Structures at Area A		02-Jun-16	24-Aug-16	25-Feb-17	10-Apr-17		25-Mar-17	13-May-17	-207	-78	
01112.23426	A - Construct Hanger Wall and Slab	02-Jun-16	22-Jun-16	25-Feb-17	07-Mar-17	-54	25-Mar-17	05-Apr-17	-232	-78	60%
01112.23428	A - Construct Derailment Kerb to NSL	23-Jun-16	26-Jul-16	08-Mar-17	10-Apr-17	-54	06-Apr-17	13-May-17	-232	-78	15%
01112.23870	A - EWL Plant Room Degree 1 Works	11-Aug-16	24-Aug-16	04-Mar-17	17-Mar-17	-155	01-Apr-17	19-Apr-17	-188	-159	68%
CLP Transformer Rooms at G.L. 1-5/Q-R		22-Jun-16	08-Aug-16	25-Feb-17	01-Mar-17		25-Mar-17	29-Mar-17	-188	303	
01112.79150	A - Transformer Room, Switch Room Grid O-R / 2-5 E&M, Inspection and Handover to CLP	22-Jun-16	08-Aug-16	25-Feb-17	01-Mar-17	-119	25-Mar-17	29-Mar-17	-188	303	0%
HUH Area Hong Kong Coliseum (Grid 7 to 15)		02-Jan-16	18-Jan-16	25-Feb-17	03-Mar-17		25-Mar-17	31-Mar-17	-350	-47	
ELS and Tunnel Structure		02-Jan-16	18-Jan-16	25-Feb-17	03-Mar-17		25-Mar-17	31-Mar-17	-350	-47	



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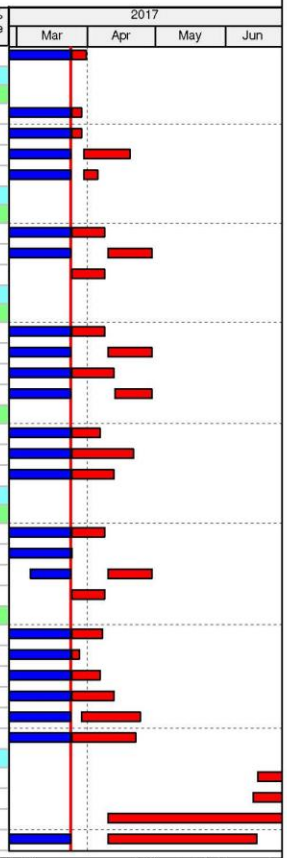
MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
01112.24220	HKC - Construct Derailment Kerb for NSL	02-Jan-16	18-Jan-16	25-Feb-17	03-Mar-17	-23	25-Mar-17	31-Mar-17	-350	-47	50%
HUH Area B (Grid 15 to 22)		21-Apr-16	05-Aug-16	25-Feb-17	17-Mar-17		25-Mar-17	19-Apr-17	-257	-74	
ELS and Tunnel Structure		21-Apr-16	05-Aug-16	25-Feb-17	17-Mar-17		25-Mar-17	19-Apr-17	-257	-74	
01112.25240	B - Construct NSL Platform Slab and Wall & Column	21-Apr-16	28-May-16	25-Feb-17	01-Mar-17	-171	25-Mar-17	29-Mar-17	-247	-165	86%
01112.25250	B - Construct EWL Platform Slab and Structure	06-Jun-16	05-Aug-16	25-Feb-17	01-Mar-17	-141	25-Mar-17	29-Mar-17	-190	-165	95%
01112.25270	B - Construct Derailment Kerb for NSL	30-May-16	15-Jun-16	02-Mar-17	17-Mar-17	-35	30-Mar-17	19-Apr-17	-247	-59	41%
01112.25380	B - Curing Time	29-May-16	04-Jun-16	02-Mar-17	08-Mar-17	-186	30-Mar-17	05-Apr-17	-305	-189	86%
HUH Area C1 (Grid 22 to 31)		07-Jun-16	31-Aug-16	25-Feb-17	06-Apr-17		25-Mar-17	29-Apr-17	-191	-68	
ELS and Tunnel Structure		07-Jun-16	31-Aug-16	25-Feb-17	06-Apr-17		25-Mar-17	29-Apr-17	-191	-68	
01112.26270	C1 - Construct NSL Platform Slab and Wall	07-Jun-16	13-Jul-16	25-Feb-17	10-Mar-17	-179	25-Mar-17	08-Apr-17	-218	-203	90%
01112.26350	C1 - Construct Derailment Kerb for NSL	14-Jul-16	30-Jul-16	11-Mar-17	28-Mar-17	-44	10-Apr-17	29-Apr-17	-218	-68	58%
01112.26510	C1 - Platform Degree 1 Works	18-Aug-16	31-Aug-16	23-Mar-17	06-Apr-17	-171	25-Mar-17	08-Apr-17	-176	-173	98%
HUH Area C2 (Grid 31 to 40)		18-Jul-15	18-Jun-16	25-Feb-17	28-Mar-17		25-Mar-17	29-Apr-17	-253	-68	
ELS and Tunnel Structure		10-Mar-16	16-Jun-16	25-Feb-17	28-Mar-17		25-Mar-17	29-Apr-17	-255	-68	
01112.27290	C2 - Construct NSL Platform Slab and Wall	10-Mar-16	25-Apr-16	25-Feb-17	10-Mar-17	-179	25-Mar-17	08-Apr-17	-282	-203	95%
01112.27300	C2 - Construct Derailment Kerb for NSL	26-Apr-16	13-May-16	11-Mar-17	28-Mar-17	-44	10-Apr-17	29-Apr-17	-282	-68	70%
01112.27310	C2 - Construct EWL Platform Slab and Structure	26-Apr-16	01-Jun-16	25-Feb-17	14-Mar-17	-164	25-Mar-17	12-Apr-17	-255	-188	71%
01112.27570	C2 - Platform Degree 1 Works	02-Jun-16	16-Jun-16	15-Mar-17	28-Mar-17	-164	13-Apr-17	29-Apr-17	-255	-188	71%
Structure Above Ground (Grid M1 ECS Room / Grid J-K1 Staff Rooms)		18-Jul-15	18-Jun-16	25-Feb-17	20-Mar-17		25-Mar-17	21-Apr-17	-246	-161	
01112.27490	C2 - Upgrade of Fire Protection to Underside of Podium Removal	18-Jul-15	25-Sep-15	25-Feb-17	08-Mar-17	-164	25-Mar-17	06-Apr-17	-446	-188	90%
01112.27550	C2 - Plant Rooms Degree 1 Works	29-Mar-16	17-May-16	25-Feb-17	20-Mar-17	-157	25-Mar-17	21-Apr-17	-273	-161	85%
01112.27560	C2 - Staff Rooms Degree 1 Works	26-May-16	18-Jun-16	25-Feb-17	14-Mar-17	-152	25-Mar-17	12-Apr-17	-241	-176	85%
HUH Area C3 (Grid 40 to 50)		11-Sep-15	30-Aug-16	25-Feb-17	28-Mar-17		25-Mar-17	29-Apr-17	-192	-68	
ELS and Tunnel Structure		12-May-16	06-Aug-16	25-Feb-17	28-Mar-17		25-Mar-17	29-Apr-17	-212	-68	
01112.28290	C3 - Construct NSL Platform Slab and Wall	12-May-16	17-Jun-16	25-Feb-17	10-Mar-17	-179	25-Mar-17	08-Apr-17	-239	-173	60%
01112.28300	C3 - Construct EWL Platform Slab and Structure	18-Jun-16	23-Jul-16	25-Feb-17	08-Mar-17	-159	25-Mar-17	25-Mar-17	-197	-173	91%
01112.28310	C3 - Construct Derailment Kerb for NSL	18-Jun-16	06-Jul-16	11-Mar-17	28-Mar-17	-44	10-Apr-17	29-Apr-17	-239	-68	5%
01112.28670	C3 - Platform Degree 1 Works	25-Jul-16	06-Aug-16	09-Mar-17	22-Mar-17	-159	25-Mar-17	08-Apr-17	-197	-173	0%
Structure Above Ground (Grid M1, J-K1 SVS / TSF / TSVS Rooms)		11-Sep-15	30-Aug-16	25-Feb-17	22-Mar-17		25-Mar-17	24-Apr-17	-187	-163	
01112.28520	C3 - Upgrade of Fire Protection to Underside of Podium Removal	11-Sep-15	23-Nov-15	25-Feb-17	09-Mar-17	-159	25-Mar-17	07-Apr-17	-400	-173	80%
01112.28610	C3 - Construct Grid M1 Wall & Roof Slab Plant Rooms	09-Apr-16	27-May-16	25-Feb-17	28-Feb-17	-159	25-Mar-17	28-Mar-17	-247	-163	95%
01112.28620	C3 - Construct Grid J-K1 Ground Slab Plant Rooms	23-Apr-16	11-May-16	25-Feb-17	08-Mar-17	-153	25-Mar-17	06-Apr-17	-267	-157	92%
01112.28630	C3 - Construct Grid J-K1 Wall & Roof Slab Plant Rooms	12-May-16	25-Jul-16	25-Feb-17	14-Mar-17	-153	25-Mar-17	12-Apr-17	-211	-157	92%
01112.28640	C3 - Grid M1 Plant Rooms Degree 1 Works	28-May-16	20-Jun-16	01-Mar-17	22-Mar-17	-159	29-Mar-17	24-Apr-17	-247	-163	92%
01112.28650	C3 - J-K1 Plant Rooms Degree 1 Works	26-Jul-16	30-Aug-16	25-Feb-17	21-Mar-17	-158	25-Mar-17	22-Apr-17	-186	-162	85%
Platform ABWF and E&M (Degree 2 & Degree 3 Works)		01-Aug-16	27-Jan-17	11-Mar-17	25-Jul-17		10-Apr-17	22-Aug-17	-163	-163	
01112.29020	HUH - NSL Platform Level E&M to 4B Degree 2	03-Oct-16	03-Dec-16	18-May-17	20-Jul-17	-157	15-Jun-17	17-Aug-17	-203	-181	0%
01112.29030	HUH - EWL Platform Level E&M to 4F Degree 2	17-Nov-16	27-Jan-17	16-May-17	25-Jul-17	-139	13-Jun-17	22-Aug-17	-163	-163	0%
01112.29100	HUH - NSL Platform Level E&M to 4A Degree 2	18-Oct-16	31-Dec-16	04-May-17	18-Jul-17	-155	10-Apr-17	27-Jun-17	-139	-136	0%
01112.29110	HUH - NSL Platform Level ABWF to 4B Degree 2	01-Aug-16	30-Sep-16	11-Mar-17	17-May-17	-157	10-Apr-17	14-Jun-17	-203	-181	8%



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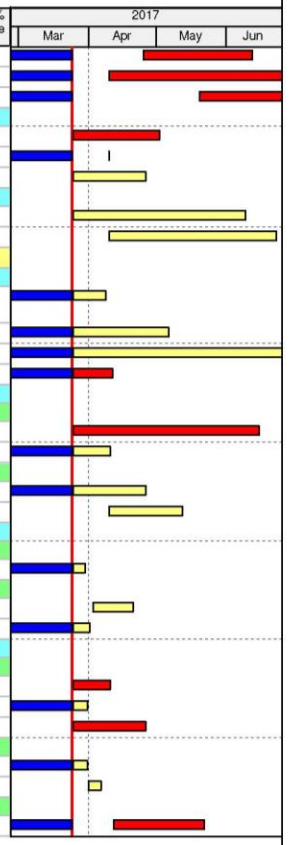
MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
01112.29120	HUH - EWL Platform Level BOH ABWF to 4F Degree 2	05-Sep-16	16-Nov-16	23-Mar-17	15-May-17	-139	25-Apr-17	12-Jun-17	-163	-163	13%
01112.29170	HUH - NSL Platform Level BOH ABWF to 4A Degree 2	01-Aug-16	17-Oct-16	11-Mar-17	31-May-17	-155	10-Apr-17	28-Jun-17	-203	-136	8%
01112.29270	HUH - EWL Platform Level ABWF to 4G Degree 2	05-Sep-16	14-Nov-16	20-Apr-17	28-Jun-17	-176	20-May-17	28-Jul-17	-203	-200	13%
Utilities		18-Jun-15	04-Jul-16	25-Feb-17	29-Mar-17		25-Mar-17	02-May-17	-242	267	
01112.29050	HUH - Storm Drain DSDD-1112-111, 112 for South Vent Shaft	18-Jun-15	22-Jul-15	25-Feb-17	29-Mar-17	-152	25-Mar-17	02-May-17	-520	-141	0%
01112.29080	HUH - Water WM-1112-107	18-Jun-16	04-Jul-16	11-Mar-17	25-Mar-17	-105	10-Apr-17	10-Apr-17	-226	283	40%
01112.29090	HUH - Telecom TEL-1112-104	28-Nov-15	28-Dec-15	25-Feb-17	24-Mar-17	-104	25-Mar-17	26-Apr-17	-385	271	0%
Reinstatement		01-Jun-16	08-Sep-16	25-Feb-17	26-May-17		25-Mar-17	23-Jun-17	-229	235	
01112.29200	HUH - Underground Utilities	01-Jun-16	11-Aug-16	25-Feb-17	12-May-17	-140	25-Mar-17	09-Jun-17	-241	235	0%
01112.29210	HUH - Reinstatement	30-Jun-16	08-Sep-16	11-Mar-17	26-May-17	-140	10-Apr-17	23-Jun-17	-229	235	0%
HUH North Approach Tunnel (NAT) & North Fan Area (NFA)		03-May-14	24-Nov-16	25-Feb-17	30-May-17		25-Mar-17	27-Jun-17	-169	244	
Utilities		03-May-14	22-Aug-16	25-Feb-17	30-May-17		25-Mar-17	27-Jun-17	-247	244	
01112.31910	NFA - Storm Drain DSDD-112-118 Cheung Wan Road Drainage Connect to New Box Culvert	24-Apr-15	06-Jun-15	25-Feb-17	10-Mar-17	-68	25-Mar-17	08-Apr-17	-541	307	50%
01112.31960	NFA - Sewer DSDS-1112-117, Temporary Support & Abandon DSDS-1112-007	12-Sep-14	12-Nov-14	25-Feb-17	01-Apr-17	-99	25-Mar-17	06-May-17	-722	276	95%
01112.31970	NFA - Sewer DSDS-1112-118, Temporary Support & Abandon DSDS-1112-008	03-May-14	30-Jun-14	25-Feb-17	30-May-17	-143	25-Mar-17	27-Jun-17	-878	232	80%
01112.32030	NFA - Water WM-1112-114	06-Aug-16	22-Aug-16	25-Feb-17	13-Mar-17	-61	25-Mar-17	11-Apr-17	-186	-85	0%
NSL/EWL Area 1 - NSL U100+347 to U100+408		25-May-16	29-Sep-16	25-Feb-17	18-May-17		25-Mar-17	15-Jun-17	-205	242	
ELS and Tunnel Structure		25-May-16	18-Aug-16	25-Feb-17	18-May-17		25-Mar-17	15-Jun-17	-240	242	
01112.31380	N1 - Construct Derailment Kerb to NSL	25-May-16	08-Jun-16	25-Feb-17	18-May-17	-82	25-Mar-17	15-Jun-17	-299	-106	0%
01112.31400	N1 - Construct Derailment Kerb to EWL	04-Aug-16	18-Aug-16	25-Feb-17	11-Mar-17	-81	25-Mar-17	10-Apr-17	-188	294	90%
Noise Barrier - Option 1		04-Aug-16	29-Sep-16	25-Feb-17	08-Apr-17		25-Mar-17	12-May-17	-176	271	
01112.31410	N1 - Noise Barrier Erect Steel Structure	04-Aug-16	31-Aug-16	25-Feb-17	24-Mar-17	-104	25-Mar-17	26-Apr-17	-188	271	10%
01112.31420	N1 - Install Absorptive Panels	01-Sep-16	29-Sep-16	11-Mar-17	08-Apr-17	-104	10-Apr-17	12-May-17	-176	271	0%
Noise Enclosure & Stabling Siding Track		18-Jun-16	18-Oct-16	25-Feb-17	18-Mar-17		25-Mar-17	20-Apr-17	-145	288	
Launching / Emergency Retrieval / Stabling Siding Track		18-Jun-16	27-Aug-16	25-Feb-17	02-Mar-17		25-Mar-17	30-Mar-17	-172	288	
01112.55080	NFA - Construct Trough Structure, Plinth	18-Jun-16	27-Aug-16	25-Feb-17	02-Mar-17	312	25-Mar-17	30-Mar-17	-172	288	95%
Noise Enclosure		22-Aug-16	18-Oct-16	25-Feb-17	18-Mar-17		25-Mar-17	20-Apr-17	-145	288	
01112.55060	NFA - Acoustic Test	04-Oct-16	18-Oct-16	06-Mar-17	18-Mar-17	312	03-Apr-17	20-Apr-17	-145	288	0%
01112.55120	NFA - Noise Metal Cladding	22-Aug-16	03-Oct-16	25-Feb-17	04-Mar-17	312	25-Mar-17	01-Apr-17	-145	288	95%
NSL/ EWL Area 2 - NSL U100+408 to U100+466		09-Jul-16	24-Nov-16	25-Feb-17	21-Apr-17		25-Mar-17	22-May-17	-138	263	
ELS and Tunnel Structure		09-Jul-16	28-Sep-16	25-Feb-17	24-Mar-17		25-Mar-17	26-Apr-17	-165	283	
01112.31560	N2 - Construct Derailment Kerb to NSL	09-Jul-16	23-Jul-16	25-Feb-17	11-Mar-17	-30	25-Mar-17	10-Apr-17	-210	-54	0%
01112.31580	N2 - Construct Derailment Kerb to EWL	13-Sep-16	28-Sep-16	25-Feb-17	03-Mar-17	-74	25-Mar-17	31-Mar-17	-147	301	95%
01112.81090	N2 - Install Noise Absorptive Panels	06-Aug-16	02-Sep-16	25-Feb-17	24-Mar-17	-92	25-Mar-17	26-Apr-17	-186	-116	0%
Noise Barrier - Option 1		13-Sep-16	24-Sep-16	25-Feb-17	08-Mar-17		25-Mar-17	06-Apr-17	-154	297	
01112.31590	N2 - Noise Barrier Erect Steel Structure	13-Sep-16	20-Sep-16	25-Feb-17	03-Mar-17	-78	25-Mar-17	31-Mar-17	-154	297	10%
01112.31592	N2 - Install Absorptive Panels (Final Works to be completed after System Works)	21-Sep-16	24-Sep-16	04-Mar-17	08-Mar-17	-78	01-Apr-17	06-Apr-17	-154	297	0%
Interfacing with 1111		14-Oct-16	24-Nov-16	14-Mar-17	21-Apr-17		12-Apr-17	22-May-17	-138	-85	
01112.31720	1111 - Complete Stitching and Make Good Waterproofing	14-Oct-16	24-Nov-16	14-Mar-17	21-Apr-17	-61	12-Apr-17	22-May-17	-138	-85	20%



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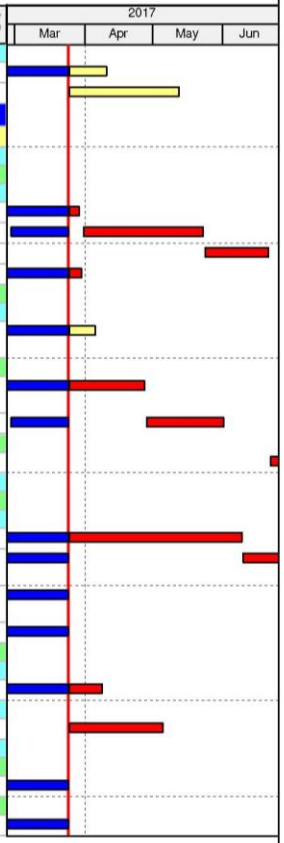
Reinstatement		23-Jul-16	17-Sep-16	25-Feb-17	08-Apr-17		25-Mar-17	12-May-17	-186	271	
01112.55200	NFA - Underground Utilities	23-Jul-16	02-Sep-16	25-Feb-17	11-Mar-17	-104	25-Mar-17	10-Apr-17	-175	271	55%
01112.55210	NFA - Reinstatement & Landscaping	06-Aug-16	17-Sep-16	25-Feb-17	08-Apr-17	-104	25-Mar-17	12-May-17	-186	271	0%
HUH MODIFICATION		28-Oct-14	23-Sep-17	25-Feb-17	29-Jun-18		25-Mar-17	31-May-18	-250	14	
Modification Podium Concourse Level		28-Oct-14	23-Sep-17	25-Feb-17	29-Jun-18		25-Mar-17	31-May-18	-196	12	
Stage 1		28-Oct-14	26-Jan-16	25-Feb-17	21-Jul-17		25-Mar-17	18-Aug-17	-455	239	
Area M12 , M37, M36		13-Nov-14	27-Nov-15	25-Feb-17	24-May-17		25-Mar-17	21-Jun-17	-455	-451	
Construction of Future Station Control Room and DEE & MOE Stairs at G.L. 21-22/K1-M1		13-Nov-14	27-Nov-15	25-Feb-17	24-May-17		25-Mar-17	21-Jun-17	-455	-451	
01112.35320	S1 - Construction of the R.C. structure of the lift shaft and staircase	13-Nov-14	17-Dec-14	25-Feb-17	01-Mar-17	-426	25-Mar-17	29-Mar-17	-665	-450	30%
01112.35340	S1 - Construction of slab and wall Associated ABWF Works	27-Jun-15	29-Aug-15	03-Mar-17	22-Apr-17	-427	31-Mar-17	23-May-17	-504	-451	60%
01112.35360	S1 - Station System Works (by other Designated Contractors)	31-Aug-15	27-Nov-15	24-Apr-17	24-May-17	-427	24-May-17	21-Jun-17	-455	-451	0%
01112.35370	S1 - Construction of slab and wall	15-Apr-15	26-Jun-15	25-Feb-17	02-Mar-17	-427	25-Mar-17	30-Mar-17	-518	-451	90%
Area M35		28-Oct-14	20-Dec-14	25-Feb-17	07-Mar-17		25-Mar-17	05-Apr-17	-667	348	
Modification of Smoke Extract Duct and Revise MOE Staircase at G.L. 23-25/B-C		28-Oct-14	20-Dec-14	25-Feb-17	07-Mar-17		25-Mar-17	05-Apr-17	-667	348	
01112.35640	S1 - Modification of Smoke Extract Duct and Revise MOE Staircase at G.L. 23-25/B-C	28-Oct-14	20-Dec-14	25-Feb-17	07-Mar-17	372	25-Mar-17	05-Apr-17	-667	348	20%
Area M8		29-Jun-15	22-Oct-15	25-Feb-17	04-May-17		25-Mar-17	01-Jun-17	-469	-434	
01112.81180	S1 - Fill-up void and replace existing screeding with light weight concrete over excalator void	29-Jun-15	24-Aug-15	25-Feb-17	25-Mar-17	-410	25-Mar-17	27-Apr-17	-489	-434	20%
01112.81190	S1 - Replace existing screeding with light weight concrete remaining areas	25-Aug-15	22-Oct-15	27-Mar-17	04-May-17	-410	28-Apr-17	01-Jun-17	-469	-434	20%
Inspection and Change Over		28-Nov-15	26-Jan-16	25-May-17	21-Jul-17		22-Jun-17	18-Aug-17	-455	-451	
01112.35700	S1 - Inspections, T&C, Change Over	28-Nov-15	26-Jan-16	25-May-17	21-Jul-17	-427	22-Jun-17	18-Aug-17	-455	-451	0%
Stage 2		21-Mar-16	30-Nov-16	25-Feb-17	23-Sep-17		25-Mar-17	24-Oct-17	-262	-237	
Area M13 & M14		21-Mar-16	30-Nov-16	25-Feb-17	23-Sep-17		25-Mar-17	24-Oct-17	-262	-237	
Civil and ABWF Provision for Escalators at G.L. 27-33/B-C from Mid Level to Podium Concourse Level		21-Mar-16	30-Nov-16	25-Feb-17	23-Sep-17		25-Mar-17	24-Oct-17	-262	-237	
01112.36140	S2 - Modification and strengthening work for the existing structure	21-Mar-16	02-Jul-16	25-Feb-17	12-May-17	-230	25-Mar-17	09-Jun-17	-275	-241	95%
01112.36150	S2 - Civil Provision for Escalators at G.L. 27-33/B-C from Mid Level to Podium Concourse Level	04-Jul-16	26-Sep-16	13-May-17	29-Jul-17	-230	10-Jun-17	26-Aug-17	-268	-241	95%
01112.36160	S2 - Installation of New Escalators at G.L. 27-33/B-C from Mid Level to Podium Concourse Level (By 1172)	27-Sep-16	30-Nov-16	31-Jul-17	23-Sep-17	-230	28-Aug-17	24-Oct-17	-262	-237	95%
01112.36170	S2 - Associated ABWF Works	20-Oct-16	30-Nov-16	14-Aug-17	23-Sep-17	-230	11-Sep-17	24-Oct-17	-262	-237	95%
Area M17 & M38		27-Jul-16	30-Nov-16	25-Feb-17	31-Mar-17		25-Mar-17	05-May-17	-119	-94	
Construction of new Mezzanine Floor For F&B at G.L. 31-37/J1-L1		27-Jul-16	26-Nov-16	25-Feb-17	10-Mar-17		25-Mar-17	08-Apr-17	-104	-76	
01112.36110	S2 - Building Services Works (by 1173)	27-Jul-16	26-Nov-16	25-Feb-17	10-Mar-17	-69	25-Mar-17	08-Apr-17	-104	-76	99%
Civil and ABWF works for escalator U2-ESC 03, 04, 11-14 at G.L. 26-34/L-L1		27-Oct-16	30-Nov-16	25-Feb-17	31-Mar-17		25-Mar-17	05-May-17	-119	-94	
01112.36230	S2 - Installation of new escalators (by 1172)	27-Oct-16	30-Nov-16	25-Feb-17	31-Mar-17	-87	25-Mar-17	05-May-17	-119	-94	0%
Stage 3		06-Feb-17	23-Sep-17	23-Nov-17	29-Jun-18		25-Oct-17	31-May-18	-196	-169	
Site Preparation		06-Mar-17	18-Mar-17	21-Dec-17	06-Jan-18		23-Nov-17	06-Dec-17	-214	-206	
01112.36340	S3 - Erection of Hoarding	06-Mar-17	18-Mar-17	21-Dec-17	06-Jan-18	-230	23-Nov-17	06-Dec-17	-214	-206	60%
Pre-Possession Preparation		06-Feb-17	04-Mar-17	23-Nov-17	20-Dec-17		25-Oct-17	22-Nov-17	-214	-206	
01112.36300	S3 - Relocation of AFC and wide gate	06-Feb-17	04-Mar-17	23-Nov-17	20-Dec-17	-230	25-Oct-17	22-Nov-17	-214	-206	70%



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Three Month Rolling Programme (25-March-17)

Project ID : 01112-3M49
Layout : March 2017 MPR
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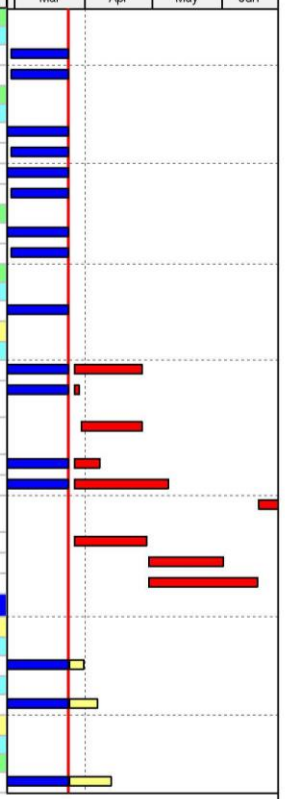
Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

Data Date : 25-Mar-17
Print Date : 28-Mar-17

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
Area M26		26-May-17	23-Sep-17	14-Feb-18	27-Jun-18		08-Dec-17	06-Apr-18	-151	-124	
Construction of New Concession area at G.L. 28-32/E-J1		26-May-17	23-Sep-17	14-Feb-18	27-Jun-18		08-Dec-17	06-Apr-18	-151	-124	
01112.36490	S3 - ABWF works	26-May-17	10-Aug-17	14-Feb-18	11-May-18	-191	08-Dec-17	02-Mar-18	-163	-124	20%
01112.36500	S3 - Building services works (by 1173)	09-Jun-17	23-Sep-17	07-Mar-18	27-Jun-18	-191	08-Dec-17	06-Apr-18	-151	-124	30%
Area M29		20-Mar-17	06-Sep-17	08-Jan-18	29-Jun-18		07-Dec-17	31-May-18	-211	-169	
Construction of Staircase U2-ST-69 (SEE) and MOE U2-ST-59 at G.L. 38-39/K1-M1		20-Mar-17	06-Sep-17	08-Jan-18	29-Jun-18		07-Dec-17	31-May-18	-211	-169	
01112.36410	S3 - Structural modification works at G.L. 38-39/K1-M1	20-Mar-17	20-Apr-17	08-Jan-18	03-Feb-18	-230	07-Dec-17	06-Jan-18	-214	-206	20%
01112.36420	S3 - Erect structural steelwork for the staircase	23-Mar-17	24-Apr-17	08-Jan-18	03-Feb-18	-230	07-Dec-17	06-Jan-18	-211	-206	5%
01112.36430	S3 - Forming slab openings and construct the staircase structure	25-Apr-17	12-Jun-17	05-Feb-18	29-Mar-18	-230	08-Jan-18	01-Mar-18	-211	-206	20%
01112.36450	S3 - Building services work (by 1173)	13-Jun-17	06-Sep-17	03-Apr-18	29-Jun-18	-193	02-Mar-18	31-May-18	-211	-169	5%
Building Services		20-Mar-17	29-Aug-17	08-Jan-18	25-Jun-18		07-Dec-17	26-May-18	-214	-191	
01112.36610	BS - S3 Diversion and Modification after Possession	20-Mar-17	15-Jun-17	08-Jan-18	10-Apr-18	-215	07-Dec-17	08-Mar-18	-214	-191	60%
01112.36640	BS - S3 Dismantle Abandoned Services	16-Jun-17	29-Aug-17	11-Apr-18	25-Jun-18	-215	09-Mar-18	26-May-18	-214	-191	50%
Area M19-M25		25-Apr-17	02-May-17	05-Feb-18	10-Feb-18		08-Jan-18	13-Jan-18	-211	-123	
Upgrading wall Finishes at G.L. C-E/26-28		25-Apr-17	02-May-17	05-Feb-18	10-Feb-18		08-Jan-18	13-Jan-18	-211	-123	
01112.36570	S3 - Erect Hoarding	25-Apr-17	02-May-17	05-Feb-18	10-Feb-18	-147	08-Jan-18	13-Jan-18	-211	-123	50%
Area M33, M34		31-Aug-15	24-Jan-17	27-Feb-17	03-Jun-17		27-Mar-17	04-Jul-17	-161	-122	
Modification Walkway Level (Mid Level)		31-Aug-15	24-Jan-17	27-Feb-17	03-Jun-17		27-Mar-17	04-Jul-17	-161	-122	
01112.99970	ENT E - Demolish wall at mid-level walkway (GL B/24-26 & B/34-36) (I&P)	07-Sep-16	07-Oct-16	27-Feb-17	24-Mar-17	-35	27-Mar-17	26-Apr-17	-78	-47	85%
01112.99972	ENT E - Installation of strengthening beams & hanger post underneath the concourse slab (GL 26-29 & 31-34)	31-Aug-15	30-Dec-15	27-Feb-17	01-Mar-17	-35	27-Mar-17	29-Mar-17	-181	-47	95%
01112.99974	ENT E-Setup the temp frame (1172) & install lifting beams for escalators installation at concourse slab (GL 26-28,32-34)	31-Dec-15	30-Jan-16	02-Mar-17	24-Mar-17	-30	30-Mar-17	26-Apr-17	-357	-54	0%
01112.99978	ENT E - Demolish the designated podium slab and beams (NTH)	03-Mar-16	04-May-16	27-Feb-17	09-Mar-17	-72	27-Mar-17	07-Apr-17	-274	-96	85%
01112.99980	ENT E - Remove the debris shield for the podium opening (I&P)	04-May-16	04-Jul-16	27-Feb-17	31-Mar-17	-35	27-Mar-17	08-May-17	-120	-47	0%
01112.99982	ENT E - Install escalator & remove temporary lifting frame (by 1172) - Up to 4K Degree 3 Completion	10-Jan-17	24-Jan-17	20-May-17	03-Jun-17	-72	17-Jun-17	04-Jul-17	-124	-96	0%
01112.99986	ENT E - Floor finish (NTH)	06-Sep-16	06-Oct-16	27-Feb-17	27-Mar-17	-72	27-Mar-17	28-Apr-17	-161	-96	0%
01112.99988	ENT E - Wall finish & ceiling (NTH) up to 4K Degree 1 Completion	08-Oct-16	09-Nov-16	28-Mar-17	04-May-17	-72	29-Apr-17	01-Jun-17	-160	-96	0%
01112.99990	ENT E - Escalator enclosure (NTH) - up to 4K Degree 2 Completion	10-Nov-16	09-Jan-17	28-Mar-17	19-May-17	-72	29-Apr-17	16-Jun-17	-124	-96	0%
HUNG HOM STABLING SIDINGS (HHS)		28-Oct-14	10-Mar-16	25-Feb-17	18-Mar-17		25-Mar-17	20-Apr-17	-324	328	
Transformer Rooms and Accommodation - Piling (Block 1A, 1B & 2)		17-Jan-15	07-May-15	25-Feb-17	08-Mar-17		25-Mar-17	06-Apr-17	-564	297	
Store Rooms - Block 1A		17-Jan-15	13-Mar-15	25-Feb-17	03-Mar-17		25-Mar-17	31-Mar-17	-602	301	
01112.99815	Blk1A - ABWF	17-Jan-15	13-Mar-15	25-Feb-17	03-Mar-17	325	25-Mar-17	31-Mar-17	-602	301	94%
Office Rooms - Block 2		14-Mar-15	07-May-15	25-Feb-17	08-Mar-17		25-Mar-17	06-Apr-17	-564	297	
01112.99875	Blk2 - E&M Installation	14-Mar-15	07-May-15	25-Feb-17	08-Mar-17	321	25-Mar-17	06-Apr-17	-564	297	95%
Package 2		28-Oct-14	08-Jan-15	25-Feb-17	14-Mar-17		25-Mar-17	12-Apr-17	-660	307	
Abandon Subway Works (Grid A11 to A12)-1		28-Oct-14	08-Jan-15	25-Feb-17	14-Mar-17		25-Mar-17	12-Apr-17	-660	307	
Demolition Works		28-Oct-14	08-Jan-15	25-Feb-17	14-Mar-17		25-Mar-17	12-Apr-17	-660	307	
01112.97196	HHS - Install smoke barriers	28-Oct-14	08-Jan-15	25-Feb-17	14-Mar-17	331	25-Mar-17	12-Apr-17	-660	307	82%



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Three Month Rolling Programme (25-March-17)

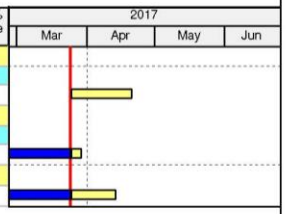
Project ID : 01112-3M49
Layout : March 2017 MPR
Page 6 of 7

Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

Data Date : 25-Mar-17
Print Date : 28-Mar-17

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Feb/2017 3MR Early Start	Feb/2017 3MR Early Finish	Feb/2017 Variance	Mar/2017 3MR Early Start	Mar/2017 3MR Early Finish	Mar/2017 Variance	Total Float	Activity % Complete
Package 3		10-Feb-15	16-Mar-15	25-Feb-17	18-Mar-17		25-Mar-17	20-Apr-17	-613	328	
New Underpass Works (A16 - A17)		10-Feb-15	16-Mar-15	25-Feb-17	18-Mar-17		25-Mar-17	20-Apr-17	-613	328	
01112.97312	HHS - UDP BD Inspection	10-Feb-15	16-Mar-15	25-Feb-17	18-Mar-17	352	25-Mar-17	20-Apr-17	-613	328	0%
Package 4a		13-Aug-15	23-Sep-15	25-Feb-17	01-Mar-17		25-Mar-17	29-Mar-17	-442	303	
Reprovisioning Underpass Grid A-22 / A-23A		13-Aug-15	23-Sep-15	25-Feb-17	01-Mar-17		25-Mar-17	29-Mar-17	-442	303	
01112.97405	HHS - UDP Backfilling & Zone u/g utilities installation	13-Aug-15	23-Sep-15	25-Feb-17	01-Mar-17	327	25-Mar-17	29-Mar-17	-442	303	98%
Trackform		07-Dec-15	10-Mar-16	25-Feb-17	15-Mar-17		25-Mar-17	13-Apr-17	-321	291	
01112.97298	HHS - Trackform for Launching & Retrieval Tracks (Ch.450 to 800)	07-Dec-15	10-Mar-16	25-Feb-17	15-Mar-17	315	25-Mar-17	13-Apr-17	-321	291	98%



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
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Three Month Rolling Programme (25-March-17)

Project ID : 01112-3M49
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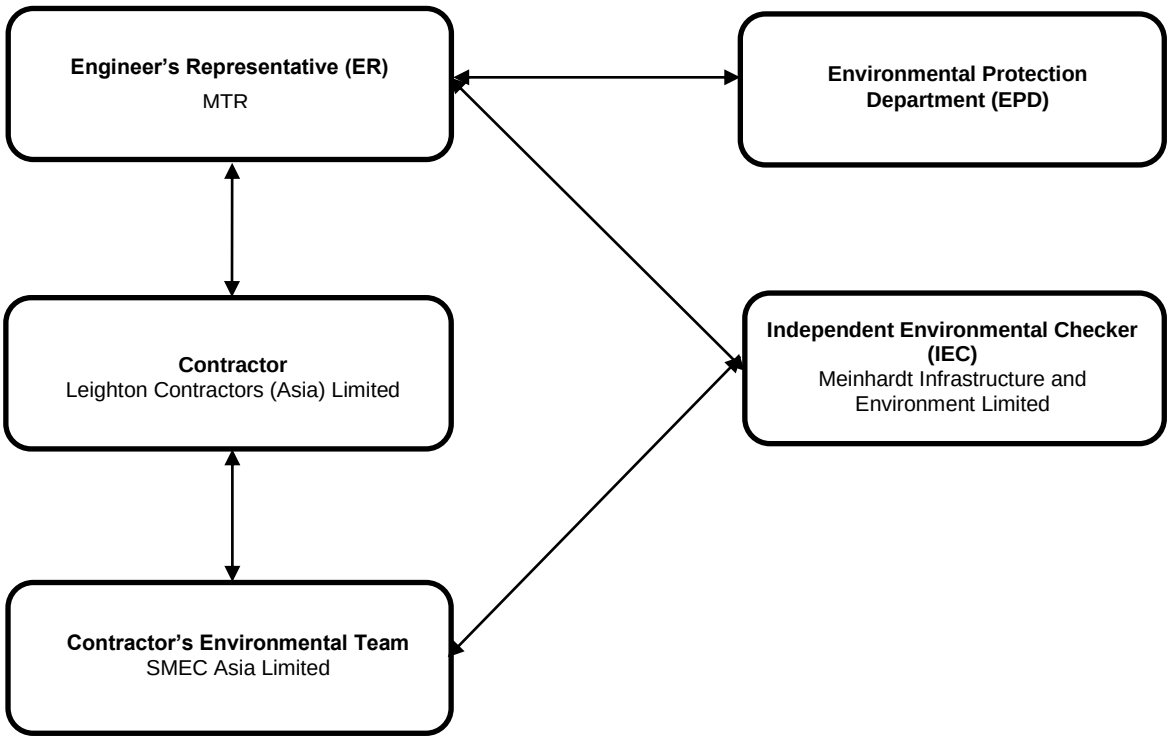
Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

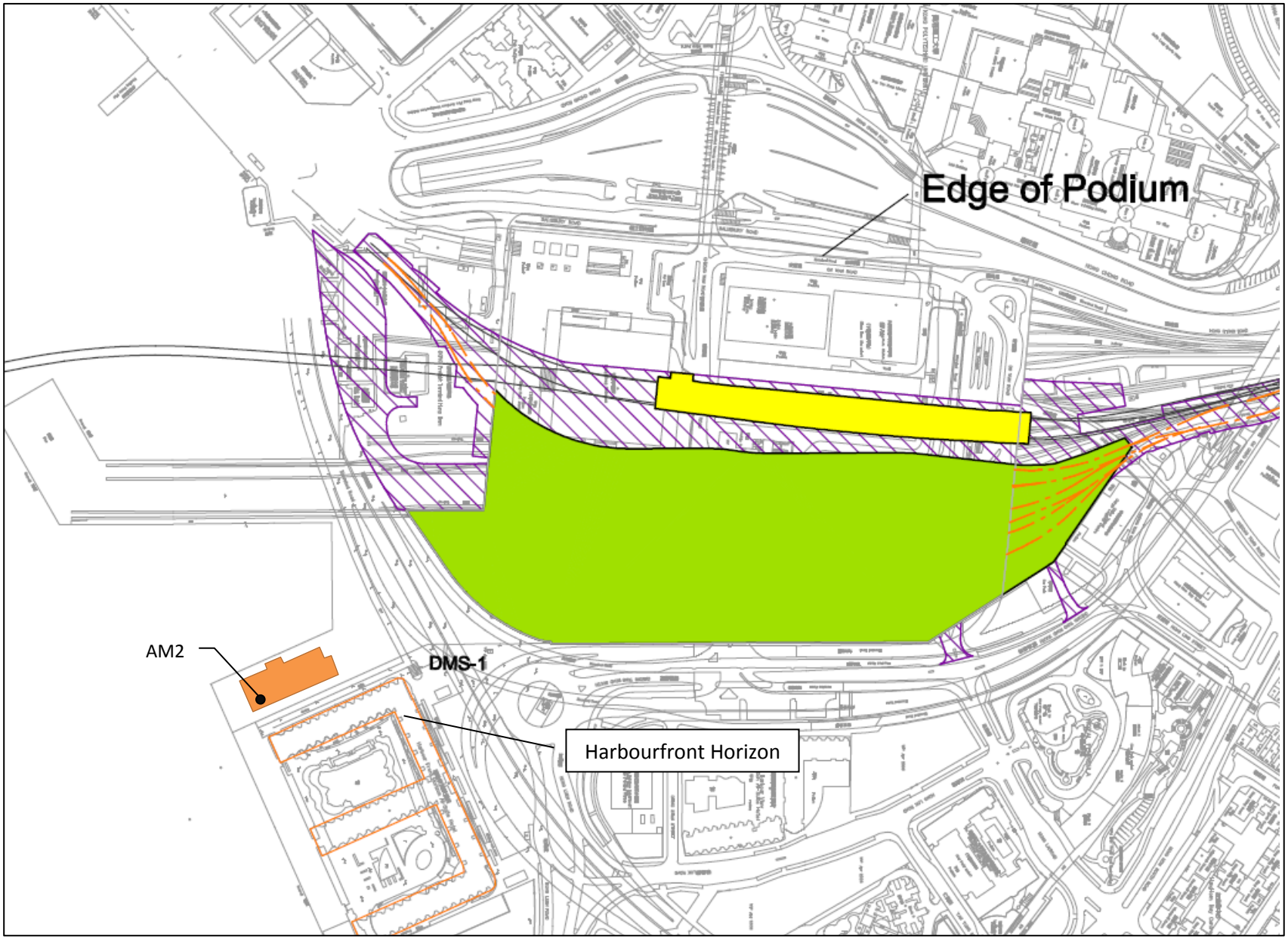
APPENDIX C

Project Organisation for Environmental Works


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

APPENDIX D

Location of Air Quality Monitoring Station


Edge of Podium
AM2
DMS-1
Harbourfront Horizon

APPENDIX E

Calibration Certificates for Monitoring Equipment

TSP Sampler Calibration

SITE

Location:	Hung Hom	Calibration Date:	February 14, 2017
Sampler:	Hunghom MTR TSP	Next Calibration Date:	April 14, 2017
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	40.48	Corrected Pressure (mm Hg):	1028
Temperature (deg F):	70	Temperature (deg K):	294
Average Press. (in Hg):	40.48	Corrected Average (mm Hg):	1028
Average Temp. (deg F):	70	Average Temp. (deg K):	294

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.00411
Model:	TE-5025A	Qstd Intercept:	-0.03059
Serial#:	1612	Date Certified:	March 14, 2016

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	2.039	58.0	67.91	Slope =	33.0024
2	10.00	1.863	54.0	63.22	Intercept =	1.2632
3	7.80	1.647	48.0	56.20	Corr. coeff.=	0.9992
4	5.00	1.322	38.0	44.49		
5	3.00	1.027	30.0	35.12	# of Observations:	5

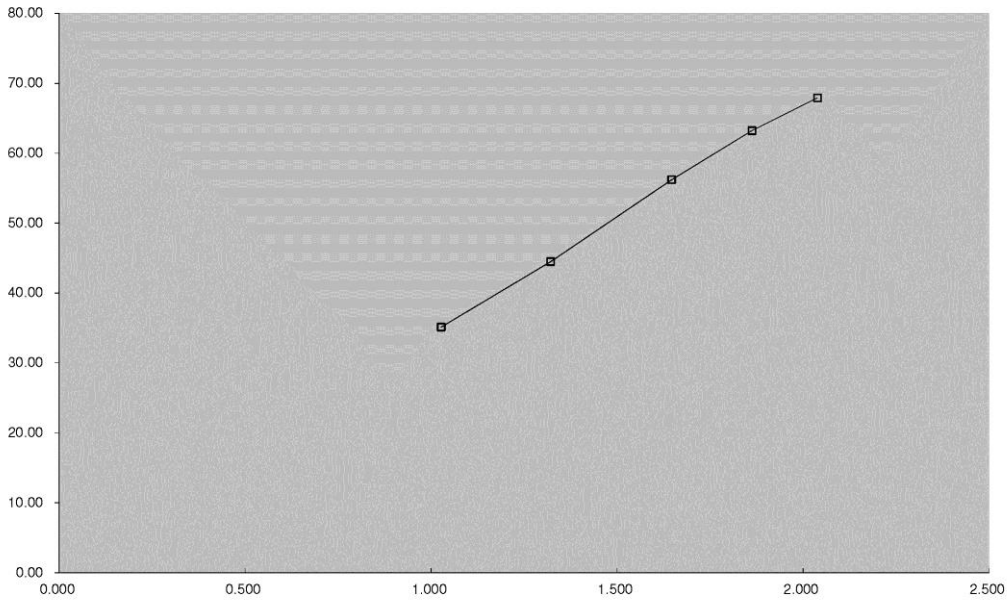
Calculations

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

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

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

Reviewer: Sam Wong Signature: _____ Date: February 14, 2017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70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.000
0.500
1.000
1.500
2.000
2.500

TSP Sampler Calibration

SITE

Location:	Hung Hom	Calibration Date:	March 9, 2017
Sampler:	Hunghom MTR TSP	Next Calibration Date:	May 9, 2017
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	40.00	Corrected Pressure (mm Hg):	1016
Temperature (deg F):	68	Temperature (deg K):	293
Average Press. (in Hg):	40.00	Corrected Average (mm Hg):	1016
Average Temp. (deg F):	68	Average Temp. (deg K):	293

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.00411
Model:	TE-5025A	Qstd Intercept:	-0.03059
Serial#:	1612	Date Certified:	March 14, 2016

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	2.031	58.0	67.63	Slope =	33.0024
2	10.00	1.855	54.0	62.97	Intercept =	1.2560
3	7.80	1.640	48.0	55.97	Corr. coeff.=	0.9992
4	5.00	1.316	38.0	44.31		
5	3.00	1.023	30.0	34.98	# of Observations:	5

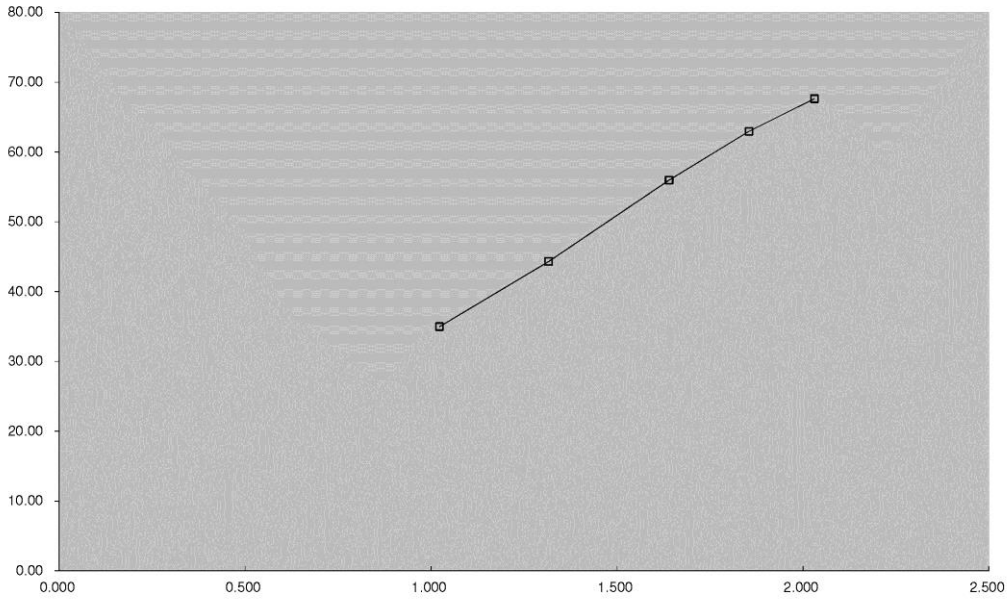
Calculations

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

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

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

Reviewer: Sam Wong Signature: _____ Date: March 9, 2017


80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.000
0.500
1.000
1.500
2.000
2.500

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
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ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 1612 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3770	3.2	2.00
2	NA	NA	1.00	0.9710	6.4	4.00
3	NA	NA	1.00	0.8710	7.8	5.00
4	NA	NA	1.00	0.8310	8.7	5.50
5	NA	NA	1.00	0.6860	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9866	0.7165	1.4078		0.9957	0.7231	0.8896
0.9824	1.0117	1.9909		0.9914	1.0210	1.2581
0.9804	1.1256	2.2259		0.9894	1.1360	1.4066
0.9793	1.1785	2.3345		0.9883	1.1893	1.4753
0.9741	1.4200	2.8155		0.9830	1.4330	1.7792
Qstd slope (m) =	2.00411			Qa slope (m) =		1.25494
intercept (b) =	-0.03059			intercept (b) =		-0.01933
coefficient (r) =	0.99995			coefficient (r) =		0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

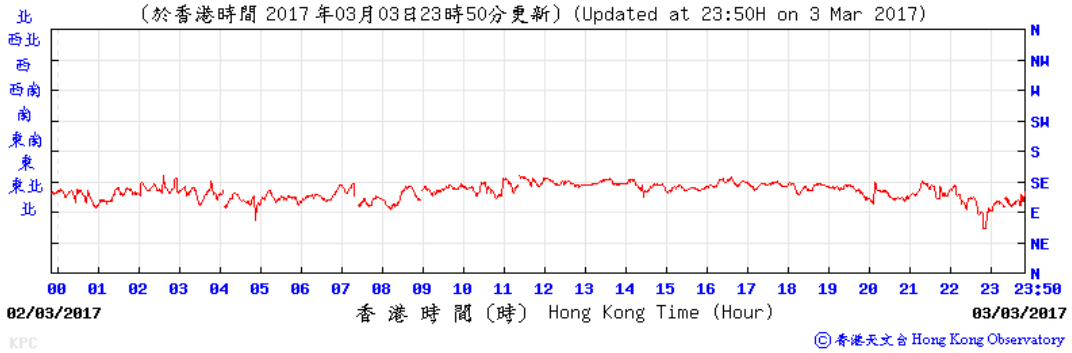
For subsequent flow rate calculations:

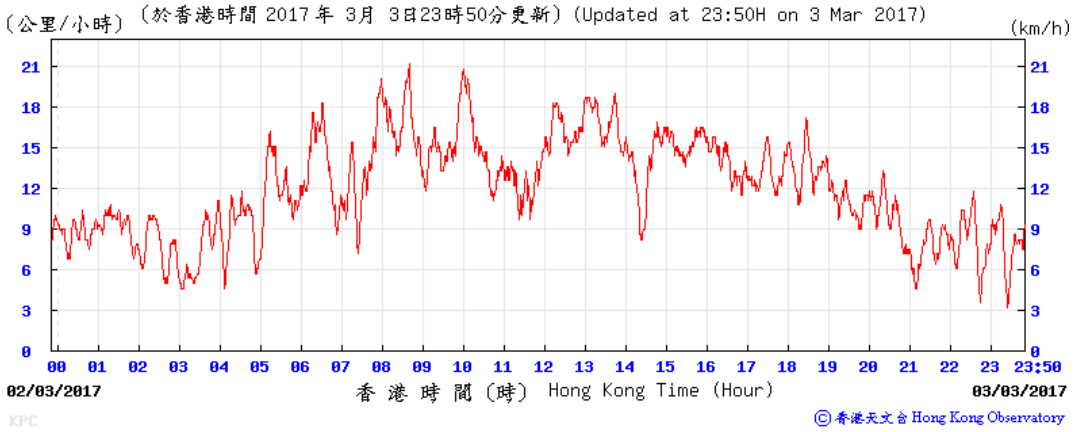
Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

Appendix F

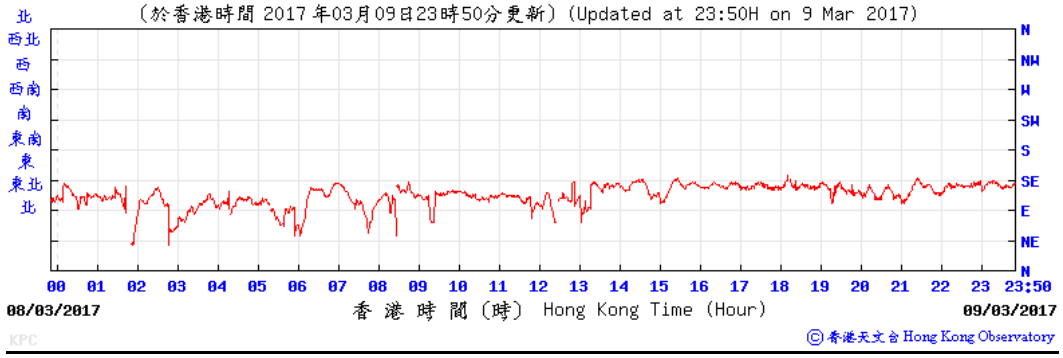
Wind Data

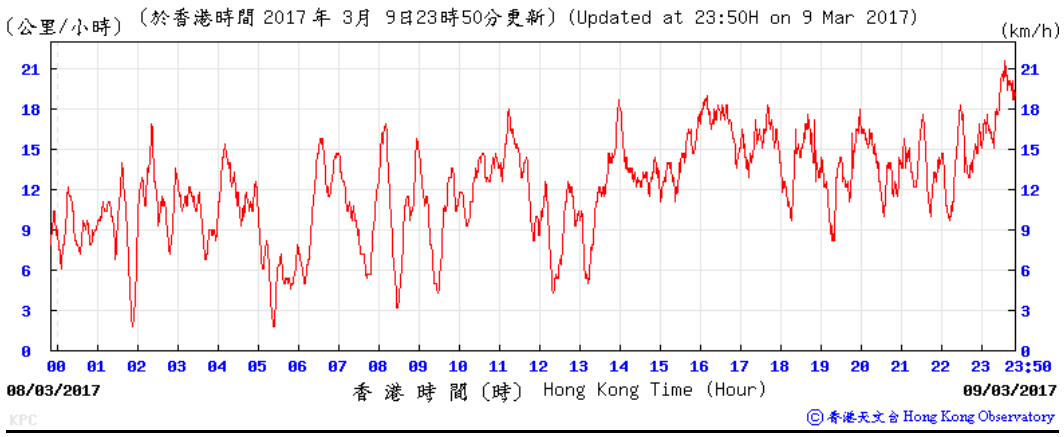
3 March 2017



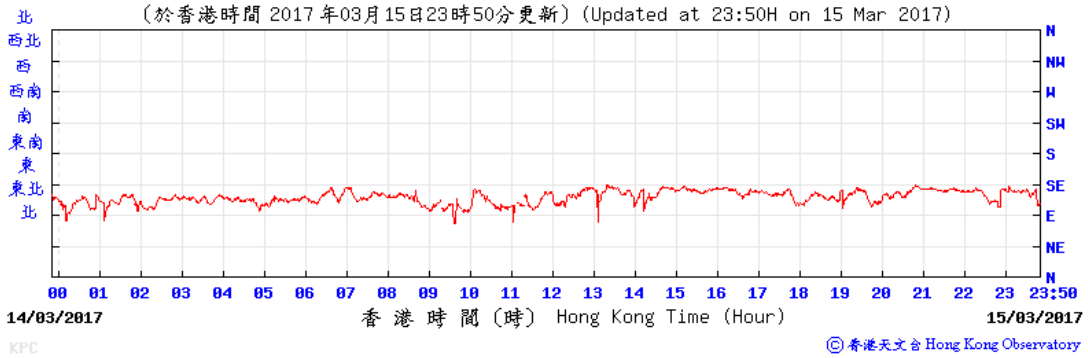


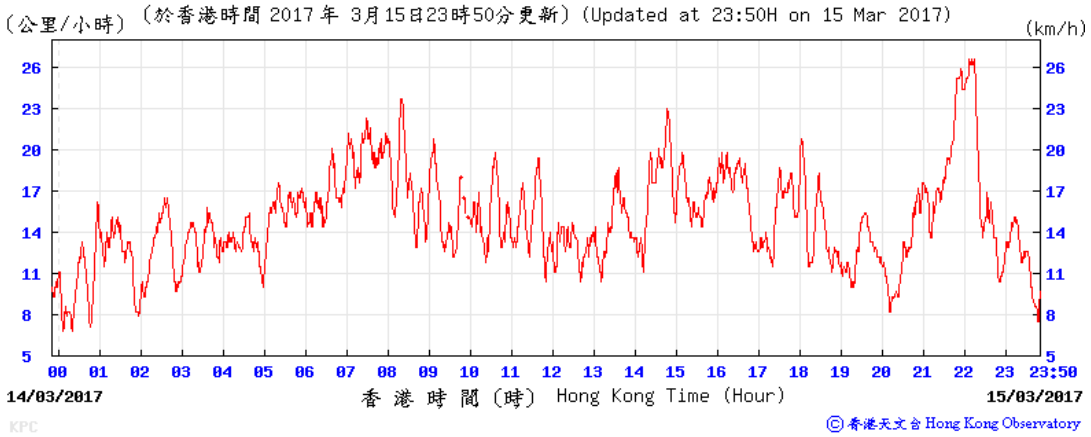
9 March 2017



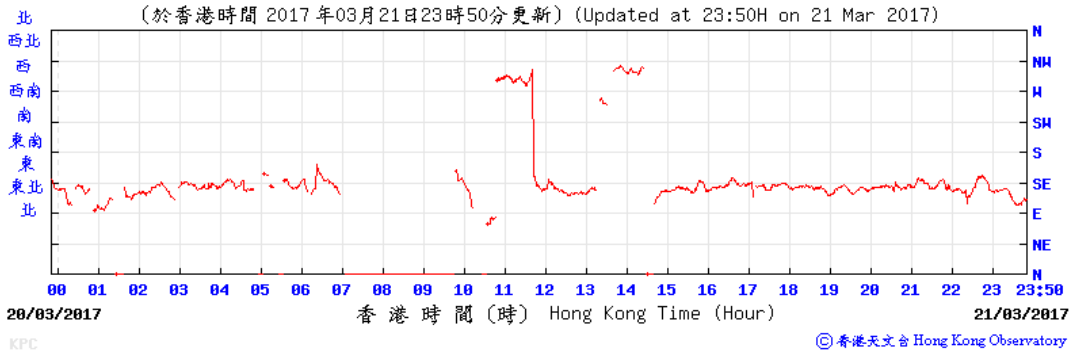


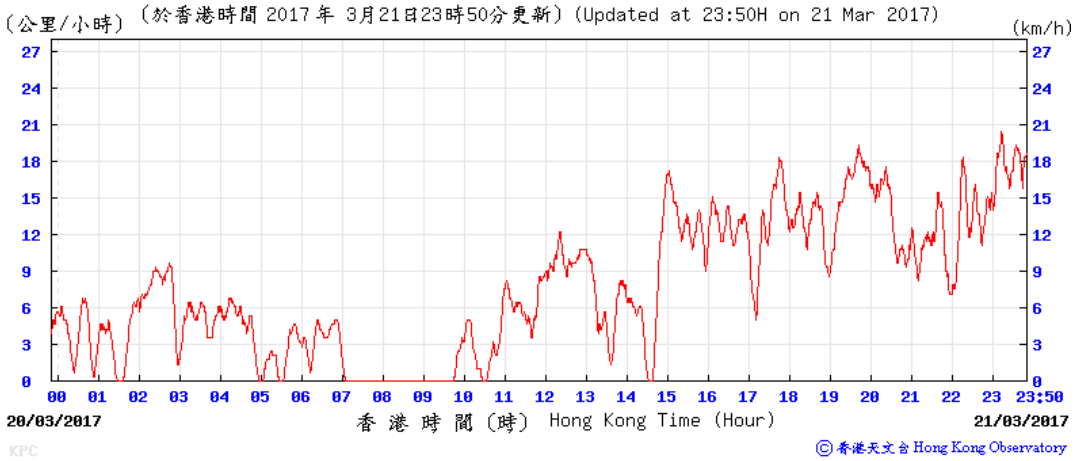
15 March 2017



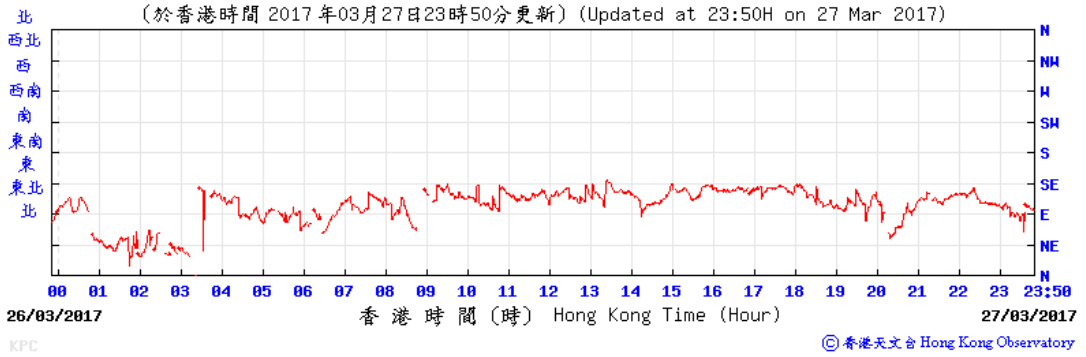


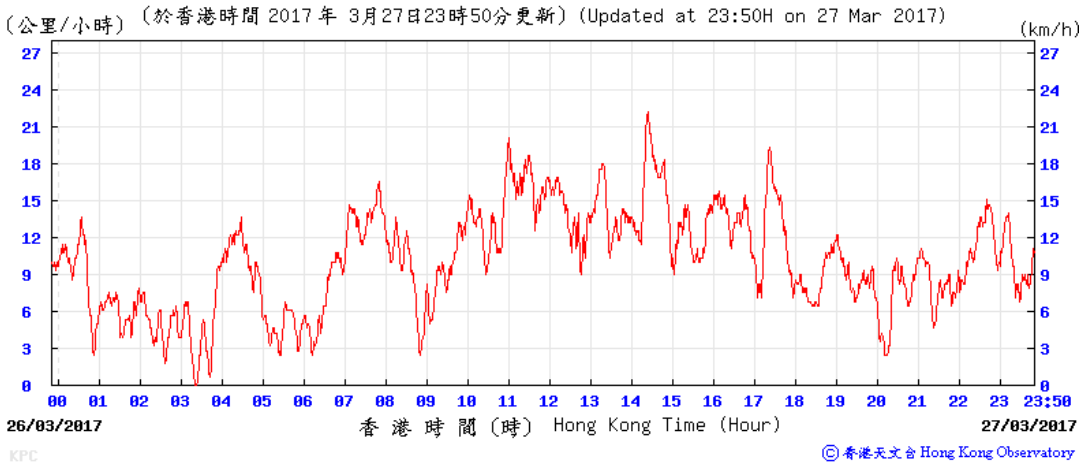
21 March 2017





27 March 2017





Appendix G

Environmental Monitoring Programme

Environmental Monitoring Schedule for SCL1112 in March 2017

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	27 24 hr TSP	28	29	30	31	

Environmental Monitoring Schedule for SCL1112 in April 2017

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

APPENDIX H

Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Landscape & Visual (Construction Phase)							
S6.9.3 and S6.12 of Ref.1; Table 4.9 of Ref. 2; S6.12 of Ref. 3	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of existing soil</u> • 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. <u>No-intrusion zone</u> • 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. <u>Protection of retained trees</u> • All retained trees will be recorded photographically at the commencement of the contract, and carefully protected during the construction period. • The contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.	Minimise visual and landscape impact	Contractor	Within project site	Construction Stage	EIAO-TM	^ ^ ^ ^
S6.12 of Ref.1; Table 4.9 of Ref. 2; Table 6.9 of Ref. 3	<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 will be designed to be compatible with the existing urban context. <u>Management of facilities on work sites</u> • 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. <u>Tree transplanting</u> • Trees of medium to high survival rate that would be affected by the works will be transplanted where possible and	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	^ ^ ^

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
	practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.						
Air Quality (Construction Phase)							
N.A.	Emission from Vehicles and Plants: • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD).	Reduce air pollution emission from construction vehicles and plants	Contractor	All constructions sites	Construction stage	Air Pollution Control Ordinance (APCO)	^ * ^
Construction Dust Impact							
S7.6.5 of Ref. 1; S7.6.6 of Ref. 3	The contractor will follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation.	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO 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: • 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. • Transportation of the spoil from the construction sites to the Barging Point – watering once along all paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/m^2 once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7L/m^2 to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the	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
	EM&A Manual. • Vehicles leaving the barging facilities – vehicles would be required to pass through the wheel washing facilities to be provided at site exit.						N/A
S7.6.5 of Ref. 1; S5.50 of Ref. 2; S7.6.6 of Ref. 3	Mitigation measures in form of regular watering under a good site practice will be adopted. Watering once per hour on exposed worksites and haul road will be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but will be sufficient to maintain an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency.	Minimise dust impact at the nearby sensitive receivers	Contractor	Active works areas, exposed areas and paved haul roads	Construction stage	APCO To control the dust impact to meet HKAQO and EIAO-TM criteria	^
S7.6.5 of Ref. 1; S5.51 of Ref. 2; S7.6.6 of Ref. 3	• Any excavated or stockpile of dusty material will be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading. • Any dusty materials remaining after stockpiles are removed will be wetted and cleared from the surface of roads. • A stockpile of dusty material will not be extended beyond the pedestrian barriers, fencing or traffic cones. • 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. • 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. • 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. • 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. • Surfaces where any pneumatic or power-driven drilling,	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
	cutting, polishing or other mechanical breaking operation takes place will be sprayed with water or a dust suppression chemical continuously. • Any area that involves demolition activities will 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. • 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. • Any skip hoist for material transport will be totally enclosed by impervious sheeting. • 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. • 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. • 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. • 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.						^ ^ N/A ^ * ^ ^ ^
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
Construction Airborne Noise							
S8.3.6 of Ref. 1; S6.61 of Ref. 2; S8.5.6 of Ref. 3	Implement the following good site practices: • Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction programme. • 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. • Plant known to emit noise strongly in one direction, where possible; be orientated so that the noise is directed away from nearby NSRs. • Silencers or mufflers on construction equipment will be properly fitted and maintained during the construction works. • Mobile plant will be sited as far away from NSRs as possible and practicable. • Material stockpiles, mobile container site office and other structures will be effectively utilised, where practicable, to screen noise from onsite construction activities.	Control construction airborne noise	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^ ^ ^ ^ ^ ^
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: • Asphalt Paver (SWL=101dB(A)) • Backhoe (SWL=106dB(A)) • Backhoe with Hydraulic Breaker (SWL=110dB(A)) • Concrete lorry mixer (SWL=96dB(A)) • Concrete mixer truck (SWL=96dB(A)) • Concrete Pump (SWL=106dB(A)) • Concrete Pump Truck (SWL=106dB(A)) • Crane, mobile (SWL=94dB(A)) • Crawler Crane (SWL=102dB(A))	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
	• Drill, hand-held (SWL=98dB(A)) • Dump truck (SWL=104dB(A)) • Excavator (SWL=106dB(A)) • Flat Bed Lorry (SWL=102dB(A)) • Generator (SWL=95dB(A)) • Giken Piler and Power-pack (SWL=94dB(A)) • Hydraulic breaker (SWL=110dB(A)) • Hydraulic excavator (SWL=106dB(A)) • Lorry (SWL=102dB(A)) • Lorry with crane/ grab (SWL=94dB(A)) • Mini Piling Rig (SWL=112dB(A)) • Piling Rig (SWL=112dB(A)) • Poker, vibrator, hand-held (SWL=98dB(A)) • Road Roller (SWL=101dB(A)) • Rock Drill (SWL = 108dB(A) • Roller (SWL = 101dB(A) • Truck (SWL=103dB(A)) • Vibratory Hammer (SWL=118dB(A))						
S8.3.6 of Ref. 1; S8.5.6 of Ref. 3	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^
S8.3.6 of Ref. 1; S8.5.6 of Ref. 3	Implement noise monitoring under EM&A programme.	Monitoring of construction noise impact	Contractor	Wing Fung Building	Construction stage as required by IEC	TM-EIA	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Water Quality (Construction Phase)							
S10.7.1 of Ref. 1;S8.41 – 8.39 and S8.50 of Ref. 2; S10.7.1 of Ref. 3	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, EPD, 1994 (ProPECC PN1/94), construction phase mitigation measures will include the following: <u>Construction runoff and site drainage</u> • 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. • 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. • 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^3/s a sedimentation basin of 30m^3 would be required and for a flow rate of 0.5m^3/s the basin would be 150m^3. Detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of works. • 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. • 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,	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	Water Pollution Control Ordinance (WPCO) ProPECC PN1/94 EIAO-TM TM-Water Technical Memorandum on Effluent Discharge Standard (TM-DSS)	^ ^ ^ ^ ^

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
	vegetated areas. • Measures will be taken to minimise the ingress of site drainage 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ will be covered with tarpaulin or similar fabric during rainstorms. • Measures will be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • 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. • 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. • 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. • 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						^ ^ ^ ^ ^ ^

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 oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site will be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas will 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. • 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. • Adopt Best Management Practices.						^ ^ ^ ^
S10.7.1 of Ref. 1; S10.7.1 of Ref. 3	<u>Tunnelling works</u> • 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. • Uncontaminated discharge will pass through sedimentation tanks prior to off-site discharge. • 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. • Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It will be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) will be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 will be adhered to in the handling and disposal of bentonite slurries.	To minimize construction water quality impact from tunnelling works	Contractor	All tunnelling portion	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	^ ^ ^ ^

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	Operation of Barging Facilities The following good practice shall apply for the barging facilities operations: • All barges should be fitted with tight bottom seals to prevent leakage of materials during transport; • Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation; • 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 • Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. • Mitigation measures as outlined for control of *construction runoff and site drainage* provide above should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate.	To minimize water quality impact from operation of barging facility	Contractor	All barging facilities	Construction stage	WPCO TM-EIA	N/A N/A N/A N/A N/A
S8.51 – 8.52 of Ref. 2	Bentonite Slurries: • 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. • If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the TM-DSS.	To minimize water quality impact from bentonite slurries	Contractor	All works area	Construction stage	WPCO TM-EIA	^ ^
S8.53 – 8.54 of Ref. 2	Wastewater from Building Construction: • 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 • 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	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
	consumption and reduce the effluent discharge volume. If 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	Excavation Activities: • The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise the potential for dust emission, increased siltation and contamination of runoff. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from water environment so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work.	To minimize water quality impact from excavation activities	Contractor	All excavation works areas	Construction stage	WPCO EIAO-TM	^
S8.63 of Ref. 2	Diaphragm Wall • The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be implemented to control site run-off and drainage as well as any site effluents generated from the works areas, and to prevent run-off and construction wastes from entering nearby water environment. Proper handling of bentonite slurries used in diaphragm wall construction should be adopted.	To minimize water quality impact from diaphragm walling	Contractor	All diaphragm walling works areas	Construction stage	WPCO EIAO-TM	^
S8.60 – 8.61 of Ref. 2; S10.7.1 of Ref. 3	Sewage effluent 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	Groundwater seepage 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	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
	removal facilities. Groundwater from dewatering process will also be discharged into the storm system via silt traps.						
S10.7.1 of Ref. 1; S8.57 – 8.59 of Ref. 2; S10.7.1 of Ref. 3	Accidental spillage To prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities will be provided. • 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. • 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. • Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	WPCO 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
Waste Management (Construction Phase)							
S11.4.1.1 of Ref. 1; S9.80 – 9.83 of Ref. 2; S11.4.1.1 of Ref.3	Onsite sorting of C&D material 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	Construction and demolition material • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement. • Carry out onsite sorting. • Make provisions in the Contract documents to allow and promote • The use of recycled aggregates where appropriate. • Adopt 'selective demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible. • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified. • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) ref 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. will be avoided. The contractor will propose the final disposal sites to the Project	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
	Proponent and EPD and get their approval before implementation.						
S11.5.1 of Ref.1; S9.73 of Ref. 2; S11.5.1 of Ref.3	<u>C&D waste</u> • Standard formwork or pre-fabrication will be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works will be considered. Use of wooden hoardings will not be used, as in other projects. Metal hoarding will be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The contractor will recycle as much of the C&D materials as possible onsite. Public fill and C&D waste will be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites will be considered for such segregation and storage.	Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW Ref 19/2005	^ ^
S11.5.1 of Ref.1; S9.100-9.102 of Ref.2; S11.5.1 of Ref. 3	<u>General refuse</u> • General refuse generated onsite will be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • 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. • Office wastes will be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme will be considered by the contractor.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	# ^ ^ ^

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> • The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. • 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. • 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. • 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. • Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of sediments. • 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	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 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
	according to the Water Pollution Control Ordinance (WPCO). • In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated 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. • 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. • In order to minimize the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						N/A N/A N/A
S11.5.1 of Ref.1; S8.94 – 9.97 of Ref. 2; S11.5.1 of Ref. 3	<u>Chemical waste</u> • 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. • 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. • 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	Waste Disposal (Chemical Waste) General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ ^ ^

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
	• 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.						^
S9.98 – 9.99 of Ref 2	<u>Asbestos wastes</u> • 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. • 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	To ensure the asbestos wastes are handled and disposed of in accordance with the statutory requirements	Contractor	All construction sites	Construction stage	Code of practice on the Handling, Transportation and Disposal of Asbestos Waste	^ 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
Land Contamination							
S10.24 – 10.34 of Ref 2	<u>Precautionary measures</u> • Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process should involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination. • If soil discolouration or the presence of oil/unnatural odour is noted during visual inspection, sampling and testing should also be undertaken to verify the presence of contamination.	To act as a general precautionary measure to screen soils for the presence contamination during construction	Contractor	All construction sites	Construction stage	"Guidance Note for Contaminated Land Assessment and Remediation" "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management	^ ^
S10.35 of Ref 2	• Potential remediation of contaminated soil • If land contamination is identified, CAR and RAP detailing the proposed remediation works should be prepared. RR should then be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and has been carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/disposal records (including trip tickets), confirmatory sampling results and photographs should be included in the RR. No construction work should be carried out prior to endorsement of the RR by EPD. • In order to minimise environmental impacts arising from the handling of potentially contaminated materials, the following environmental precautionary measures are recommended to be utilised during the course of any required site remediation: • Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Excavation should be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; • Supply of suitable clean backfill material is needed after excavation; • If proposed remediation methods employ chemical oxidation methods as the contaminant mass reduction technology, chemicals will be securely and separately stored away from	To remediate contaminated soil	Contractor	All construction sites	Construction stage	"Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair /Dismantling Workshop"	N/A 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
	sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and Personal Protective Equipment • 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; • 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; • Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control should be implemented and complied with relevant regulations and guidelines.						N/A N/A N/A N/A
S10.36 of Ref 2	The Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations should be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures should be implemented as far as possible: Set up a list of safety measures for site workers. Provide written information and training on safety for site workers. Keep a log-book and plan showing the contaminated zones and clean zones. Maintain a hygienic working environment. Avoid dust generation. Provide face and respiratory protection gear to site workers. Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers. Provide first aid training and materials to site workers.	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	All construction sites	Site remediation and prior to construction phase	"Guidance Note for Contaminated Land Assessment and Remediation" "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management "Occupation Safety and Health Ordinance (Chapter 509)"	N/A
EM&A Project							
S14.2 – 14.4 of Ref. 1; S13.2 – 13.4 of Ref. 3 1.	• An Environmental Team needs to be employed as per this EM&A Manual. • Prepare a systematic EMP to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in this	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	EIAO Guidance Note Ref4/2010 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
	EM&A Manual are fully complied with.						

Remark for Status:

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

Notes:

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

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

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

APPENDIX I

Event and Action Plan

Event and Action Plan for Landscape and Visual Impact Monitoring

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

Event and Action Plan for Air Quality

Event	ET	IEC	ER	Contractor
Action level				
1. Exceedance for one sample	1. Inform the IEC, Contractor and ER 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	2. Check monitoring data submitted by the ET 3. Check Contractor's working method 4. 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	ET	IEC	ER	Contractor
Limit Level				
1. Exceedance for one sample	1. Inform the IEC, EPD, Contractor 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. 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(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 agreed proposals 5. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, Contractor & EPD 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, Contractor 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. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance 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 and Action Plan for Construction Noise

Event	ET	IEC	ER	Contractor
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. 3. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by Contractor. 2. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.	1. Confirm receipt of notification of complaint in writing 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. Investigate the complaint and propose remedial measure. 2. Report the results of investigation to the IEC, ET and ER. 3. Submit noise mitigation proposals to ER with a copy to ET and IEC within three working days of notification 4. Implement noise mitigation proposal.
Limit Level	1. Notify IEC, Contractor & EPD 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, Contractor 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. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results.	1. Check monitoring data submitted by the ET 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. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance 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.

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

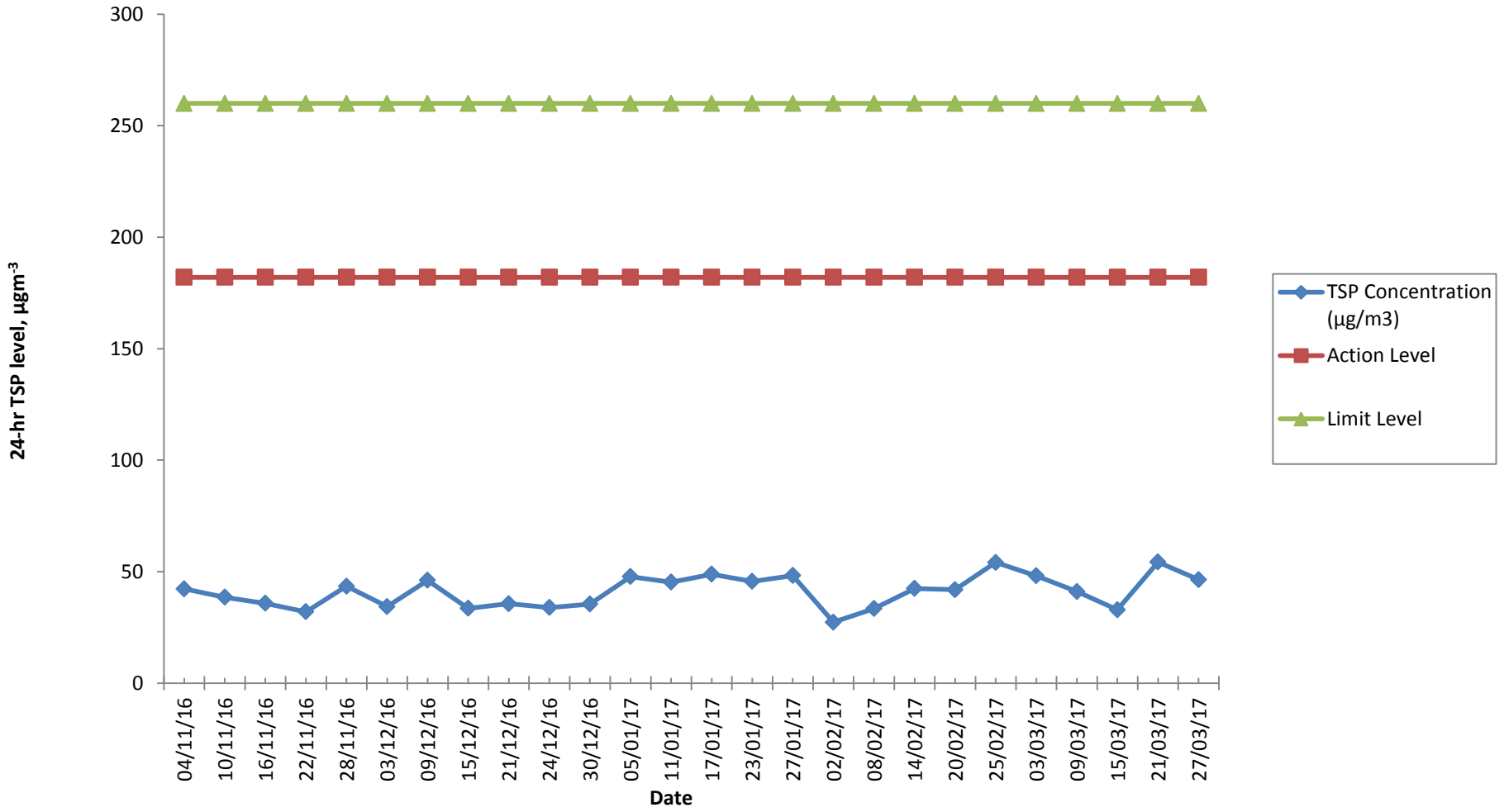
APPENDIX J

Monitoring Results and their Graphical Presentations

Air Quality Monitoring Results for AM2

Sampling Date	Wt. of paper (g)				Elapse Time			Flow Rate (CFM)			Total Volume (m^3)	TSP Concentration (µg/m3)	Weather	Remark
	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate				
03/03/17	C281	2.8450	2.9235	0.0785	15417.30	15441.30	24.00	40	40	40.0	1631.05	48.1285	Sunny	-
09/03/17	C276	2.8505	2.9175	0.0670	15441.30	15465.30	24.00	40	40	40.0	1631.05	41.0778	Cloudy	-
15/03/17	C278	2.8513	2.9050	0.0537	15465.30	15489.30	24.00	40	40	40.0	1631.05	32.9236	Cloudy	-
21/03/17	C324	2.8440	2.9326	0.0886	15489.30	15513.30	24.00	40	40	40.0	1631.05	54.3208	Cloudy	-
27/03/17	C325	2.8455	2.9212	0.0757	15513.30	15537.30	24.00	40	40	40.0	1631.05	46.4118	Sunny	-

Construction Dust Monitoring Results for AM2 (Harbourfront Horizon)



APPENDIX K

Waste Flow Table

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

Waste Flow Table																	
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly							
	Generated				Disposed					Recycled				Disposed			
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m^3)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)	
Feb-15	3.03	-	13.96	0	0	8.41 [Note13]	0	0	5.54	263.10	0.46	168.82	0	0	0	180.27	
Mar-15	5.68	-	22.28	0	0	12.45 [Note14]	0	0	9.82	346.70	0.61	11.45	0	0	0	429.13	
Apr-15	4.71	-	18.51	0	0	11.25 [Note15]	0	0.23	7.26	275.99	0.32	0	0	0	0	376.98	
May-15	4.62	-	20.64	0	0	11.53 [Note16]	0	0	9.10	353.88	0.67	0	0	0	0	266.43	
Jun-15	5.04	-	13.49	0	0	6.29 [Note17]	0	0	7.20	317.14	0.43	0	0	0.20	1.00	258.01	
Jul-15	6.21	0.09	21.64	0	0	16.15 [Note18]	0	0	5.50	706.38	0.69	0	0	0	0	270.73	
Aug-15	0.40	0	26.43	0	0	19.29 [Note19]	0	0	7.14	45.53	0.57	0	0	0	0	261.04	
Sep-15	-	-	20.91	0	0	13.16 [Note20]	0	0	7.75	317.36	0.58	0	0	0.45	0	240.74	
Oct-15	-	-	26.22	0	0	14.19 [Note21]	0	0	12.03	251.95	0.48	0	0	0	0	422.80	
Nov-15	-	-	18.66	0	0	7.03 [Note22]	0	0	11.64	446.80	0.53	0	0	0	0	283.46	
Dec-15	-	-	17.02	0	0	9.81 [Note23]	0	0	7.21	198.11	0.50	0	0	0	0	355.24	
Jan-16	-	-	24.58	0	0	13.22 [Note24]	0	0	11.37	273.64	0.62	0	0	0	0	347.67	
Feb-16	-	-	9.34	0	0	4.31 [Note25]	0	0	5.04	269.58	0.46	0	0	0	0	251.30	
Mar-16	-	-	9.75	0	0	3.48 [Note26]	0	0	6.27	750.85	0	0	0	0	0	288.35	
Apr-16	-	-	12.83	0	0	5.68 [Note27]	0	0	7.15	549.43	0.65	0	0	0.09	1.30	282.05	
May-16	-	-	7.22	0	0	2.08 [Note28]	0	0	5.14	356.66	0.55	0	0	0	0	318.75	
Jun-16	-	-	2.83	0	0	2.38 [Note29]	0	0	0.45	228.10	0.40	0	0	0	4.21	410.03	
Jul-16	-	-	8.67	0	0	8.50 [Note30]	0	0.01	0.16	172.90	0.16	0	0	0	0	418.44	
Aug-16	-	-	2.08	0	0	1.95 [Note31]	0	0	0.12	334.40	0.30	0	0	0	0	542.00	
Sep-16	-	-	1.44	0	0	1.44 [Note32]	0	0	0	47.10	0.37	0	0	0	0	542.44	

Waste Flow Table																
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly						
	Generated				Disposed					Recycled				Disposed		
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m^3)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)
Oct-16	-	-	3.00	0	0	3.00[Note33]	0	0	0	99.79	0.44	0	0	0	0	633.27
Nov-16	-	-	1.29	0	0	1.29[Note34]	0	0	0	29.71	0.45	0	0	0	0	866.16
Dec-16	-	-	1.10	0	0	1.10[Note35]	0	0	0	45.80	0.48	0	0	0	0	978.39
Jan-17	-	-	2.19	0	0	2.19[Note36]	0	0	0	26.10	0.25	0	0	0	0	730.48
Feb-17	-	-	1.04	0	0	1.04[Note37]	0	0	0	0	0.45	0	0	0	0	564.62
Mar-17	-	-	0.89	0	0	0.89[Note38]	0	0	0	0	0.49	0	0.31	0	0	688.72
TOTAL	**40.35**	**0.09**	**445.31**	**0.00**	**0.42**	**232.04**	**4.86**	**3.36**	**205.28**	**9659.24**	**19.45**	**3790.76**	**3.07**	**6.74**	**8.11**	**12431.05**

Note:

1. 137 m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
2. 267 m^3 of the Inert C&D materials were reused in SIL Project Contract 904; 3,998 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 1,912 m^3 of the Inert C&D materials were reused in Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) Project Contract HY/2012/08.
3. 1,728 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 3,088 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
4. 184 m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904; and 1814 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
5. 1,021 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 707 m3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
6. 2,894 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
7. 575.5m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 2907.6 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08; and 76.0 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2009/08.

8. 4,905.4 m^3 of the Inert C&D materials were reused in TM-CLKL and 912.3 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
9. 5,522.9 m^3 of the Inert C&D materials were reused in TM-CLKL and 515.9 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
10. 3,774.6 m^3 of the Inert C&D materials were reused in TM-CLKL.
11. 2,968.9 m^3 of the Inert C&D materials were reused in TM-CLKL (HY/2012/08).
12. 9,988.1 m^3 of the Inert C&D materials were reused in WENT (SITA) and 46.34 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
13. 8,212.8 m^3 of the Inert C&D materials were reused in WENT (SITA) and 200.9 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
14. 11,757 m^3 of the Inert C&D materials were reused in WENT (SITA), 23.41 m^3 of the Inert C&D materials were reused in SIL Project Contract 904 and 672.78 m^3 of the Inert C&D materials were reused in XRL822.
15. 10,633 m^3 of the Inert C&D materials were reused in WENT (SITA) and 0.61176 m^3 of the Inert C&D materials were reused in XRL822.
16. 11,533 m^3 of the Inert C&D materials were reused in WENT (SITA).
17. 6,290 m^3 of the Inert C&D materials were reused in WENT (SITA).
18. 16,145 m^3 of the Inert C&D materials were reused in WENT (SITA).
19. 878 m^3 of the Inert C&D materials were reused in WENT (SITA) and 18,415 m^3 of the Inert C&D materials were reused in SCL1121.
20. 13,163 m^3 of the Inert C&D materials were reused in SCL1121.
21. 14,189 m^3 of the Inert C&D materials were reused in SCL1121.
22. 7,030 m^3 of the Inert C&D materials were reused in SCL1121.
23. 9,811 m^3 of the Inert C&D materials were reused in SCL1121.
24. 13,218 m^3 of the Inert C&D materials were reused in SCL1121.
25. 4,306 m^3 of the Inert C&D materials were reused in SCL1121.
26. 3,478 m^3 of the Inert C&D materials were reused in SCL1121.
27. 5,680 m^3 of the Inert C&D materials were reused in SCL1121.
28. 2,080 m^3 of the Inert C&D materials were reused in SCL1121.
29. 2,380 m^3 of the Inert C&D materials were reused in SCL1121.
30. 8,500 m^3 of the Inert C&D materials were reused in SCL1121.
31. 1,950 m^3 of the Inert C&D materials were reused in SCL1121.
32. 1,440 m^3 of the Inert C&D materials were reused in SCL1121.
33. 3,004 m^3 of the Inert C&D materials were reused in SCL1121.
34. 1,290 m^3 of the Inert C&D materials were reused in SCL1121.
35. 1,100 m^3 of the Inert C&D materials were reused in SCL1121.
36. 2,190 m^3 of the Inert C&D materials were reused in SCL1121.
37. 1,040 m^3 of the Inert C&D materials were reused in SCL1121.
38. 890 m^3 of the Inert C&D materials were reused in SCL1121.

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^3)			(in '000m^3)		
Jan-15	0	0	0	2.22	0.06	2.28
Feb-15	1.29	0	0.82	0	0	0
Mar-15	2.43	0	2.48	0	0	0
Apr-15	3.97	0.14	5.27	0	0	0
May-15	8.26	0.09	8.35	0	0	0
Jun-15	9.71	0.12	9.83	0	0	0
Jul-15	5.29	0	5.18	0	0	0
Aug-15	0	0	0	0	0	0
Sep-15	-	0	0	-	1.94	1.94
Oct-15	-	0.53	0.53	-	0	0
Nov-15	-	5.67	5.67	0	2.32	2.32
Dec-15	-	14.44	-	-	1.02	-
Jan-16	-	16.59	-	-	0.02	-
Feb-16	-	1.25	-	-	4.04	-
Mar-16	-	3.85	-	-	2.30	-
Apr-16	-	0	-	-	0.36	-
May-16	-	0	-	-	4.06	-
Jun-16	-	0	-	-	6.45	-
Jul-16	-	0	-	-	0	-
Aug-16	-	0	-	-	0	-
Sep-16	-	0	-	-	0	-
Oct-16	-	0	-	-	0	-

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^3)			(in '000m^3)		
Nov-16	-	0	-	-	0	-
Dec-16	-	0	-	-	0	-
Jan-17	-	0	-	-	0	-
Feb-17	-	0	-	-	0	-
Mar-17	-	0	-	-	0	-
TOTAL	31.69	42.67	38.11	2.22	22.57	6.54

Note:

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

APPENDIX L

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	13 March 2017	Public comment received by EPD, EPD's Ref. No. EP3/K01/RE/0000 7049-17	General construction noise except renovation (within Restricted Hours)	Hong Kong Coliseum at No. 9 Cheong Wan Road, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 16 March 2017. • 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. • 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. • 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. • 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. • Investigation report submitted to EPD on 21 March 2017.

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	8 April 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00008018 -16	Air nuisance, other than dark smoke, from construction machine	Hung Hom Station, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 14 April 2016. • 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. • No diesel powered equipment was found at the concourse, as all of the powered mechanical equipment was powered by electricity. • 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. • 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. • The source of strong diesel exhaust smell at the concourse, as mentioned by the complainant, could not be identified. • Investigation report submitted to EPD on 26 April 2016.

	Date Received	Reference No.	Subject	Location of Concern	Status
	11 April 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00008149 -16	Complaint of other air nuisance at Hung Hom Station, Tsim Sha Tsui	Hung Hom Station, Tsim Sha Tsui	• Complaint confirmed to be irrelevant to the construction works of the Project, no follow up required.
	24 March 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00006851 -16	"General construction noise except renovation (within Restricted Hours) from Hung Hom Station , Tsim Sha Tsui"	Hung Hom Station, Tsim Sha Tsui	• The Contractor confirmed that only mobilization, i.e. transportation of the equipment itself, of the scissor lift platforms were carried out during night time. During scissor lift platforms mobilization, safety warning signal (the "beeping" noise) would be emitted. The audible warning signal device cannot be switched off so as to alert nearby workers of the movement of the equipment. Silencing the device could induce safety concern and not advisable. • 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.

	Date Received	Reference No.	Subject	Location of Concern	Status
					• 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. • Investigation report submitted to EPD on 20 April 2016.
Environmental Complaints	28 September 2015	Public comment received by EPD, K01/RE/00024658 -15	Complaint of general construction noise except renovation (within Restricted Hours) from construction site at Hung Hom	Harbour Plaza Metropolis, Tsim Sha Tsui	• A valid construction noise permit (CNP) (CNP no. GW-RN0969-15) was granted for such works from 25 September 2015 to 24 March 2016. • Noise mitigation measures were implemented at the site. • 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. • Investigation report submitted to EPD on 3 November 2015.

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	10 March 2015	Public comment received by EPD, K01/RE/00005632 -15	Complaint of malodour from Hung Hom Station (near Exit B1)	Hung Hom Station, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 12 Mar 2015 • 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 • The source of malodour could not be identified • 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 • No noticeable malodour was observed and the air quality control was found to be satisfactory according to conversation between EPD and the Contractor • Investigation Report submitted to EPD on 26 Mar 2015
	7 Feb 2015	Public comment received by EPD, EPD's Ref. No. K01/RE/00003309 -15	Complaint of construction dust from the construction site at MTR Hung Hom Building, 8-8 Cheong Wan Road, Tsim Sha Tsui	MTR Hung Hom Station Building, 8-8 Cheong Wan Road	• ET conducted inspection to examine the environmental performance of the site on 10 Feb 2015 • No demolition works carried out inside Hung Hom Station and Freight Operation Building during the complaint period • Watering and dust screen (site enclosed with bamboo scaffold and tarpaulin sheet) were provided for the demolition work at International Mail Centre • Renovation works on-going inside the Hung Hom Station with dust mitigation measures implemented • A joint inspection was then conducted by the Contractor and EPD on 13 Feb 2015 and no adverse

	Date Received	Reference No.	Subject	Location of Concern	Status
					comment was provided by EPD • Investigation Report submitted to EPD on 23 Feb 2015
Environmental Complaints	11 Nov 2014	Public comment received by EPD, EPD's Ref. No. K01/RE/00028087 -14	Complaint of welding smell and air nuisance other than dark smoke, from construction machine from Hung Hom Station, Tsim Sha Tsui	At footbridge between Hung Hom Station and Hung Hom Region, near Royal Peninsula	• Barrier was erected on the side of footbridge facing the construction site • ET conducted followed-up inspection of the implemented mitigation measures on 20 Nov 2014 and air quality control was found to be satisfactory • Investigation Report submitted to EPD on 3 Dec 2014
	11 Nov 2014	Public comment received by EPD, EPD's Ref. No. K01/RE/00028181 -14	Complaint of construction dust from Hung Hom Station, Tsim Sha Tsui	At footbridge between Hung Hom Station and Hung Hom Region, near Royal Peninsula	• Barrier was erected on the side of footbridge facing the construction site • ET conducted followed-up inspection of the implemented mitigation measures on 20 Nov 2014 and air quality control was found to be satisfactory • Investigation Report submitted to EPD on 3 Dec 2014
Notification of Summons	3 Oct 2016	Summon received by Mr. MAK Wong-Chuen, Case No.: KTS16747/2016	On 1 April 2016, Mr. MAK Wong-Chuen operated a hand-held electric breaker at around 0053hr outside the Concourse, in violation of Section 6 (1) (a) and 6 (5) of the Noise Control Ordinance (Cap. 400). Mr. Mak Wong-Chuen was employed by Palgo	Entrance C2 of Hung Hom Station	• The hearing took place on 3 Nov 2016 at Kwun Tong Magistrates' Courts. Remarks: The summon was only sent to the individual. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received the summons.

	Date Received	Reference No.	Subject	Location of Concern	Status
			Company Limited, which is a sub-contractor for SCL Contract 1112's main contractor, Leighton Contractors (Asia) Limited.		
Successful Prosecution	3 Nov 2016	Summon received by Mr. MAK Wong-Chuen, Case No.: KTS16747/2016	On 1 April 2016, Mr. MAK Wong-Chuen operated a hand-held electric breaker at around 0053hr outside the Concourse, in violation of Section 6 (1) (a) and 6 (5) of the Noise Control Ordinance (Cap. 400). Mr. Mak Wong-Chuen was employed by Palgo Company Limited, which is a sub-contractor for SCL Contract 1112's main contractor, Leighton Contractors (Asia) Limited.	Entrance C2 of Hung Hom Station	• The hearing took place on 3 Nov 2016 at Kwun Tong Magistrates' Courts. • The worker pleaded guilty and paid a HKD 15,000 fine. • After the incident, Leighton has reviewed their internal procedures/ working methods to identify the cause of non-compliance and potential improvements. • Upon review, Leighton's current system is found to be adequate to ensure proper implementation of their construction work undertaken at night and they will continue to implement the environmental management systems with the objective of ensuring environmental compliance.

Appendix G

46th Monthly EM&A Report for Works Contract 1108 –
Kai Tak Station and Associated Tunnels

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 46

[Period from 1 to 31 March 2017]

Works Contract 1108 – Kai Tak Station and Associated Tunnels

(April 2017)

Certified by: Goldie Fung 

Position: Environmental Team Leader

Date: 10 April 2017

Kaden – Chun Wo Joint Venture (KCJV)

Shatin to Central Link –

Contract 1108

Kai Tak Station and Associated Tunnels

Monthly Environmental Monitoring & Auditing Report for March 2017

The Contents of this report have been certified by:

Ms. Goldie Fung
(Environmental Team Leader)

Environmental Pioneers & Solutions Limited
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Executive Summary

This is the forty sixth Environmental Monitoring and Audit (EM&A) Report for **MTR Shatin to Central Link (SCL) Works Contract 1108 – Kai Tak Station and Associated Tunnels**. The project commenced on 17th June 2013. This report documents the finding of EM&A Works conducted from 1st March 2017 to 31st March 2017.

Summary of the Construction Works undertaken during the Reporting Month

The major site activities in this reporting period were including:

- Open cut tunnel: DT and UT general cleaning and defect rectification.
- Cut and cover tunnel: DT and UT general cleaning and defect rectification.
- Station: Drainage work at all area, leveling to F.F.L. in Area 3, installation of roof cladding at Entrance A, B & D, EVA construction for the first 2 portion, completion of installation of glazed wall at Entrance A, B & D.

Variation in Construction Method

Based on recent engineering information and having considered the high construction risk for tunnel excavation, the tunnel with mining method is required to be shortened and the associated at-grade construction works within the buffer zone above the Former Kowloon City Pier (FKCP) is therefore proposed to minimize the potential impact on FKCP. The application for variation of an Environmental Permit with Environmental Review Report has been submitted to EPD on 19th March 2014 and the amended Environmental Permit (EP-438/2012/E) was issued to MTRC on 4th April 2014.

Environmental Monitoring and Audit Progress

Culture Heritage

Since the construction of the mined tunnel was completed, the works area near FKCP lies within the Project was handed-over to Land Department on 6th January 2017. No inspection of the Form Kowloon City Pier was conducted during this reporting period. Details of the inspection findings are presented in Section 6.

Landscape and Visual

The implementation of landscape and visual mitigation measures was inspected during the weekly environmental site inspection. Most of the necessary mitigation measures have been implemented. Details of the audit findings and implementation status are

presented in Section 6.

Waste Management

According to Contractor's waste flow data, a total of 0m^3 of inert C&D materials were generated and received from other construction site, which 0m^3 were disposed to the receiving facility of Contract 1108A and 0m^3 were reused in the contract. 104m^3 of general refuse were generated and disposed at landfill site. 80kg of paper and 0kg of plastic, 0kg of metal and 0kg of chemical waste were sent to recyclers for recycling.

Environmental Site Inspection

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 7th, 14th, 23rd and 28th March 2017. The representative of the IEC joined the site inspection on 28th March 2017. Details of the audit findings and implementation status are presented in Section 6.

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

A notification of summon received was issued on 20th February 2017, regarding an incident on 17th August 2016. Contractor has attended to the court on 23rd March 2017 and the trail was scheduled on Mid-April 2017.

No breaches of Action and Limits levels, non-compliance event, environmental complaint, notification of summons and successful prosecution against the Project were received in this reporting month.

Future Key Issues

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

- Open cut tunnel: DT&UT general cleaning and defect rectification, walkway top-up remedial works.
- Cut and cover tunnel: Tunnel tracks defect rectification, access shaft pre-cast concrete slab construction, walkway top-up remedial works.
- Station: Drainage works at all area, installation of roof cladding and reflected ceiling at Entrance A, B & D, leveling to F.F.L in Area 3, EVA construction for the first 2 portion, installation of glass canopy at Entrance A & B

1 Introduction

The Environmental Team (ET), Environmental Pioneers & Solutions Limited (EPSL), was appointed by Kaden – Chun Wo Joint Venture (KCJV) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL) Works Contract 1108 – Kai Tak Station and Associated Tunnels (the Project). The project commenced on 17th June 2013.

1.1 Purpose of the Report

This is the forty sixth monthly EM&A Report which summarises the audit findings for the EM&A programme during the reporting period from 1st March 2017 to 31st March 2017.

1.2 Structure of the Report

The structure of the report is as follow:

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 requirements and 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

2.1 Background

The Shatin to Central Link – Tai Wai to Hung Hom Section (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).

The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1108 covers the construction of Kai Tak Station (KAT) and the section of tunnel between KAT and Sung Wong Toi Station (SUW) plus a short section of tunnel from KAT towards Diamond Hill Station (DIH). This construction contract was awarded to Kaden – Chun Wo Joint Venture (KCJV) in April 2013.

2.2 General Site Description

The works area includes work sites in the Kai Tak New Development Area. The construction of tunnel will employ cut & cover method. The alignment and works area for the Project is shown in **Appendix A**.

2.3 Construction Programme and Activities

A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix B**.

- Open cut tunnel: DT and UT general cleaning and defect rectification.
- Cut and cover tunnel: DT and UT general cleaning and defect rectification.
- Station: Drainage work at all area, leveling to F.F.L. in Area 3, installation of roof cladding at Entrance A, B & D, EVA construction for the first 2 portion, completion of installation of glazed wall at Entrance A, B & D.

2.4 Project Organization

The project organization chart and contact details are shown in **Appendix C.**

2.5 Status of Environmental Licences, Notification and Permits

A summary of the relevant permits, licences, and notifications on environmental protection for this Project 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	Remark
	From	To		
Environmental Permit (EP)				
EP-438/2012/K	04/10/2016	N/A	Valid	/
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
Ref. Number 359540	16/05/2013	N/A	Valid	/
Construction Noise Permit for the Carrying Out of Percussive Piling				
N/A				
Construction Noise Permit for General Works				
GW-RE0245-17	29/03/2017	19/09/2017	Valid	/
Effluent Discharge License				
WT00025980-2016	14/11/2016	31/08/2018	Valid	/
Waste Disposal (Charges for Disposal of Construction Waste) Regulation				
Billing Account No. 7017544	07/06/2013	N/A	Valid	/
Registration of Chemical Waste Producer				
WPN 5213-286-K3069-01	09/07/2013	N/A	Valid	/

2.6 Summary of EM&A Requirements

The EM&A programme under Works Contract 1108 require regular environmental site audits. The EM&A requirements are described in the following sections, including:

- Weekly inspection for Cultural Heritage;
- Weekly inspection for Landscape and Visual;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirements in contract documents.

The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.

3 Environmental Monitoring Requirements

3.1 Culture Heritage

In accordance with the Environmental Permit and EM&A Manual, a buffer zone shall be maintained between both Lung Tsun Stone Bridge and Former Kowloon City Pier and SCL (TAW-HUH) works sites during the tunneling work. For Lung Tsun Stone Bridge, a horizontal distance of 25m between the bridge and the buffer boundary shall be maintained. For Former Kowloon City Pier, a vertical buffer distance of 1.8 – 2.2m from the top of the tunnel shall be maintained. The layout of the buffer zone was attached in **Appendix D**. No at-grade construction activities shall be allowed within the buffer zone. Audit shall be conducted on a weekly basis throughout the construction period for the mined tunnel section under Former Kowloon City Pier

3.2 Landscape and Visual

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

The event/action plan for Landscape and Visual during Construction Stage is attached in **Appendix E**.

4 Implementation Status on Environmental Protection Requirements

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 G**. Status of required submissions under the Environmental Permit (EP) as 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	Forty fifth Monthly EM&A Report	14th March 2017

5 Monitoring Results

5.1 Cultural Heritage

Since the construction of the mined tunnel was completed, the works area near FKCP lies within the Project was handed-over to Land Department on 6th January 2017. No inspection of the Form Kowloon City Pier was conducted during this reporting period. Details of the inspection findings are presented in Section 6.

5.2 Landscape and Visual

Inspections of the implementation of landscape and visual mitigation measures were conducted on weekly basis. The observations and recommendations made during the audit sessions are summarized in Table 6.1.

5.3 Waste Management

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 5.1. Inert C&D materials were disposed to the receiving facility of Contract 1108A or reused in the Contract. General refuse was disposed to designated landfill site. Plastics, paper and metal were sent to recycler for recycling. Chemical waste generated was collected by licensed collector. Detail of waste management data is presented in **Appendix F**.

Table 5.1 Quantities of Waste Disposed from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [(a)]	C&D Materials (non-inert) [(b)]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/cardboard	Plastics	Metals
March2017	0 m^3	104m^3	0 kg	80 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 metal 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.

According to the approved Sediment Management Plan, a portion of the excavated marine sediment, which is classified as uncontaminated Type 1 sediment and suitable for Open Sea Disposal, should be reused on site for backfilling material. The uncontaminated sediment is mixed with cement and general materials to Cement Stabilized Marine Mud (CSMM). There are total 125.12m^3 of CSMM were cumulatively backfilled.

During this reporting period, no CSMM backfilling work was conducted.

6 Environmental Site Inspection

6.1 Site Audit

Site audit was carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 7th, 14th, 23rd and 28th March 2017. The representative of the IEC joined the site inspection on 28th March 2017. The details of observations during site audit can refer to Table 6.1.

6.2 Implementation Status of Environmental Mitigation Measures

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. Updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix G**.

During site inspections in the reporting month, no non-conformance was identified. The observations, reminders and recommendations made during the audit sessions are summarized in Table 6.1.

Table 6.1 Summary results of site inspections findings

Parameters	Date	Findings	Advice from ET	Action taken	Closing date	Remarks
Noise	N/A	N/A	N/A	N/A	N/A	/
Air	7 Mar 17	Although the main haul was maintained in wet to prevent dust generation, exposed area outside the main haul road was observed dry.	Contractor was reminded to increase watering frequencies on the exposed area for dusting mitigation.	Exposed area outside the main haul road was maintained in wet to prevent dust generation.	14 Mar 17	/
	28 Mar 17	Exposed stockpile was observed at area 3.	Contractor was reminded to cover it with tarpaulin sheet for dust suppression.	Follow-up action will be inspected during next reporting month.	N/A	/
Water	7, 14, 21 & 28 Feb 17 7, 14, 23 & 28 Mar 17	Oil stain on ground was observed at Area 3.	Contractor was advised to remove the contaminated soil as chemical waste and treat the contaminated soil properly.	Follow-up action will be inspected during next reporting month.	N/A	/
	14, 21 & 28 Feb 17 7, 14, 23& 28 Mar 17	Oil drums without drip tray were observed at Area 3.	Contractor was advised to provide drip tray to prevent leakage.	Follow-up action will be inspected during next reporting month.	N/A	/
	21 & 28 Feb 17	Oil stain on ground was observed at Area 1.	Contractor was advised to remove the contaminated soil as chemical waste and treat the contaminated soil properly.	Oil stain on ground at Area 1 was cleaned by contractor.	7 Mar 17	/
	21 & 28 Feb 17	Cumulative water with chemical residual was observed inside drip tray at Area 1.	Contractor was advised to remove to the water with chemical residual to prevent chemical leakage.	Cumulated water with chemical residual inside the drip tray at Area 1 was removed by contractor.	7 Mar 17	/
	23 Mar 17	Damaged sand bag bound was observed a new site entrance at area 3.	Contractor was reminded to replace the damaged sand bags to avoid leakage of run-off to public area.	Damaged sand bags were replaced by new sand bags.	28 Mar 17	/
	28 Mar 17	Oil stain on ground was observed at Area 3.	Contractor was advised to remove the contaminated soil properly.	Follow-up action will be inspected during next reporting month.	N/A	/
Waste / Chemical Management	N/A	N/A	N/A	N/A	N/A	/
Cultural Heritage	N/A	N/A	N/A	N/A	N/A	/
Landscape and Visual	N/A	N/A	N/A	N/A	N/A	/
Permits/ Licenses	N/A	N/A	N/A	N/A	N/A	/

7 Environmental Non-Conformance

7.1 Summary of Environmental Exceedances

No breaches of Action and Limit levels were recorded in the reporting month.

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaint

No environmental project-related complaint was received in the reporting month.

7.4 Summary of Environmental Summon and Successful Prosecution

A notification of summon received was issued on 20th February 2017, regarding an incident on 17th August 2016. Contractor has attended to the court on 23rd March 2017 and the trail was scheduled on Mid-April 2017.

There was no successful environmental prosecution received since the Project commencement.

The cumulative log for environmental exceedance, non-compliance, complaint and summon and successful prosecution since the commencement of the Project is presented in **Appendix H**.

8 Future Key Issues

The major construction activities in the coming month will include:

- Open cut tunnel: DT&UT general cleaning and defect rectification, walkway top-up remedial works.
- Cut and cover tunnel: Tunnel tracks defect rectification, access shaft pre-cast concrete slab construction, walkway top-up remedial works.
- Station: Drainage works at all area, installation of roof cladding and reflected ceiling at Entrance A, B & D, leveling to F.F.L in Area 3, EVA construction for the first 2 portion, installation of glass canopy at Entrance A & B

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, water quality and waste management. The Contractor has been reminded to properly implement dust, construction noise and water quality control measures as well as proper waste management in order to minimize the potential environmental impacts due to the construction works of the Project.

9 Conclusions and Recommendations

9.1 Conclusions

This is the forty sixth monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st March 2017 to 31st March 2017 in accordance with the EM&A Manual and the requirement under EP-438/2012/K.

4 nos. of environmental site inspections were carried out in this reporting month. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

A notification of summon received was issued on 20th February 2017, regarding an incident on 17th August 2016. Contractor has attended to the court on 23rd March 2017 and the trail was scheduled on Mid-April 2017.

No exceedances, non-compliance event, complaint, notification of summons and prosecution were received during the reporting period.

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

9.2 Recommendations

According to the environmental audit performed in the reporting month, the following recommendations were made:

<u>Noise Impact</u>

- N/A

<u>Air Quality Impact</u>

- Implement water spraying on the exposed for dusting mitigation.
- Cover the exposed stockpile with tarpaulin sheet for dust suppression.

<u>Water Quality Impact</u>

- Remove the contaminated soil and treat properly.
- Store the chemical materials inside the drip tray for prevention of chemical

leakage.

- Replace the damaged sand bags to avoid leakage of run-off to public area.

Chemical Management

- N/A

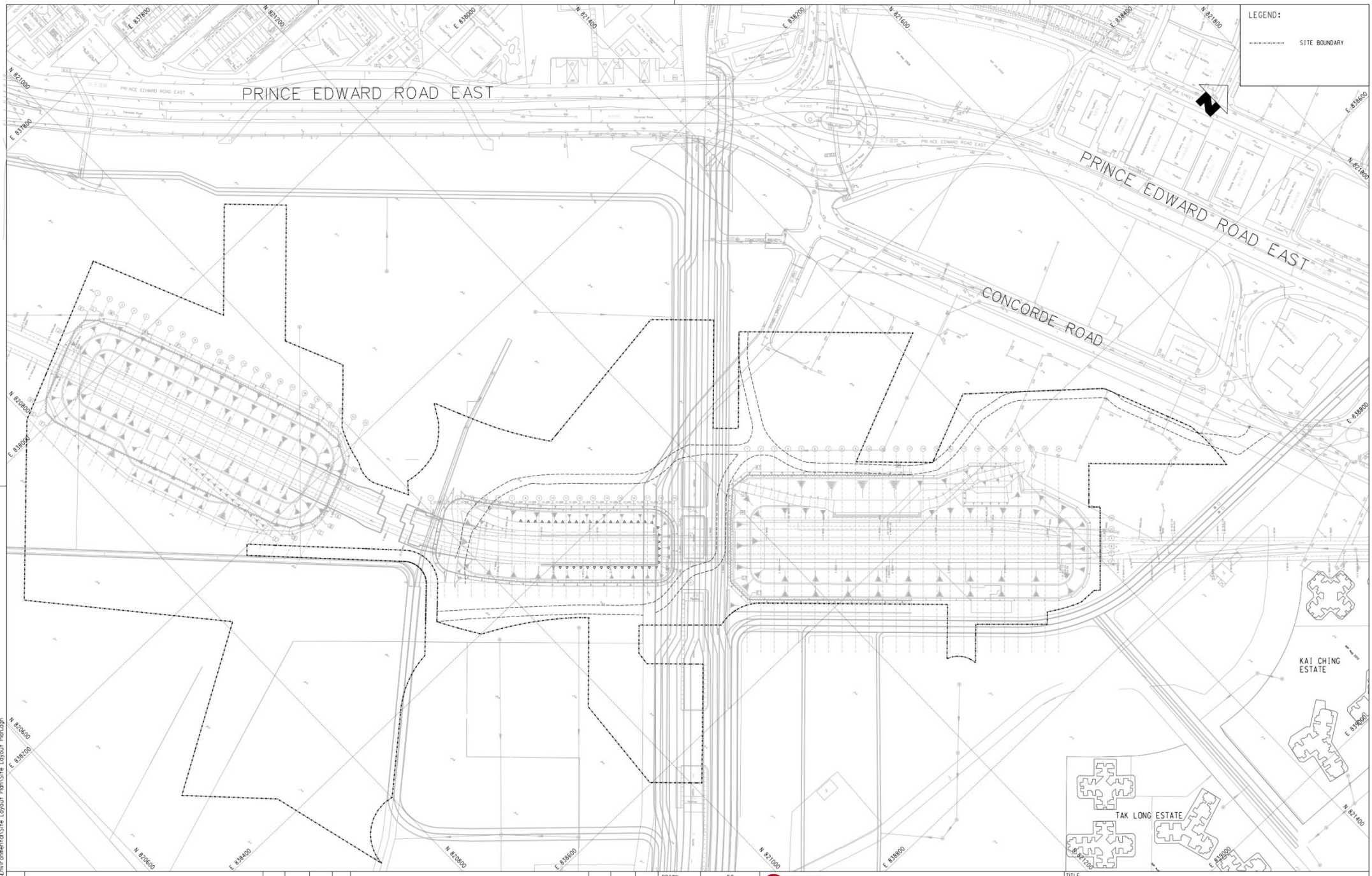
Waste Management

- N/A

Cultural Heritage

- N/A

Appendix A – Site Location Plan



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REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST SUBMISSION	KW	110814	BW

DRAWN	CC
DESIGNED	KW
CHECKED	ET
APPROVED	BW
DATE	11/AUG/2014

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

Kaden – Chun Wo Joint Venture

CADD REF. Site Layout Plan.dgn

TITLE
CONTRACT 1108
KAI TAK STATION AND ASSOCIATED TUNNELS
SITE LAYOUT PLAN

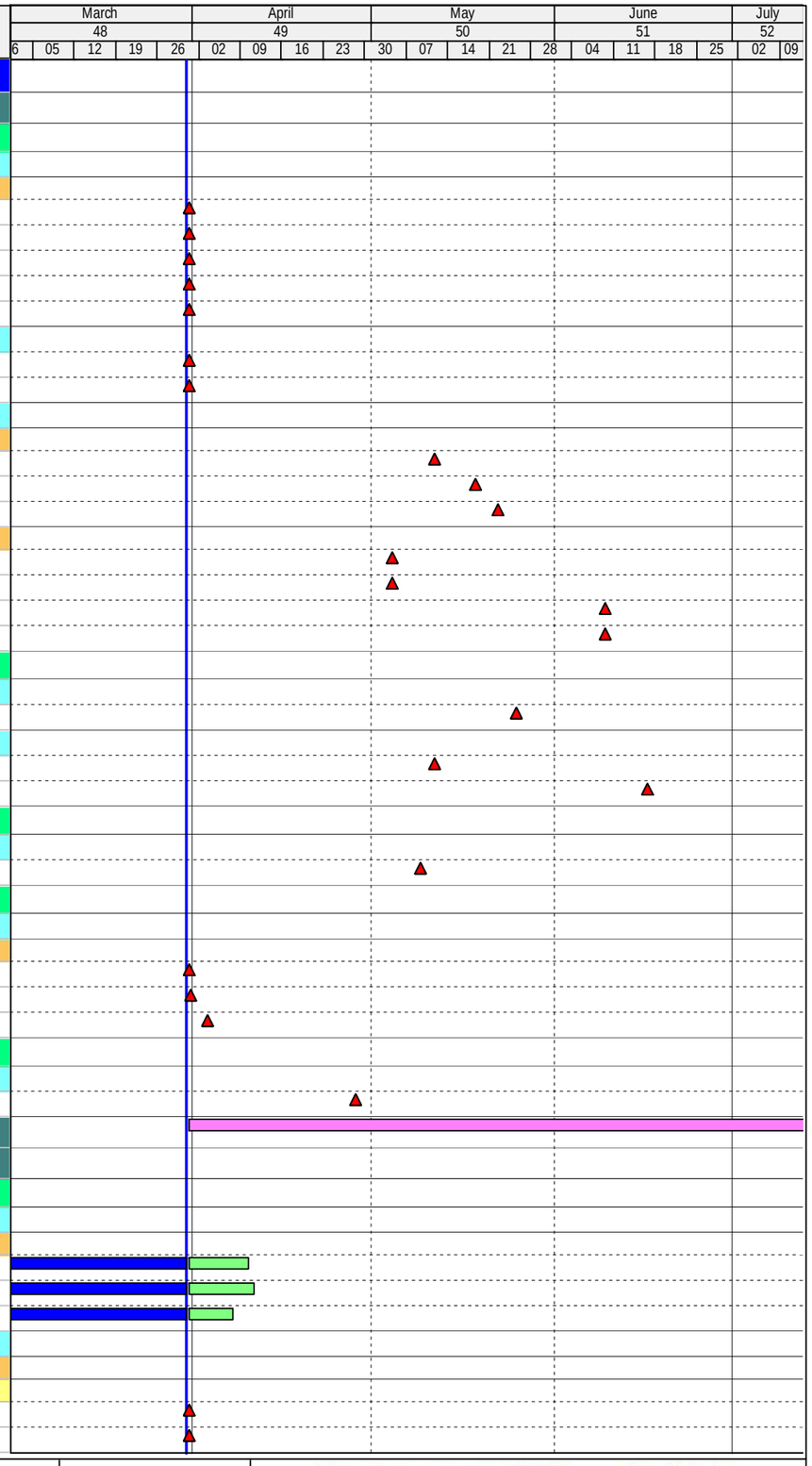
SCALE 1 : 1500 (A1)

DRAWING NO. SITE LAYOUT PLAN

REV. A

Appendix B –Construction Programme

Activity ID	Activity Name	Activity % Complete	Start	Finish
Contract 1108 Kai Tak Station and Associated Tunnels				
Contractual Dates and Project Key Dates				
Critical Dates				
Schedule of Options				
Latest Exercising Date				
01108.CDO1a-ED	Option 1a - Temporary passenger acces roads within KTD & EVA above KAT- Latest Exercising Date (31-Dec-15)	0%	31-Mar-17*	
01108.CDO1b-ED	Option 1b - Temporary passenger acces road to connect Entrance D - Latest Exercising Date (31-Dec-15)	0%	31-Mar-17*	
01108.CDO2a-ED	Option 2a - Roads L9 & L16 & Associated Works, except the works in Options 2b & 2c - Latest Exercising Date (31-Mar-15)	0%	31-Mar-17*	
01108.CDO2b-ED	Option 2b - Landscape hardwork, irrigation facilities, softworks & pavers - Latest Exercising Date (31-Mar-15)	0%	31-Mar-17*	
01108.CDO2c-ED	Option 2c - Establishment works of the landscape softworks in Option 2b - Latest Exercising Date (31-Mar-15)	0%	31-Mar-17*	
Specified Parts Completion of the Works (General Damages Applicable)				
01108.CD3C	3C - Complete backfill of KAT station (Grid 12-19)&ready for EMSD/ DCScontractor for laying DCS pipe(Wk.09/15,01-Mar-15)	0%		31-Mar-17*
01108.CD3D	3D - Complete backfill to ex.ground level of necessary station area for CLP cable lead-in (Wk.33/15,16-Aug-15)	0%		31-Mar-17*
Specified Degrees of Completion (General Damages / * Liquidated Damages Applicable)				
Structures				
01108.CD4F2	4F2 - Deg2, Sung Wong Toi Emergency Egress Point (Week No. 39/15, 27-Sep15)	0%		11-May-17*
01108.CD4A3	4A3 - Deg3, KAT Platform level (Week No. 48/15, 29-Nov-15)	0%		18-May-17*
01108.CD4C1	4C1 - Deg1, KAT Entrances & Supplementary Emergency Entrance (Week No. 44/15, 01-Nov-15)	0%		22-May-17*
Trackwork Accesses				
01108.CD4J1	4J1 - Deg1, Trackwork Access - Down Track Tunnel- CH.D99275.225~D99175.225 (Wk.No.08/16, 28-Feb-16)	0%		04-May-17*
01108.CD4K1	4K1 - Deg1, Trackwork Access - Up Track Tunnel- CH.D99257.140~U99157.140 (Wk.No.08/16, 28-Feb-16)	0%		04-May-17*
01108.CD4D1	4D1 - Deg1, Trackwork Access,crane p'form&P-way access opn'g-D/T Tunnel-CH.D99175.225~D98731.113 (WN.13/15, 29-Mar-15)	0%		09-Jun-17*
01108.CD4E1	4E1 - Deg1, Trackwork Access,crane p'form&P-way access opn'g-U/T Tunnel-CH.U99175.140~U98719.700 (WN.13/15, 29-Mar-15)	0%		09-Jun-17*
IPS Milestone Dates				
Cost Centre D - Associated Works				
01108.MSD020	D2 - Complete External Drainage (Week No. 52/15, 27-Dec-15)	0%		25-May-17
Cost Centre F - Option 2 - CEDD Works for Roads L9 & L16 and Associated Works				
01108.MSF01	F1 - Contractor's dwgs submission schedule & All permanent works Material Control Schedule approved (WN.33/15,16-Aug-15)	0%		11-May-17
01108.MSF02	F2 - Shop drawings & material submissions approved (Week No. 50/15, 13-Dec-15)	0%		16-Jun-17
Programme Data				
Interface with Contract 1109				
01108.PD5-IF1109.2	Contract 1108 Complete tunnelling works & necessary backfilling works at the interface area (Week No. 52/15, 27-Dec-15)	0%		09-May-17*
Schedule of Access & Vacate Dates for Works Areas				
Vacation Dates				
Works Areas				
01108.VAWA1	Works Area 1108.A1 (31-Dec-16)	0%		31-Mar-17*
01108.VAWA2	Works Area 1108.A2 (31-Dec-16)	0%		31-Mar-17*
01108.VAWA3	Works Area 1108.A3 (31-Dec-14)	0%		03-Apr-17*
Schedule of Access Dates for Designated Contractors				
Various Systems - DC1152, DC1153, DC1154, DC1155, DC1166, DC1169A, DC1162A & DC1163				
01108.IF1155.2	DC1155 PSS&TA - KAT Station - All lift shafts (platform to concours) (Week No. 08/16, 29-Feb-16)	0%	28-Apr-17*	
A - Preliminaries				
B - Kai Tal Station, Entrances and Adits				
B1 KAT Station				
B1.3 Station - U/G C&S Works (Below Concourse Level Soffit)				
Metalworks, BWIC with Services and BS Works				
01108.STN.BW12-24	GL 12~24 BWIC and BS works	90%	28-Feb-15 A	10-Apr-17
01108.STN.BW00-04	GL 00-04 BWIC and BS works	80%	28-Feb-15 A	11-Apr-17
01108.STN.BW04-12	GL 04~12 BWIC and BS works	90%	28-Feb-15 A	07-Apr-17
B1.4 Station U/G C&S Works (Concourse Level and Above)				
Backfilling				
Backfilling to Finish Ground Level				
01108.MSB07bP	Completion of Station backfill and compaction for outside works - Programmed	0%		31-Mar-17
01108.CD3DP	Completion of Station backfill to ex. ground level of necessary atation for CLP cable lead-in - Programmed	0%		31-Mar-17



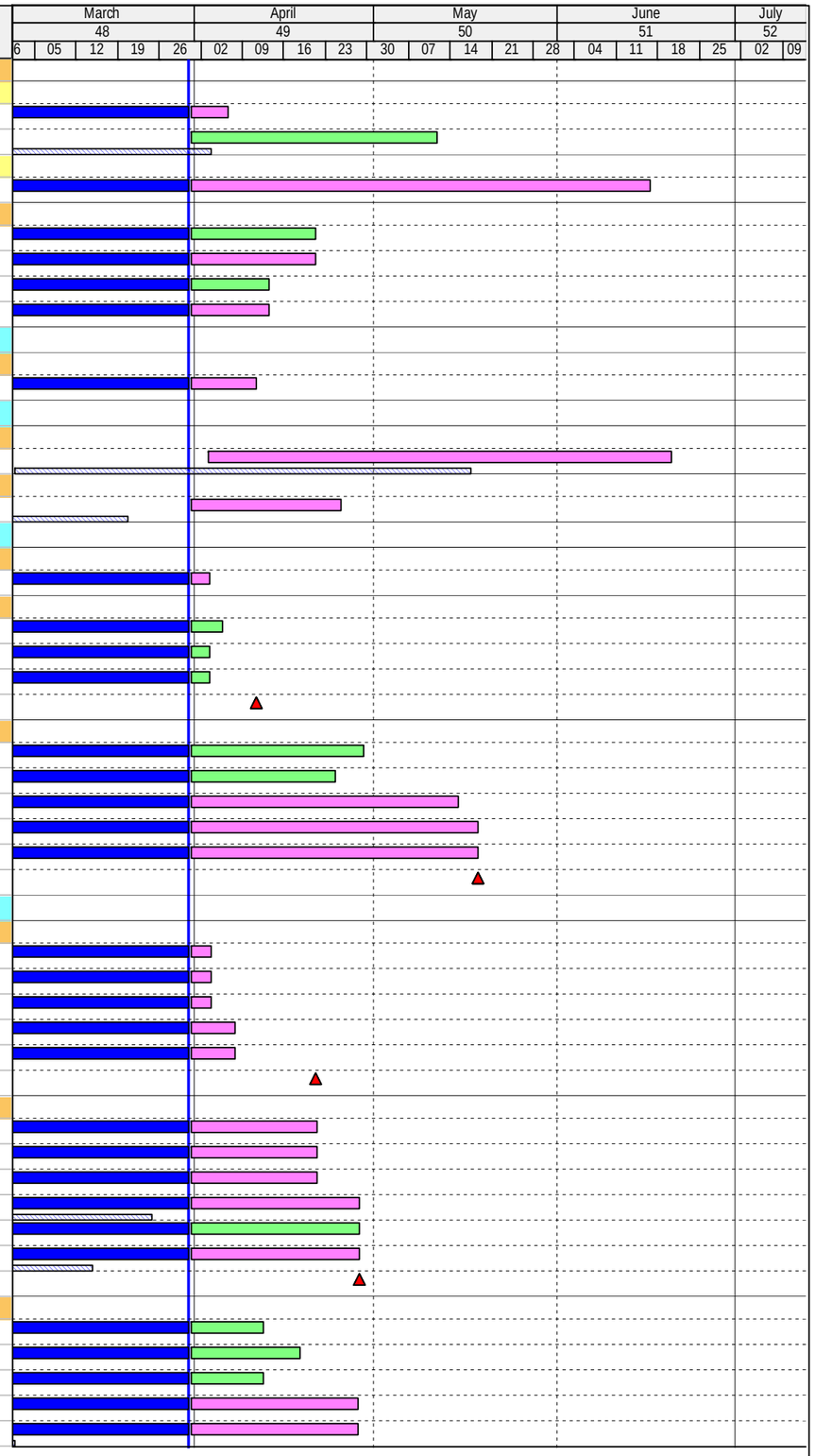
Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
RMP Rev F
Last Report
Actual Work

Contract 1108
Kai Tak Station and Associated Tunnels

3-months Rolling Programme (Mar 2017)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
Water Tanks & CLP Transformer Rooms				
CLP Transformer Rooms				
01108.STN.CP215	CLP Transformer Rooms Dedicated Access 2 - AWBF Works	85%	23-Feb-16 A	06-Apr-17
01108.STN.CP115	CLP Transformer Rooms Dedicated Access 2 - BS Works	0%	31-Mar-17	11-May-17
CLP Interface Works				
01108.STN.CP620	CLP Transformer Rooms 1~2 - Installation Works (By CLP)	0%	14-Mar-16 A	16-Jun-17
Metalworks, BWIC with Services and BS Works				
01108.STN.BW120	KAT Concourse level - BWIC with services	70%	15-Jul-15 A	21-Apr-17
01108.STN.BW130	KAT Concourse level - BS works	70%	15-Jul-15 A	21-Apr-17
01108.STN.BW220	KAT Concourse level - BWIC with services	70%	15-Jul-15 A	13-Apr-17
01108.STN.BW230	KAT Concourse level - BS works	70%	15-Jul-15 A	13-Apr-17
B1.5 Station - A/G C&S Works (Vent Shaft)				
Souther Vent Shaft				
01108.STN.SS030	Drainage	65%	04-Dec-15 A	11-Apr-17
B1.6 Station - Station - A/G C&S Works (Entrance D & DEE)				
Entrance D				
01108.STN.ED040	Metal works	0%	03-Apr-17	20-Jun-17
Designated Emergency Entrance (DEE)				
01108.STN.DE030	Drainage	0%	31-Mar-17	25-Apr-17
B1.7 Station - ABWF Works (Below Concourse Level Soffit)				
ABWF Works - Degree 1 of Completion				
01108.STN.CD4A1P3a	KAT Platform level - GL 4~1 Degree 1 of completion - Blockwork, partition wall, plastering, finish, staircase, etc.	95%	28-Feb-15 A	03-Apr-17
ABWF Works - Degree 2 of Completion				
01108.STN.CD4A2P3a	KAT Platform level - GL 4~1 Degree 2 of completeion - Door,wall&ceiling frame/support, strut. steel, finish, fixture,etc	95%	02-Jun-15 A	05-Apr-17
01108.STN.CD4A2P2a	KAT Platform level - GL 12~4 Degree 2 of completeion - Door frame, m. staircase, strut. steel, fixture, etc.	95%	03-Aug-15 A	03-Apr-17
01108.STN.CD4A2P1a	KAT Platform level - GL 24~12 Degree 2 of completeion - Door frame, m. staircase, strut .steel, fixture, etc	95%	03-Aug-15 A	03-Apr-17
01108.CD4A2P	KAT Platform level - Degree 2 of completion (Week No. 33/15, 16-Aug-15) - Programmed	0%		11-Apr-17
ABWF Works - Degree 3 of Completion				
01108.STN.CD4A3P1a	KAT Platform level GL 24~12 Degree 3 of completeion - Int.&ext. to ceiling/ wall/ floor finish, incl.lift lobby, etc.	55%	03-Oct-15 A	29-Apr-17
01108.STN.CD4A3P2a	KAT Platform level GL 12~4 Degree 3 of completeion - Int.&ext. to ceiling/ wall/ floor finish, incl.lift lobby, etc.	65%	07-Oct-15 A	24-Apr-17
01108.STN.CD4A3P3a	KAT Platform level GL 4~1 Degree 3 of completion - Int&ext. to ceiling/ wall/ floor finish, incl.lift lobby, tc.	55%	11-Nov-15 A	15-May-17
01108.STN.CD4A3P1b	KAT Platform level GL 24~12 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	25%	29-Aug-16 A	18-May-17
01108.STN.CD4A3P2b	KAT Platform level GL 12~4 Degree 3 of completeion - Glazing, permanent doors, ironmongery, etc.	25%	29-Aug-16 A	18-May-17
01108.CD4A3P	KAT Platform level - Degree 3 of completion (Week No. 48/15, 29-Nov-15) - Programmed	0%		18-May-17
B1.8 Station - ABWF Works (Concourse Level and Above)				
ABWF Works - Degree 1 of Completion				
01108.STN.CD4B1P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - Blockwork, partition wall, plastering, etc.	95%	10-Feb-15 A	03-Apr-17
01108.STN.CD4B1P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - Blockwork, partition wall, plastering, etc.	95%	10-Feb-15 A	03-Apr-17
01108.STN.CD4B1P3a	KAT Concourse level, exclude 4G- GL 4~1 Degree 1 of completion- Blockwork, part.wall, plastering, finish, staircase, etc	95%	03-Oct-15 A	03-Apr-17
01108.STN.CD4B1P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	90%	17-May-16 A	07-Apr-17
01108.STN.CD4B1P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	90%	17-May-16 A	07-Apr-17
01108.CD4B1P	KAT Concourse level, exclude 4G - Degree 1 of completion (Week No. 36/15, 06-Sep-15) - Programmed	0%		21-Apr-17
ABWF Works - Degree 2 of Completion				
01108.STN.CD4B2P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completeion - Blockwall, partition wall, plastering, etc.	75%	22-Sep-15 A	21-Apr-17
01108.STN.CD4B2P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completeion - Blockwork, partition wall, plastering, etc.	75%	22-Sep-15 A	21-Apr-17
01108.STN.CD4B2P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completeion - Blockwork, p.wall, platering, finish, staircase, etc.	75%	20-Oct-15 A	21-Apr-17
01108.STN.CD4B2P3b	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	65%	20-Jun-16 A	28-Apr-17
01108.STN.CD4B2P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	65%	20-Jun-16 A	28-Apr-17
01108.STN.CD4B2P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	65%	20-Jun-16 A	28-Apr-17
01108.CD4B2P	KAT Concourse level, exclude 4G - Degree 2 of completion (Week No. 52/15, 27-Dec-15) - Programmed	0%		28-Apr-17
ABWF Works - Degree 3 of Completion				
01108.STN.CD4B3P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 3 of completeion - Int.&ext. to ceiling/wall/floor finish, lobby, ,etc.	82%	20-Oct-15 A	12-Apr-17
01108.STN.CD4B3P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 3 of completeion - Int.&ext. to ceiling/wall/floor finish, lobby, etc.	78%	20-Oct-15 A	18-Apr-17
01108.STN.CD4B3P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completeion - Int.&ext. to ceiling/wall/floor finish, lobby, etc.	82%	20-Oct-15 A	12-Apr-17
01108.STN.CD4B3P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	62%	18-Apr-16 A	28-Apr-17
01108.STN.CD4B3P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	62%	18-Apr-16 A	28-Apr-17



Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
RMP Rev F
Last Report
Actual Work

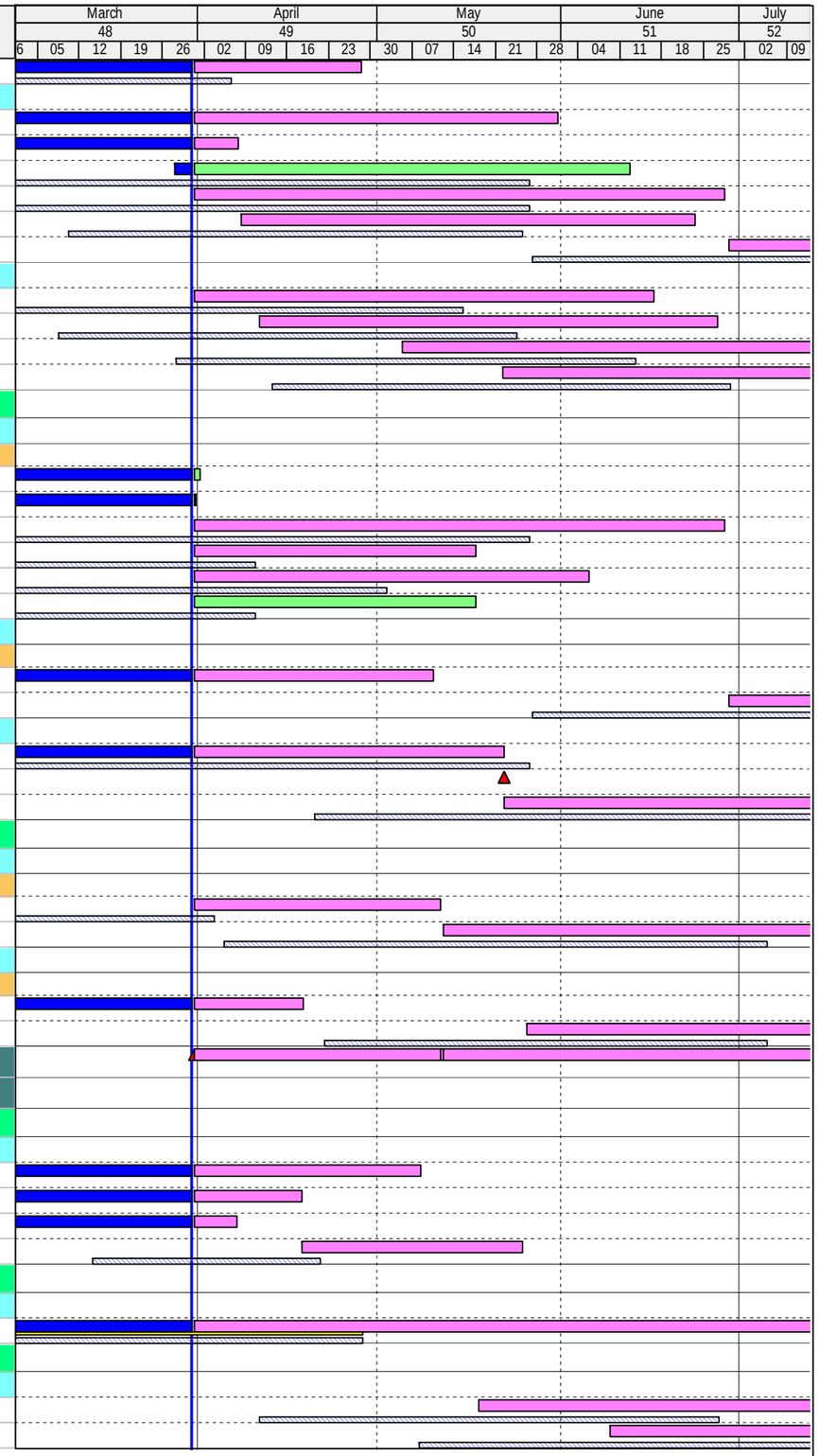
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (Mar 2017)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.STN.CD4B3P3b	KAT Concourse level, exclude 4G - GL 4~1 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	62%	18-Apr-16 A	28-Apr-17
B1.9 Station- ABWF Works (A/G Vent Shaft)				
01108.STN.VS120	Wall finishes	35%	25-Apr-16 A	31-May-17
01108.STN.VS140	External wall finishes	90%	13-Jun-16 A	07-Apr-17
01108.STN.VS110	Floor finishes	20%	28-Mar-17 A	12-Jun-17
01108.STN.VS130	Ceiling finishes	0%	31-Mar-17	28-Jun-17
01108.STN.VS150	External roof finishes	0%	08-Apr-17	23-Jun-17
01108.STN.VS160	Metal works and architectural elements	0%	29-Jun-17	19-Sep-17
B1.10 Station - ABWF (A/G Entrance D & DEE)				
01108.STN.DE060	Lift - ABWF Works	0%	31-Mar-17	16-Jun-17
01108.STN.ED060	Escalators - ABWF Works	0%	11-Apr-17	27-Jun-17
01108.STN.DE070	E&M Works for Lift installation	0%	05-May-17	15-Jul-17
01108.STN.ED070	E&M Works for Escalators installation	0%	22-May-17	02-Aug-17
B2 Entrance A, Adit & SEE				
B2.2 Entrance A, Adit & SEE - C&S Works				
Entrance A, Adit and SEE				
01108.STN.PF610	Backfill and compaction, 3165 m3 for Adit & See	96%	01-Apr-16 A	01-Apr-17
01108.STN.PF600	Backfill and compaction, 3165 m3 for Entrance A	96%	01-Apr-16 A	31-Mar-17
01108.STN.EA90	Metal works and finishes for Adit & See	0%	31-Mar-17	28-Jun-17
01108.STN.EA030	Drainage for Entrance A	0%	31-Mar-17	17-May-17
01108.STN.EA040	Metal works and finishes for Entrance A	0%	31-Mar-17	05-Jun-17
01108.STN.EA100	Drainage for Adit & See	0%	31-Mar-17	17-May-17
B2.3 Entrance A, Adit & SEE - ABWF Works				
Entrance A, Adit and SEE				
01108.STN.EA050	ABWF Works	60%	31-May-16 A	10-May-17
01108.STN.EA070	E&M Works for Escalators installation	0%	29-Jun-17	21-Sep-17
KAT Entrances & SEE ABWF				
01108.STN.CD4C1	KAT Entrances & SEE - Works for Degree 1 of completion	45%	14-Sep-16 A	22-May-17
01108.CD4C1P	KAT Entrances & SEE - Degree 1 of Completion (01-Nov-15) - Programmed	0%		22-May-17
01108.STN.CD4C2	KAT Entrances & SEE - Works for Degree 2 of completion	0%	22-May-17	14-Aug-17
B3 Entrance B and Adit				
B3.1 Entrance B and Adit - C&S Works				
Entrance B and Adit				
01108.STN.EB050	Drainage	0%	31-Mar-17	11-May-17
01108.STN.EB060	Metal works and finishes	0%	12-May-17	05-Aug-17
B3.2 Entrance B and Adit - ABWF Works				
Entrance B and Adit				
01108.STN.EB110	ABWF Works	80%	04-Jan-16 A	18-Apr-17
01108.STN.EB120	E&M Works for Escalators installation	0%	26-May-17	05-Aug-17
C - South Approach Tunnel				
D - Associated Works				
D2 Drainage				
Sewerage and Stormwater				
01108.AWD.S010	Storm sewer, S1.2~S1.3~S1.6, S1.4~S1.3, S2.1~S2.4~S1.6; DP-7~S2.4: 633m, 10 nr. MH	76%	15-Dec-15 A	08-May-17
01108.AWD.F010	Foul sewer, F1.3~F1.4~MH10, F1.7~F.14: 180m, 6 nr. MH	76%	15-Dec-15 A	18-Apr-17
01108.AWD.S020	Storm sewer, S1.1~S1.2: 35m, 1 nr. MH	51%	15-Nov-16 A	07-Apr-17
01108.AWD.C010	U-channels, 197 m straight, 24 m curved	0%	18-Apr-17	25-May-17
D3 Instrumentation and Monitoring				
Instrumentation Installation and Monitoring				
01108.AWM.0030	Regular Monitorings and Submit Monitoring Reports (weekly for 50 months)	88%	01-Aug-13 A	17-Sep-17
D4 Landscape				
External Road and Paving				
01108.AWR.0010	Filling to road formation level, 5430 m3	0%	18-May-17	29-Jul-17
01108.AWR.0020	Kerb foundation, concrete kerbs & edgings, 830 m	0%	09-Jun-17	19-Aug-17



△ Milestone
▲ Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
RMP Rev F
Last Report
Actual Work

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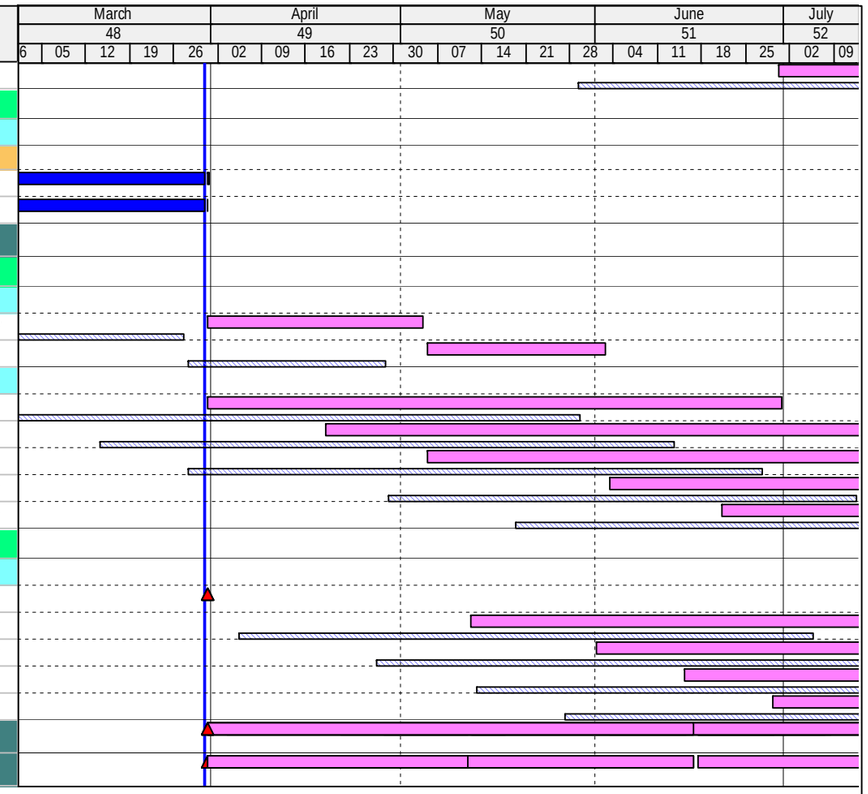
Kai Tak Station and Associated Tunnels

3-months Rolling Programme (Mar 2017)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.AWR.0030	Type 1 granular sub-base, road base, sand base, geotextile soil & copping layer, 2537 m2	0%	30-Jun-17	09-Sep-17
D5 Utilities Diversion				
Diversion of Existing Nullah				
Temporary Works & Hydraulic Assessment				
01108.AWD.DNA1.3	KTND Hydraulic Assessment - No-adverse-comment by DSD	98%	08-Aug-13 A	31-Mar-17
01108.AWD.DN09.5.3	KTND Temporary Channel - Design - No-adverse-comment by DSD & RDO/ BD/ GEO	98%	16-Jan-14 A	31-Mar-17
E Option 1 SCL Works				
Option 1a Temp. Passenger Access Roads connecting Station Entrances with Carriageways				
Preliminaries				
01108.O1A.PRE.010	Sumbmission of drawings & permanent works material control schedules & Approval	0%	31-Mar-17	04-May-17
01108.O1A.PRE.020	Submission of shop drawings & materials & Approval	0%	05-May-17	02-Jun-17
Temporary Passenage Access Road ER3, 4, 5, 7 & 8				
01108.O1A.TPA.010	Formation leveling, 2280 m2	0%	31-Mar-17	30-Jun-17
01108.O1A.TPA.020	Kerb foundation, concrete kerbs & edgings, 976 m	0%	19-Apr-17	15-Jul-17
01108.O1A.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2280 m2	0%	05-May-17	29-Jul-17
01108.O1A.TPA.040	Recycle aggregate concrete blocks, 2280 m2	0%	03-Jun-17	12-Aug-17
01108.O1A.TPA.050	Chain link fence & 1m r/c concrete footing, 976m, & temporary lighting and testing	0%	21-Jun-17	30-Aug-17
Option 1b Temp. Passenger Access Roads connecting Entrance D with Pedestrain Strip				
Temporary Passenage Acces Road ER6				
01108.CDO1B.EDP	Option 1b SCL Works - Temp. Passenger Access Road - Latest Exercinsg Date (31-Dec-15)	0%	31-Mar-17	
01108.O1B.TPA.010	Formation leveling, 2343 m2	0%	12-May-17	05-Aug-17
01108.O1B.TPA.020	Kerb foundation, concrete kerbs & edgings, 368 m	0%	01-Jun-17	24-Aug-17
01108.O1B.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2343 m2	0%	15-Jun-17	07-Sep-17
01108.O1B.TPA.040	Recycle aggregate concrete blocks, 2343 m2	0%	29-Jun-17	21-Sep-17
F Option 2 CEDD Entrusted Works for Roads L9 & L16 & Associated Works				
G Option 3 CEDD Entrusted Works for Reconstruction of Kai Tak Nullah				



Milestone
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Critical Remaining Work
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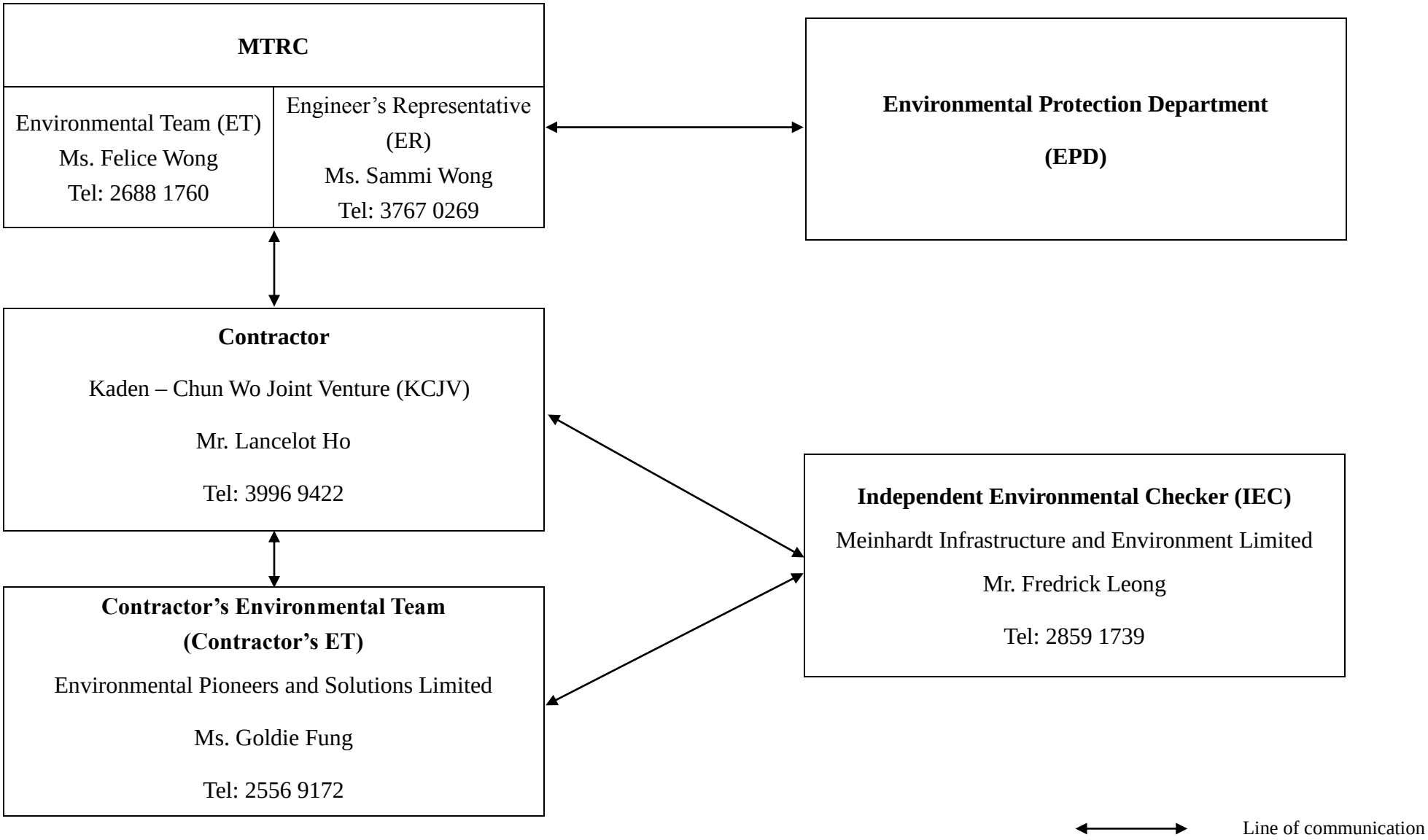
Remaining Level of Effort
RMP Rev F
Last Report
Actual Work

Contract 1108
Kai Tak Station and Associated Tunnels

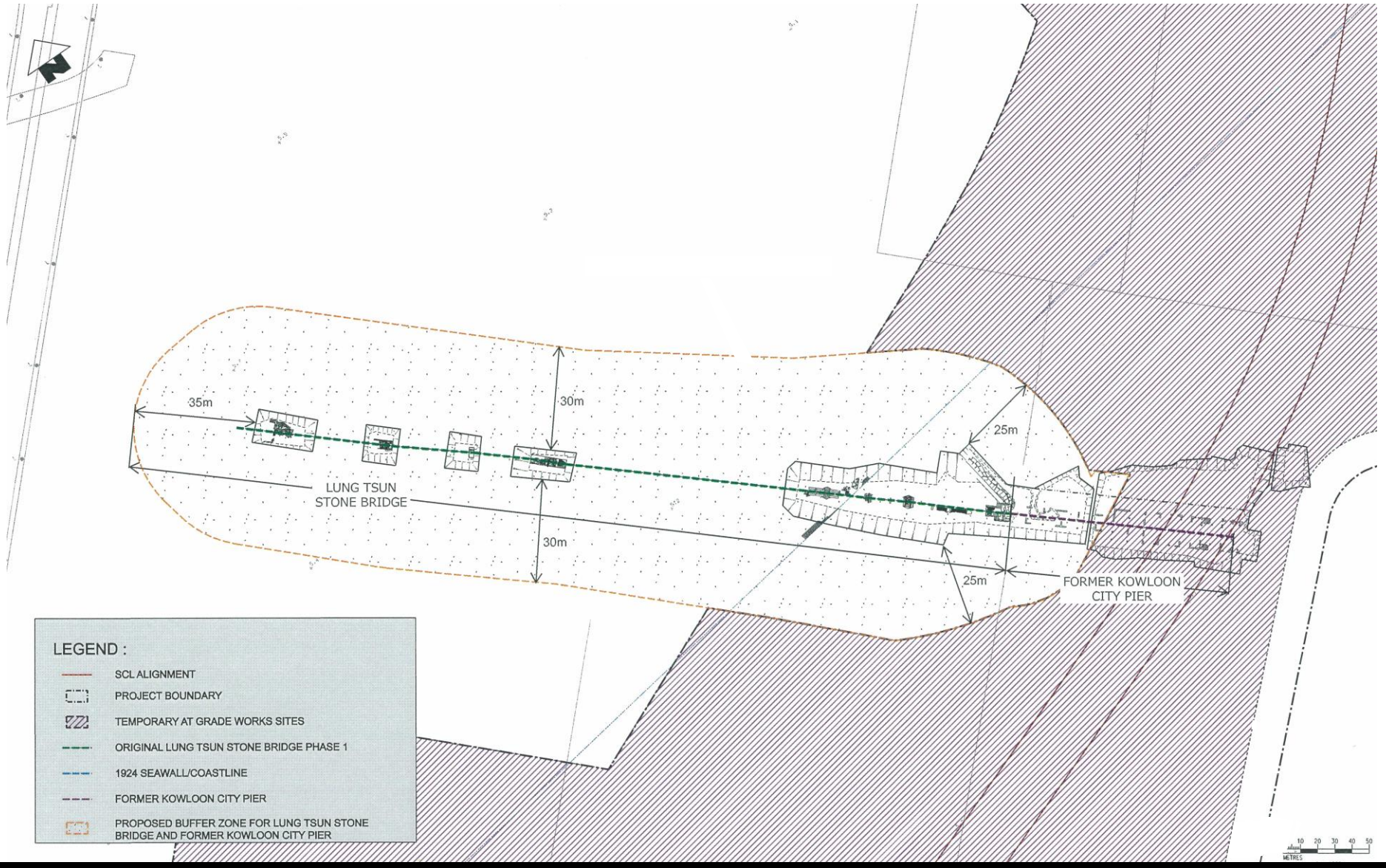
3-months Rolling Programme (Mar 2017)

Kaden – Chun Wo Joint Venture

Appendix C –Project Organization Chart & Contact Details


MTRC
Environmental Team (ET)
Ms. Felice Wong
Tel: 2688 1760
Engineer's Representative (ER)
Ms. Sammi Wong
Tel: 3767 0269
Environmental Protection Department
(EPD)
Contractor
Kaden – Chun Wo Joint Venture (KCJV)
Mr. Lancelot Ho
Tel: 3996 9422
Independent Environmental Checker (IEC)
Meinhardt Infrastructure and Environment Limited
Mr. Fredrick Leong
Tel: 2859 1739
Contractor's Environmental Team (Contractor's ET)
Environmental Pioneers and Solutions Limited
Ms. Goldie Fung
Tel: 2556 9172
Line of communication

Appendix D – Buffer Zone for Lung Tsun Stone Bridge & Former Kowloon City Pier



Project Title 工程名稱	Shatin to Central Link (SCL) - Tai Wai to Hung Hom Section(TAW-HUH) 沙田至中環綫 - 大圍至紅磡段	Environmental Permit No.: EP-438/2012/H 環境許可證編號：EP-438/2012/H
Figure 6 圖六	Buffer Zone from the Boundary of Lung Tsun Stone Bridge 龍津石橋界線之緩衝區 [This figure was prepared based on the attachment of the Application No.: VEP-432/2014] [本圖是根據申請編號 VEP-432/2014 的附件編制]	

Appendix E – Event/Action Plan for landscape & Visual During Construction Stage

Event / Action Plan for Landscape and Visual during Construction Stage

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

Appendix F – Waste Flow Table

Monthly Summary Waste Flow Table for _2017_ (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Materials Generated Monthly				
	Total Quantity Generated/ Received	Hard Rocks & Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals	Paper / cardboard packaging	Plastics	Chemical waste	Others (general refuse)
					1108A*	CEDD#					
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.064	0.001	0.000	0.263
Feb	0.093	0.000	0.093	0.000	0.000	0.000	0.000	0.071	0.001	0.000	0.074
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.000	0.000	0.104
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sub-total	0.093	0.000	0.093	0.000	0.000	0.000	0.000	0.215	0.002	0.000	0.441
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
October	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
November	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
December	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.093	0.000	0.093	0.000	0.000	0.000	0.000	0.215	0.002	0.000	0.441
Year 2016	915.150	0.000	915.150	0.000	0.000		66.004	0.927	0.008	1.000	1.742
Year 2015	368.534	0.000	322.676	0.000	45.857		208.770	1.042	0.163	1.280	2.171
Year 2014	311.876	0.000	39.476	0.000	272.400		103.280	0.855	0.056	1.540	1.484
Year 2013	144.512	0.000	0.000	0.000	144.512		93.330	0.030	0.000	0.480	2.568
Grand Total	1740.165	0.000	1277.395	0.000	462.769		471.384	3.069	0.229	4.300	8.406

Notes: * MTR SCL Contract 1108A barging point.

Government (CEDD) Public Fill Reception Facilities

Appendix G – Updated Environmental Mitigation Implementation Schedule

Environmental Mitigation Implementation Schedule –SCL Contract 1108 (Kai Tak Station and Associated Tunnels)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Cultural Heritage Impact (Construction and Operational Phase)							
S4.9	CH1	Maintain a buffer distance as shown in **Appendix D**. A 1.8-2.2m vertical separation distance shall be maintained between the top of tunnel and the piles of the Former Kowloon City Pier.	Reserve sufficient area for necessary archaeological conservation and display works for Lung Tsun Stone Bridge in the future. Avoid direct impact on the Lung Tsun Stone Bridge and the Former Kowloon City Pier.	MTR Corporation Contractor	Lung Tsun Stone Bridge & Former Kowloon City Pier.	During the Construction of the tunnel section at Kai Tak	✔
-	-	Adopt best management practices.	-	MTR Corporation Contractor	Former Kowloon City Pier.	During the Construction of the tunnel section at Kai Tak	✔
Landscape & Visual (Construction Phase)							
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u>	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• 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. <u>No-intrusion Zone</u> • 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. <u>Protection of Retained Trees</u> • 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					✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		approval system, and the tree monitoring system. • 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,					✔
S6.12	LV2	<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 <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. <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.	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and construction stage	✔ ✔ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Air Quality (Construction Phase)							
/	A1	<u>Emission from Vehicles and Plants</u> • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD).	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	✔ ✔ ✔
/	A2	Open burning shall be prohibited.	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	✔
Construction Dust Impact							
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	✔
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 should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	*
S7.6.5	D3	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	✔ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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;					✔
		• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;					✔
		• A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.					✔
		• 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;					✔
		• 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;					✔
		• 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;					✔
		• The portion of any road leading only to construction site that is					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		within 30m of a vehicle entrance or exit should be kept clear of dusty materials;					✔
		• 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;					✔
		• 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;					N/A
		• 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;					✔
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting;					✔
		• 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;					✔
		• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		with the material filling line and no overfilling is allowed; 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 • 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.					N/A
Construction Noise (Airborne)							
S8.3.6	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • 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; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;	Control construction airborne noise	Contractor	All construction sites	Construction stage	✔ ✔ ✔

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Water Quality (Construction Phase)							
S10.7.1	W1	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: <u>Construction Runoff and Site Drainage</u> • 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. • 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	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	* ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of 30m^3 would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.					✔
		• 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.					✔
		• 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.					✔
		• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and					✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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. • 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • 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. • 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					✔ ✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. • 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. • 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. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality					✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		impacts. • 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. • 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. • Adopt best management practices.					✔ ✔ *
S10.7.1	W2	<u>Tunnelling Works</u> • Cut-&-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. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • 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. • Direct discharge of the bentonite slurry (as a result of D-wall and	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	✔ ✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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.					
S10.7.1	W3	<u>Sewage Effluent</u> • 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.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	✔
S10.7.1	W4	<u>Groundwater from Contaminated Area:</u> • 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	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 Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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. • 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. • 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, 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					N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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	In order to prevent accidental spillage of chemicals, the following is recommended: • 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. • 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. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	* ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Waste Management (Construction Waste)							
S11.4.1.1	WM1	On-site sorting of C&D material • 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.	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 Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&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.	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	✔ ✔ ✔ ✔ ✔ ✔
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as	Good site practice to minimize the waste	Contractor	All construction sites	Construction stage	✔

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		practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered Use of wooden hoardings should not be used, 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. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal				✔
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • 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. • 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.					✔ ✔
S11.5.1	WM6	<u>Land-based and Marine-based Sediment</u> • All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location; • All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations;	To control pollution due to marine sediment	Contractor	Within Project Site Area	Construction Stage	✔ N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.					N/A
		• The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the engineers;					N/A
		• The Contractors shall comply with the conditions in the dumping licence.					✔
		• All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material;					N/A
		• The material shall be placed into the disposal pit by bottom dumping;					N/A
		• Contaminated marine mud shall be transported by spit barge of not less than 750m ^{3} capacity and capable of rapid opening and discharge at the disposal site;					N/A
		• Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.					N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfil confined mud disposal.					N/A
S11.5.1	WM7	<u>Chemical Waste</u> • 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. • 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. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3	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 Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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. • 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.					✔
EM&A Project							
S14.2 – 14.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 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.	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	✔ ✔ ✔

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 H – Cumulative Log for Environmental Exceedance, Complaints, Notification of Summons and Successful Prosecutions

Cumulative Log for Environmental Exceedance, Complaints, Notification of Summons and Successful Prosecution

Reporting Month	Number of Exceedance	Number of Environmental Complaints	Number of Notification of Summons	Number of Successful Prosecutions
January 2017	0	0	0	0
February 2017	0	0	1	0
March 2017	0	0	0	0
Total	0	0	1	0
Year 2013	0	0	0	0
Year 2014	0	0	0	0
Year 2015	0	16	0	0
Year 2016	0	9	1	0
Grand Total	0	25	2	0

Appendix H

42nd Monthly EM&A Report for Works Contract 1102 –
Hin Keng Station and Approach Structures

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 42

[Period from 1 to 31 March 2017]

Works Contract 1102 –

Hin Keng Station and Approach Structures

(April 2017)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 11th April 2017

Penta-Ocean Construction Co. Ltd.

Shatin to Central Link –

Contract 1102
Hin Keng Station and Approach Structures

Monthly Environmental Monitoring and Audit Report

(Version 1.0)

March 2017

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.

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 42nd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants 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 conducted from 1 to 31 March 2017.

Summary of Construction Works undertaken during the Reporting Month

2. The major site activities undertaken in the reporting month include:

- Soft Landscaping;
- ABWF works at Hin Keng Station;
- Modification of Retaining Wall and Installation of Noise Barrier;
- Hard Landscape; and
- E&M Works.

Environmental Monitoring and Audit Progress

3. A summary of the monitoring activities in this reporting period is listed below and the monitoring works were undertaken by Contractor ET of Works Contract SCL 1103:

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
  Noise Monitoring Station ID
  - NMS-CA-1(1) (C.U.H.K.A.A Thomas Cheung School) 5 times

- Construction Dust (24-hour TSP) Monitoring
  Dust Monitoring Station ID
  - DMS-1(1) (C.U.H.K.A.A Thomas Cheung School) 6 times

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

Waste Management

4. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 218.5 m^3 of inert C&D materials were generated from the Project and sent to Tuen Mun Area 38 Fill Bank and Tseung Kwan O Area 137 Fill Bank during the reporting month. No non-recyclable non-inert C&D materials and 61.0 m^3 general refuse were disposed of at NENT Landfill. No chemical wastes, steel material, plastics and paper/cardboard packaging was generated and collected by the recycler during this reporting month.

Landscape and Visual

5. Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 14 and 28 March 2017. Most of the 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

6. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 7, 14, 23 and 28 March 2017. The representative of the IEC joined the site inspection on 23 March 2017. Details of the audit findings and implementation status are presented in **Section 6**.

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

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

8. No non-compliance event was recorded during the reporting period.

9. No reporting change was recorded during the reporting period.

10. No Project related environmental complaint and notification of summons/ successful prosecutions were received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- Soft Landscaping;
- ABWF works at Hin Keng Station;
- Modification of Retaining Wall and Installation of Noise Barrier;
- Hard Landscape; and
- E&M Works

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).

Purpose of the Report

1.2 This is the 42nd EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 31 March 2017.

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 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 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 1st 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 this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.

- Soft Landscaping;
- ABWF works at Hin Keng Station;
- Modification of Retaining Wall and Installation of Noise Barrier;
- Hard Landscape; and
- E&M Works

Project Organization

2.5 The project organization chart and contact details are shown in **Figure 2.**

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 October 2013 are 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	4/10/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Reference No: 362534	29/7/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
A/C No.: 7017900	02/8/2013	N/A	Valid
Registration of Chemical Waste Producer			
Registration No. 5218-759-P1057-03	03/9/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00018589-2014	29/4/2014	30/9/2018	Valid
Construction Noise Permit (CNP)			
GW-RN0961-16	30/12/2016	29/6/2017	Valid

Summary of EM&A Requirements

2.7 The EM&A programme under Works Contract 1102 require 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 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 station. The construction noise monitoring location is listed in **Table 3.1** and shown in **Figure 3**.

Table 3.1 Regular Construction Noise Monitoring Station

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-1(1)	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).

Monitoring Parameter and Frequency

3.2 Weekly 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 monitoring schedule for this reporting period could be referred to Appendix K of SCL 1103 monthly EM&A report. 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	Duration	Parameter	Frequency
Impact Monitoring	Throughout the construction period	L_{eq} (30min)	Once per week

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) was used as the monitoring metric for the time period between 0700 – 1900 hours on normal weekdays while L_{10} and L_{90} were also recorded as supplementary reference information for data auditing.

Monitoring Equipment, Maintenance, Calibration and Procedures

3.4 The detailed information of monitoring equipment, maintenance, calibration and procedures could be referred to Section 4.2 of SCL 1103 monthly EM&A report.

Action & Limit Level for Construction Noise Monitoring

3.5 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix F.**

Continuous Noise Monitoring

3.6 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, 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 1102.

Regular Construction Dust Monitoring

3.7 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

Regular Dust Monitoring Location	Description
DMS-1(1)	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

3.8 The dust 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 monitoring schedule for this reporting period could be referred to Appendix K of SCL 1103 monthly EM&A report. 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

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring(1)	Throughout the construction period	24-hour TSP(2)	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.

Monitoring Equipment, Maintenance, Calibration and Procedures

3.9 The detailed information of monitoring equipment, maintenance, calibration and procedures could be referred to Section 3.2 of SCL 1103 monthly EM&A report.

Action and Limit Levels for Dust Monitoring

3.10 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 F.**

Landscape and Visual

3.11 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 E**. The Event / Action Plan (EAP) for landscape and visual are presented in **Appendix F.**

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
3.4	Monthly Environmental Monitoring & Audit Report (February 2017)	14 March 2017

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 5 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays during the reporting period by ET of SCL 1103. No exceedance of the limit level was recorded at designated monitoring station.

5.2 Based on observation during the on-site monitoring, road traffic nearby is considered as a potential noise source other than construction works of the Project that affects the monitoring results of the reporting month.

5.3 The detailed noise monitoring results together with their graphical presentations are presented in Appendix H of SCL 1103 monthly EM&A report.

Table 5.1 Summary Table of Construction Noise Monitoring Results

Parameter	Minimum Leq(30min), dB(A)	Maximum Leq(30min), dB(A)	Action Level	Limit Level, Leq(30min), dB(A)
Noise	< Baseline Level	< Baseline Level	When one documented complaint is received	70/65(1)

Remarks:
(1) For normal day-time working hours, the noise criteria is 70 dB(A) and 65 dB(A) for normal teaching period and examination periods respectively.
(2) The noise monitoring data presented in the table is baseline corrected.

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

Regular Dust Monitoring

5.5 A total of 6 sets of 24-hour TSP monitoring were carried out at the designated monitoring station of the reporting period by ET of Works Contract SCL 1103. The monitoring results together with their graphical presentations are presented in Appendix E of SCL 1103 monthly EM&A report and a summary of the dust monitoring results in this reporting month is given in **Table 5.2**.

Table 5.2 Summary Table of Dust Monitoring Results

Parameter	Minimum µg/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
24-hr TSP	50.7	81.6	62.3	148.7	260

5.6 Wind monitoring data obtained from Kai Tak Meteorological Station of Hong Kong Observatory is shown in Appendix F of SCL 1103 monthly EM&A report.

5.7 Based on observation during the on-site monitoring, road traffic emission nearby is considered as a potential dust source other than construction works of the Project that affects the monitoring results of the reporting month.

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

Waste Management

5.9 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. 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 5.3**. No chemical waste, steel material, plastics, paper/cardboard packaging was generated during this reporting month. Details of waste management data is presented in **Appendix G**.

Table 5.3 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2017[c]	218.5 m^3	61.0 m^3	0 kg	0 kg	0 kg	0 kg

Notes:
(a) Inert C&D materials include excavated soil and rock. 218.5 m^3 of inert C&D materials were delivered to Tuen Mun Area 38 Fill Bank and 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.
(c) The cut-off date of the waste flow table in reporting month was 29 March 2017.

Landscape and Visual

5.10 Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 14 and 28 March 2017. 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 D**.

6.2 Site audits were conducted on 7, 14, 23 and 28 March 2017 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 23 March 2017. No EPD site inspection was conducted during the reporting month. The details of observations during site audit 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 E**.

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
Water Quality	28 Mar 2017	Reminder: Wastewater treatment facility near Site entrance should be maintained before rainy season.	Follow up actions will be reported in the next month.
Noise	N/A	There was no observation in the reporting period.	N/A
Landscape and Visual	N/A	There was no observation in the reporting period.	N/A
Air Quality	28 Feb 2017	Reminder: Mitigation measures should be provided near Site entrance for dust suppression.	Water spraying was provided on 7 Mar 2017.
	7 Mar 2017	Reminder: Water spraying should be provided more frequently to haul roads within the site to prevent dust generation.	Water spraying was provided on 14 Mar 2017.
	7 Mar 2017	Reminder: Dust suppression measures should be performed to concrete breaking near site entrance to prevent dust generation.	Water spraying was performed on 14 Mar 2017.
	14 Mar 2017	Dust control measures should be performed to drill works at Viaduct to prevent dust generation.	Water spraying was provided to drill works on 23 Mar 2017.
	14 Mar 2017	Reminder: Bagged cement at Platform should be properly covered.	Housekeeping at Platform was observed improved on 23 Mar 2017

Parameters	Date	Observations and Recommendations	Follow-up
		The Contractor was reminded to improve the housekeeping at Station.	
	23 and 28 Mar 2017	Reminder: Water spraying should be provided more frequently near football court to prevent dust generation.	Follow up actions will be reported in the next month.
Waste / Chemical Management	N/A	There was no observation in the reporting period.	N/A
Permits/ Licenses	N/A	There was no observation in the reporting period.	N/A

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 C**.

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 Complaint Log in reporting month and cumulative summary table since the commencement of the Project is presented in **Appendix H**.

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 Log for environmental summon and successful prosecution in reporting month and cumulative summary table since the commencement of the Project is presented in **Appendix H**.

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:

- Soft Landscaping;
- ABWF works at Hin Keng Station;
- Modification of Retaining Wall and Installation of Noise Barrier;
- Hard Landscape; and
- E&M Works.

Key Issues in the Next Month

8.2 Key issues to be considered in the coming month include:

- Dust arising from loading, unloading, transfer, handling or storage of bulk cement, excavated materials and soil erosion in dry days;
- Control of silty surface runoff;
- Implementation of mitigation measures for wastewater spillage from construction works.
- Preservation and protection of retained and transplanted trees;
- Implementation of mitigation measures for noise nuisance from construction works;
- Regular removal of silt, mud and sand along drainage channels and sedimentation tanks; and
- Proper storage and mitigation measures for oil/chemical containers.

Monitoring Schedule in the Next Month

8.3 The tentative schedule of regular construction noise monitoring and 24-hour TSP monitoring at in the next reporting period is presented in Appendix K of SCL 1103 monthly EM&A report. 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 to 31 March 2017 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 4 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 There was no Project related environmental complaint, successful prosecution or notification of summons received during 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:

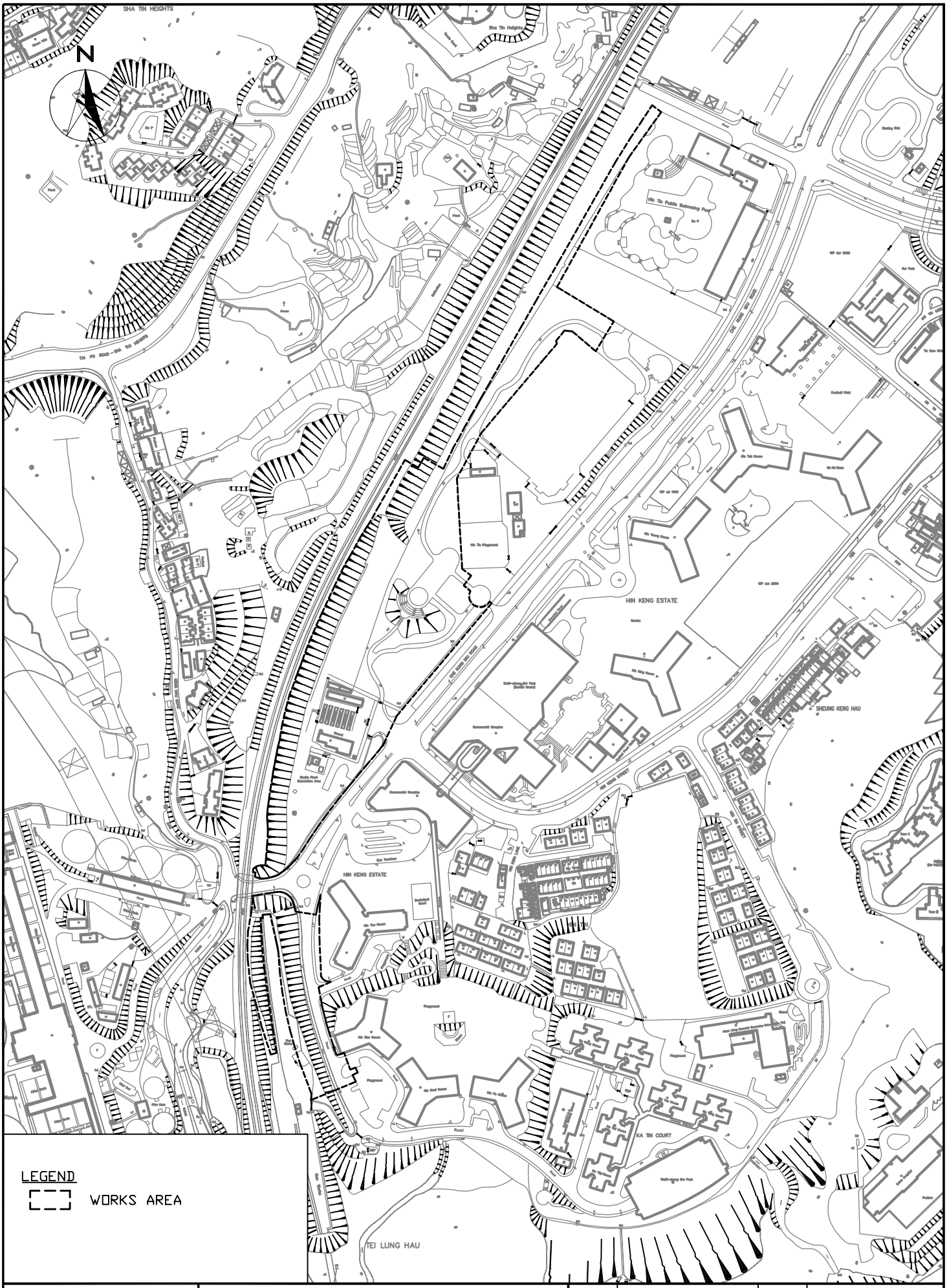
Air Quality

- Exposed area and haul roads in the Site should be provided with adequate dust control measures to prevent dust generation.
- Stockpiles or dusty materials should be completely covered with impervious sheets to prevent dust generation.
- Housekeeping within the Site should be maintained as far as practicable. Bagged cement should be properly covered to prevent dust generation.
- Works that generate dust should be provided with adequate dust control measures to minimize dust generation.

Water Quality

- Treatment facility for wastewater should be maintained regularly as far as practicable before rainy season.

FIGURES



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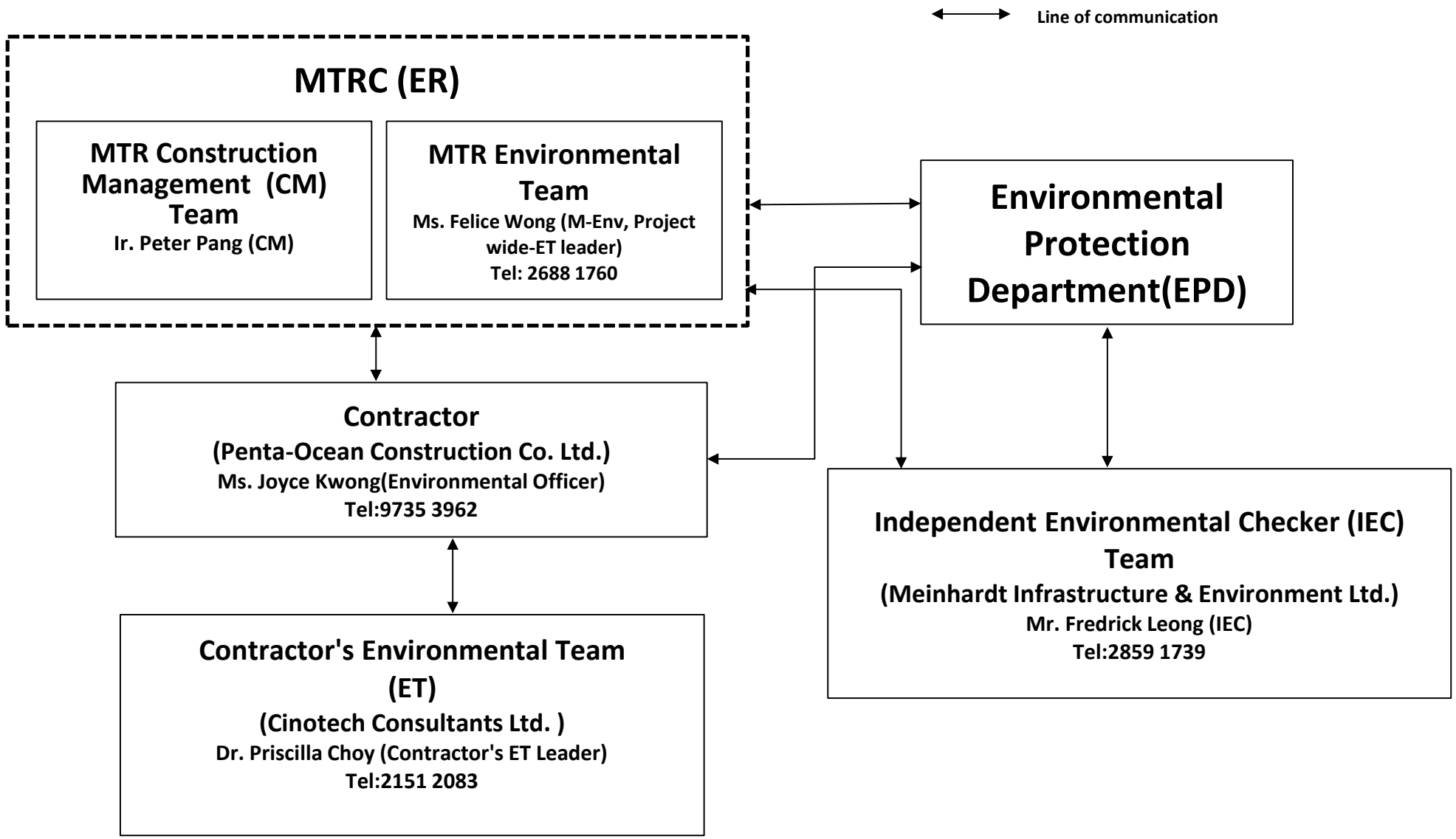
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

SITE LAYOUT PLAN OF
WORKS CONTRACT 1102

SCALE	1:10000@A4	DATE	NOV 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 1
		REV	–



Title	SCL Contract 1102 The Shatin to Central Link - Hin Keng Station and Approach Structures Organization Chart and Key Contact of the Project	Scale N.T.S Date Jan-17	Project No. MA13040 Figure 2

CINOTECH

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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	-

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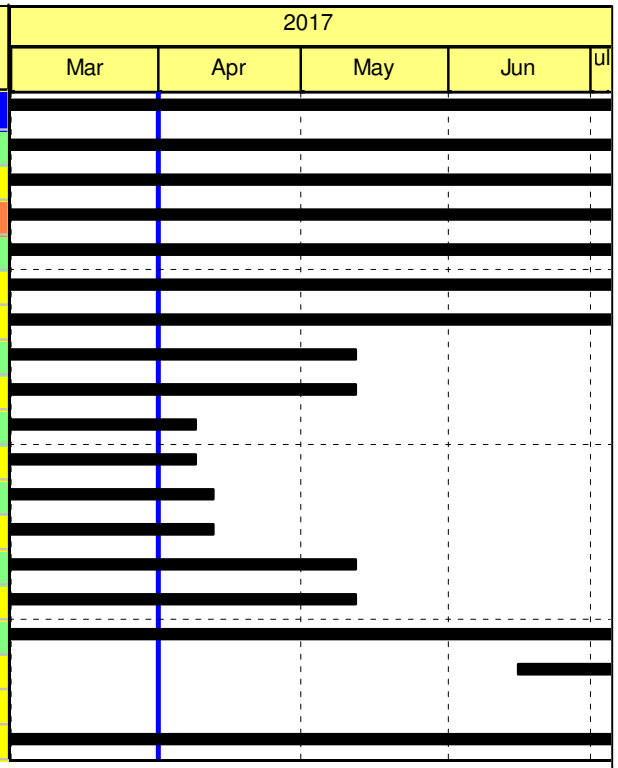
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

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
TENTATIVE CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish
	3-month Rolling Programme Summary (Apr tc	729.80	211.00	21-Oct-13 A	15-Dec-17
	Hin Keng Station	403.00	211.00	04-Mar-15 A	15-Dec-17
	Superstructure	403.00	211.00	04-Mar-15 A	15-Dec-17
	ABWF	403.00	211.00	04-Mar-15 A	15-Dec-17
	Ma On Shan Line & Tail Track	378.00	111.23	21-Oct-13 A	18-Aug-17
	Noise Barrier behind Hin Tin Swimming Pool	378.00	111.23	21-Oct-13 A	18-Aug-17
	Noise Barrier Work	157.00	60.00	15-Jul-14 A	05-Jul-17
	At-grade Box	275.00	30.00	27-May-16 A	12-May-17
	Backfilling Works	275.00	30.00	27-May-16 A	12-May-17
	FR63 Slope	60.00	6.00	15-Jul-15 A	08-Apr-17
	Soft Landscape	60.00	6.00	15-Jul-15 A	08-Apr-17
	FR65 Slope	90.00	9.00	05-Jan-15 A	12-Apr-17
	Soft Landscape	90.00	9.00	05-Jan-15 A	12-Apr-17
	F320 Slope	60.00	30.00	01-Nov-16 A	12-May-17
	Soft Landscaping Works	60.00	30.00	01-Nov-16 A	12-May-17
	Hin Tin Playground	251.80	144.80	15-Nov-16 A	27-Sep-17
	Hard Landscape	29.00	29.00	15-Jun-17	20-Jul-17
	ABWF (Finishing) - Store Room & Plant Room	12.00	12.00	20-Jul-17	03-Aug-17
	E&M Works	251.80	144.80	15-Nov-16 A	27-Sep-17



PENTA-OCEAN CONSTRUCTION CO.LTD 五洋建設

Actual Work
Remaining Work
Critical Remaining Work
Milestone
% Complete

MTRC SCL Project Contract 1102

Hin Keng Station and Approach Structures

Page 1 of 1

3 Months Rolling Programme

Summary

(Period - Apr to Jun 2017)

Date	Revision	Checked	Approved
05-Apr-17	0	SC	

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Station	Description	Action Level, μg/m^3	Limit Level, μg/m^3
DMS-1 (1)(2)	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

Regular Construction Noise Monitoring Station	Description	Time Period	Action Level	Limit Level
NMS-CA-1 (1)(2)	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) (3)

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 C
SUMMARY OF EXCEEDANCE

APPENIDX C – SUMMARY OF EXCEEDANCE

Reporting Month: March 2017

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX D
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170307
Date	7 March 2017 (Tuesday)
Time	09:30 – 10:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170307-R01 170307-R02	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • Water spraying should be provided more frequently to haul roads within the site to prevent dust generation. • Dust suppression measures should be performed to concrete breaking near site entrance to prevent dust generation. ***Part F – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part H – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part I – Others*** • No environmental deficiency was identified during the site inspection.	E 5 E11

	Name	Signature	Date
Recorded by	Kelvin Koo		7 March 2017
Checked by	Dr. Priscilla Choy		7 March 2017

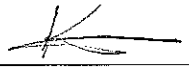
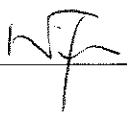
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170314
Date	14 March 2017 (Tuesday)
Time	09:30 – 11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part C – Ecology	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Landscape & Visual	
	• No environmental deficiency was identified during the site inspection.	
	Part E – Air Quality	
170314-O01	• Dust control measures should be performed to drill works at Viaduct to prevent dust generation.	E 5
170314-R02	• Bagged cement at Platform should be properly covered. The Contractor was reminded to improve the housekeeping at Station.	E11
	Part F – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	Part H – Permits/Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part I – Others	
	• No environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Kelvin Koo		14 March 2017
Checked by	Dr. Priscilla Choy		14 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170323
Date	23 March 2017 (Thursday)
Time	09:30 – 11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170323-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • Water spraying should be provided more frequently near football court to prevent dust generation. ***Part F – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part H – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part I – Others*** • No environmental deficiency was identified during the site inspection.	E 5

	Name	Signature	Date
Recorded by	Kelvin Koo		23 March 2017
Checked by	Dr. Priscilla Choy		23 March 2017

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	170328
Date	28 March 2017 (Tuesday)
Time	16:00 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
170328-R01	***Part B – Water Quality*** • Wastewater treatment facility near Site entrance should be maintained before rainy season. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part H – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part I – Others***	B 6ii
170328-F02	• Water spraying should be provided more frequently near swimming pool to prevent dust generation.	E 5

	Name	Signature	Date
Recorded by	Kelvin Koo		28 March 2017
Checked by	Dr. Priscilla Choy		28 March 2017

APPENDIX E
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION 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
Ecology (Construction Phase)								
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	• AFCD's requirements • EIAO • Country Parks Ordinance	^
S5.7	E5	<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, 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. The following good site practices should also be implemented: • 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; • Avoidance of soil storage against trees or close to	Minimise ecological impacts	Contractor	All construction sites	During construction	• ProPECC PN 1/94	^ ^ 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 measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		waterbodies in particular the Tei Lung Hau stream; • 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; • No on-site burning of waste; • Waste and refuse in appropriate receptacles.						N/A ^ ^
S5.7	E7	<u>Water Quality and Hydrology</u> • 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 theTei Lung Hau Stream) and good site practices.	• Avoid indirect water impact to any wetland habitats or wetland fauna • Minimize the drawdown of water table	Contractor	Works area in Hin Keng	Construction stage	• TCW No. 5/2005	^
Landscape & Visual (Construction Phase)								
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • 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	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	TM-EIAO	^

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
		ground, gathering ground and mixing ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • 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. <u>Protection of Retained Trees</u> • 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. • 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,						^ ^ ^

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	• Decorative Hoarding 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. • Management of facilities on work sites 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. • Tree Transplanting 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.	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and Construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	^ ^ ^

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
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All 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	^
Construction Dust Impact								
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	*

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	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • 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; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • 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; • 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	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	^ * ^ ^ ^ ^

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
		point should be paved with concrete, bituminous materials or hardcores; • 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; • 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; • 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; • 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; • Where a scaffolding is erected around the perimeter of a building						^ ^ * ^ ^

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
		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; Any skip hoist for material transport should be totally enclosed by impervious sheeting; • 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; • 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; • 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 • 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						* ^ ^ ^

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
		construction site or part of the construction site where the exposed earth lies.						
S7.6.5	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	^
Construction Noise (Airborne)								
S8.3.6	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • 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; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^ ^ ^ ^ ^ ^

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
		structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	• 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	Contractor	Selected representative	Construction stage	• TM-EIA	^

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
			representative locations		noise monitoring station			
Water Quality (Construction Phase)								
S10.7.1	W1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department,1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoff and Site Drainage</u> • 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), 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. • 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	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^

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
		in the permanent drainage channels to enhance deposition rates. • 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 m3/s a sedimentation basin of 30m3 would be required and for a flow rate of 0.5 m3/s the basin would be 150 m3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction. • 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. • 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.						^ ^ ^

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
		• 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. • 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. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 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. • 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.						* ^ ^ ^

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
		• 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. • 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. • 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						^ ^ ^

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
		accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • 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. • 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. • Adopt best management practices						^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • 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.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	^

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	In order to prevent accidental spillage of chemicals, the following is recommended: • 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. • 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. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^ ^
Waste Management (Construction Waste)								
S11.4.1.1	WM1	<u>On-site sorting of C&D material</u> • 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	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	^

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	Construction and Demolition Material • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;	Good site practice to minimize 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 No. 19/2005	^ ^ ^ ^

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
		• Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&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						^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, 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.	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	^

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
		• The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						^
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • 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. • Office wastes can be reduced through the recycling of paper if	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	^ ^ ^ ^

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	Chemical Waste • 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. • 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. • 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction Stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ ^ ^

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
		• 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.						^
Land Contamination								

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	Re-sampling at NTSAMC • 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. • 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. • 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)	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	• Practice Guide (PG) forInvestigation and Remediation of ContaminatedLand • GN/GM for land contamination • Risk-Based Remediation Goals	^ ^ ^
Hazard to Life								
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		^

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 theoperational 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, constructionworkers 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, constructionworkers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
EM&A Project								

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	• An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	MTR Corporation	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^
S 14.2 – 14.4	EM2	• An Environmental Team needs to be employed as per the EM&A Manual • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • 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.	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^ ^ ^

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
EVENT AND ACTION PLANS

Appendix F - Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
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 addtional 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	1. Inform the IEC, Contractor 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. 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(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.
2.Exceedance for two or more consecutive samples	1. Notify IEC, Contractor and EPD; 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, Contractor 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. Notify the Contractor, IEC and ET; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 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 and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 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. 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. 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. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 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, Contractor 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. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source 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 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Landscape and Visual during Construction Phase

Action Level	Works Contract 1102 ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity 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 non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX G
WASTE GENERATION IN THE REPORTING MONTH

Name of Contractor: Penta-Ocean Construction Co. Ltd.
Waste Flow Table for Year 2017

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	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^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan-17	0.2040	0	0	0	0.2040	0	0	0	0	0	0.0660
Feb-17	0.5803	0	0	0	0.5650	0.0153	0	0	0	0	0.1602
Mar-17 (See Note 2)	0.2185	0	0	0	0.2185	0	0	0	0	0	0.0610
Apr-17											
May-17											
Jun-17											
Sub-total	1.0028	0	0	0	0.9875	0	0	0	0	0	0.2872
Jul-17											
Aug-17											
Sep-17											
Oct-17											
Nov-17											
Dec-17											
Total	**1.0028**	**0**	**0**	**0**	**0.9875**	**0.0153**	**0**	**0**	**0**	**0**	**0.2872**

Note: (1) Inert C&D materials include excavated soil and rock. 212.2 m^3 and 6.3 m^3 of inert C&D materials were delivered to Tuen Mun Area 38 Fill Bank and Tseung Kwan O Area 137 Fill Bank respectively during the reporting month.
Note: (2) The cut-off date of waste flow table in reporting month was 29 Mar 2017.

APPENDIX H
LOG AND CUMULATIVE SUMMARY TABLE FOR COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix H - Log and Cumulative Summary Table for Complaints, Notifications of Summons and Successful Prosecutions

Reporting Month: March 2017

Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
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Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
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Log for Successful Prosecutions

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
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Cumulative Summary Table for Complaints, Notifications of Summons and Successful Prosecution

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
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	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
January 2015	0	0	0
February 2015	0	0	0
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	0	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	0	0	0
April 2016	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
May 2016	0	0	0
June 2016	0	0	0
July 2016	0	0	0
August 2016	0	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	0	0	0
Total	1	0	0